

Report on National Economic Supply 2017–2020



Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER

Federal Office for National Economic Supply FONES

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Foreword

You have in front of you the Report on National Economic Supply for the period 2017 to 2020. When drafting the text, the events of 2020 were still foremost in our minds. The COVID-19 pandemic has overshadowed everything and presented us with huge personal and professional challenges. When public life partially comes to a standstill, businesses temporarily close and face-to-face contact has to be kept to a minimum, much that we used to take for granted is called into question. For a long time, our everyday lives were turned upside down.

The risk of an influenza pandemic in particular is widely known. The Federal Office for Civil Protection even cited a pandemic as the biggest threat to society in its analyses. But because previous pandemics – bird flu, swine flu – ended up not being as bad as some predictions had suggested, some of us were lulled into a false sense of security. The speed with which the virus spread across the globe from February 2020 onwards surprised most of us. Once the pandemic really manifested itself, it became clear how important it is to have crisis management instruments in place.

The instruments used by the Federal Office for National Economic Supply (FONES) fall into two groups. On the one hand, strategic stockpiling allowed stocks to be released and the market to be supplied with essential goods. On the other, NES supported the economy by enabling it to optimally deploy the resources available to manage the crisis using various management measures. For example, it restricted the dispensing of medicines that were in short supply, ensured transport capacities were maintained using targeted measures, and secured an additional supply of essential antibiotics by releasing compulsory stocks. Many things worked well, but the pandemic also highlighted a number of shortcomings in our crisis preparedness. These shortcomings now need to be rectified.

Periodic reviews of stockpiling need to take into account the experiences from the COVID-19 crisis as well as insights gained from previous years. Compulsory stockpiling of ethanol was introduced back in 2020; from 2021, changes are being made in terms of foodstuffs. The compulsory stocks of therapeutic products will need to be reassessed as part of the reappraisal of the pandemic. In parallel, however, resilience measures need to be promoted to be able to better support increasingly important

services, such as logistics and ICT in a crisis. But security of supply is not free. As with private insurance policies, every additional assurance entails a higher premium. Given the special circumstances of 2020, people are likely more aware of the issue of supply and more willing to pay for it.

To ensure NES can continue to perform its tasks in as targeted a manner as possible, and to cater to an ever more vulnerable society, cooperation between the public and private sectors must be as efficient and effective as possible. An inquiry into the NES's leadership and organisational structure, commissioned by the EAER in 2020, revealed that the current structure of national economic supply has generally proven effective and should be retained. Building on the recommendations from this inquiry, the optimisation potential in the management and organisational structures of NES and the FONES in particular will be examined more closely in 2021 and subsequently adapted where necessary.

This report summarises the core activities of NES over the past four years and highlights the upcoming challenges. During the period under review, from 2017 to 2020, NES re-evaluated the risks facing supply processes, conducted an in-depth examination of its strategic direction, and analysed the effectiveness and readiness for use of its instruments and measures. NES's work relating to the COVID-19 pandemic is summarised in a separate chapter. The lessons learned from this and rapid changes to the economic, social, technological and climatic conditions will shape the work of the NES in the years ahead. An initial analysis of the implications will be carried out in the risk analysis, which is due to be revised in 2021.

*Werner Meier
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Bern, March 2021

The Federal Council acknowledged the 'Report on National Economic Supply 2017–20' on 19 May 2021.

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1 Background

NES mandate

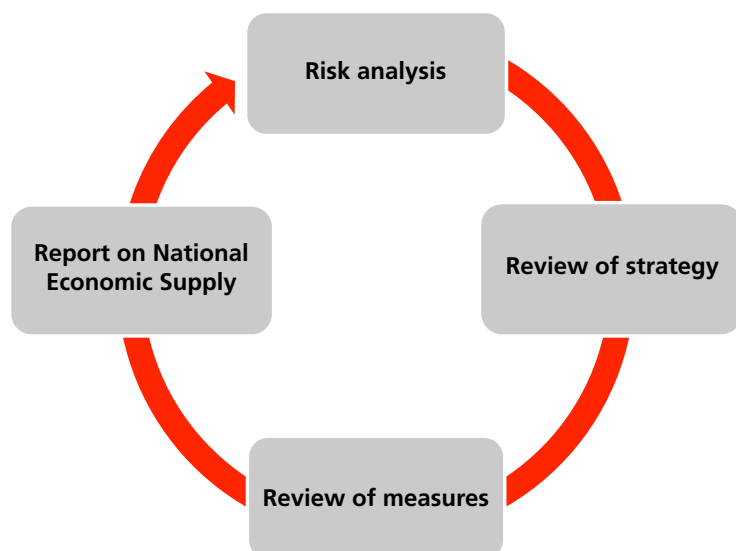
The National Economic Supply (NES) organisation minimises the consequences for Switzerland of supply disruptions and shortages that the private sector cannot remedy on its own. To this end, in the event of crisis, NES implements measures to ensure the availability of important goods and services that are essential to the functioning of the Swiss economy or of vital importance to the population. In addition to certain basic foodstuffs, energy and therapeutic products, these specifically include supply infrastructures such as logistics, power grids, and information and communication technologies, as well as the services that are based on them. Securing these supply-critical goods, infrastructures and services requires effective instruments of contingency planning and crisis management on the part of NES. This means that the measures in place must be feasible and geared to current challenges.

Purpose of this report

This Report on National Economic Supply shows how NES responds to constant shifts in supply operating conditions. It offers a review of core activities over the past four years, an overview of the current state of preparedness, and a look ahead to the challenges of the future. The report is updated as part of the four-year NES strategy process.

This strategy process begins in the first year with a comprehensive assessment of risk and vulnerability as a basis for the review in the second year of the strategic orientation of NES planning. In the third year, the fitness for purpose and feasibility of measures and instruments are then examined in terms of the strategic direction, before the strategy process concludes in the fourth year with the Report on National Economic Supply.

Figure 1: NES strategy process



2 Mandate and strategy

2.1 NES mandate

NES mandate

Under Article 102 of the Federal Constitution, the federal government has the task of ensuring that the country is supplied with essential goods and services if the economy is no longer able independently to fulfil its supply function in the event of shortages. It prepares measures that it can deploy where necessary. These measures may depart from the principle of economic freedom if necessary.

NES focuses on goods and services which are essential to the economy or to the population. These themselves depend on the availability of certain resources, such as materials or labour. Sufficient supplies of goods can be ensured only if the private sector also has access to basic services that are essential to its production and supply processes, such as power, IT and telecommunications, and logistics.

In the event of a supply shortage, NES supports the private sector with targeted measures to close the supply gaps that have arisen. The scope of an intervention is determined by the probable duration and expected extent of the supply shortage. The focus is on relieving short- and medium-term disruption to supplies. However, it is not the task of NES to institute structural policy measures to ensure supplies to Switzerland in the long term; this is the responsibility of the competent offices and departments at federal level. An abrupt increase in demand, for example due to a pandemic, constitutes an exceptional case, and NES can only play a subsidiary role in tackling it.

Primacy of the private sector

Supplying the country with goods and services is essentially a matter for the private sector. NES merely acts in a subsidiary capacity and only intervenes to support and coordinate if economic actors are no longer able to perform their supply function themselves.

The fast pace of today's economic processes demands a swifter response to disruptions in supply. NES therefore intervenes as soon as there is an imminent severe shortage. The criterion for NES intervention is an actual or impending severe shortage that the private sector is no longer able to sufficiently tackle itself.

More dynamic

Targeted preparations help make crucial supply systems and critical infrastructures more resilient in the event of crisis. Such action is geared to the needs of the economy. In certain sectors identified as particularly critical from the NES perspective, businesses can also be obliged to take preventive action.

Building resilience

The most important legal foundations:

■ Article 102 of the Federal Constitution:

¹ The Confederation shall ensure that the country is supplied with essential goods and services in the event of the threat of politico-military strife or war, or of severe shortages that the economy cannot by itself counteract. It shall take precautionary measures to address these matters.

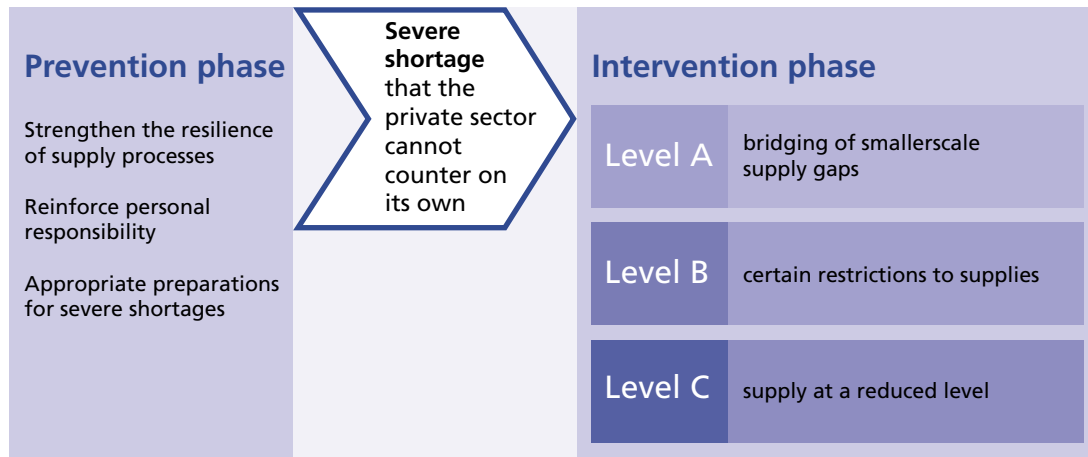
² In exercising its powers under this Article, it may, if necessary, depart from the principle of economic freedom.

■ National Economic Supply Act (SR 531)

■ Ordinance on the Organisation of National Economic Supply (SR 531.11)

■ For a full overview, please visit: <https://www.fedlex.admin.ch/en/cc/internal-law/53>

Figure 2: NES supply objectives



2.2 Strategy

In 2018, NES undertook an in-depth review of its strategic orientation and amended it in line with current requirements so that it can continue to fulfil the remit laid down in the NESa. (BWL, 01.12.2018).

NES focuses on ensuring supplies of vital goods and services in the foodstuffs, energy, therapeutic products, logistics and ICT sectors. For each of these supply processes, the strategy can be divided into two phases: prevention and intervention (see Figure 2).

The NES strategy sets out specific supply targets for vital goods and services (foodstuffs, energy, therapeutic products, logistics and ICT), with objectives for both the prevention and the intervention phases. The general idea is to remain at the lowest possible level of intervention and to keep state action to the minimum, in accordance with the principle of subsidiarity.

NES's general supply objective in the prevention phase is to bolster the resilience of supply processes. To this end, NES educates and supports supply actors and the public so they can fulfil their responsibility with regard to crisis preparedness. NES also develops measures to strengthen resilience in close cooperation with businesses and sector associations. During the prevention phase, NES also prepares appropriate action for the intervention phase. In doing so, it also coordinates with similar work being done by other authorities, such as those responsible for the protection of critical infrastructures. At the request of the sector, NES submits a request to the head of the Federal Department of Economic Affairs, Education and Research (EAER) for implementation of the appropriate measures. This means that every intervention is carefully considered. The Federal Council takes a contingency approach when deciding on market interventions.

The intervention phase is split into three different levels. Depending on the severity of the supply shortage, other measures are available. The more serious a shortage becomes, the more far-reaching the intervention in the economy and the instruments used.

Prevention phase

Intervention phase

At level A (see Figure 2: NES supply objectives), supplies are guaranteed by bridging gaps in the supply of certain goods and services. At level B, the objective is to guarantee supply through measures to manage supply and consumption. At level C, the aim is to supply the country with a reduced level of vital goods and services depending on the specific circumstances.

If the shortage has been overcome, the interventions are stopped in an orderly manner. Where necessary and appropriate, NES also has to get involved at this stage to restore normal operations. The focus is on communication and coordination with the sectors affected and the responsible specialist bodies.

Holistic approach

NES takes a cross-sectoral approach. In other words, it coordinates preventive measures between the various sectors of the economy. Its primary focus here is on the stability of the system as a whole. The necessary infrastructures and services must also be in place to ensure Switzerland's supplies in the event of a severe shortage. These include, for example, logistics systems for goods transport, information and communication infrastructures so that information can be exchanged between the economic actors concerned, and electricity transmission grids. In its work, NES focuses on the interfaces between the central supply processes and the resources that they require.

Public-private sector cooperation

The private and public sectors work together closely to implement the strategy. The private sector plays a key role, not only in ensuring supplies but also in managing severe shortages. National government action by NES only plays a subsidiary role. In the event of a contingency, NES cannot replace the private sector, and neither does it seek to. Rather, it merely supports the private sector until it is once

again able to independently fulfil its role as a supplier. Contingency planning is coordinated by the Delegate for National Economic Supply, who must by law come from the private sector. This person heads the entire NES organisation on a part-time basis. The various units of the NES framework integrate some 250 experts from all crucial sectors of the Swiss economy, as well as representatives from other federal offices and other organisations. These team members contribute their specialist knowledge and contact networks, discuss the current supply situation in Switzerland, and participate in the preparation and implementation of the measures that have been determined. They are supported and coordinated by the FONES, which represents the public-sector side of this cooperation model. Implementation of state measures may, under certain circumstances, be delegated to individual sectors or sector organisations.

In preparing crisis measures, the FONES works alongside experts from and representatives of the cantons and communes. It coordinates contingency planning between the various public bodies.

Collaboration with the cantons and communes

The focus of NES is on domestic supply. But the importance of international cooperation to security of supply in the import-dependent, globalised Swiss economy should not be overlooked. NES thus fosters the exchange of information and experience with other states and international organisations, such as the International Energy Agency and the civil NATO bodies within the framework of the Partnership for Peace.

International cooperation

3 The supply situation in Switzerland

The current supply situation in Switzerland is good, but it should be borne in mind that supply risks and supply-related incidents have increased in recent years. Switzerland is therefore heavily dependent on smooth logistics operations. This became evident in autumn 2018, when shipping on the Rhine almost ground to a halt due to low water levels, and the other modes of transport were unable to fully compensate for the shortfall. The federal government was therefore compelled to use compulsory stocks of mineral oil and fertiliser. The federal government also shored up domestic logistics during the COVID-19 pandemic in early 2020 with measures to increase capacity.

In terms of electricity, the increased use of renewables and the associated decentralised production is increasing complexity and thus making secure power supply more vulnerable. The definitive shutdown of the Mühleberg nuclear power plant in December 2019 has also made Switzerland even more

dependent on imported electricity. Particularly during the winter months, the peak load cannot adequately be covered by domestic production as power consumption is higher at this time of year, while production from hydroelectric plants is lower. In terms of therapeutic products, basic supply is becoming more vulnerable due to global company mergers, price pressure on off-patent products, market withdrawals of products, and the centralisation and relocation of production centres to Asia. The increased demand for certain drugs, medical devices and hygiene products during the COVID-19 pandemic illustrates this issue. ICT systems play an increasingly important role in logistics and a widespread outage threatens abrupt disruptions to supply. All supply processes are heavily dependent on the overarching functions of logistics and energy supply.

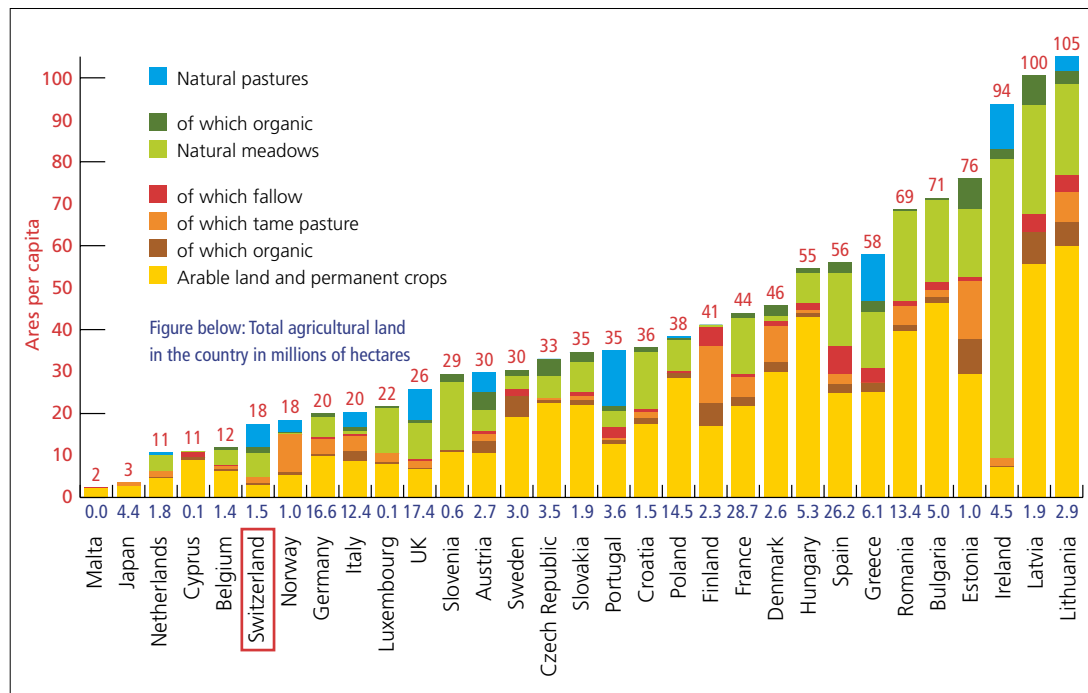
Food self-sufficiency rate of around 60 %

Foodstuffs

Since the beginning of the 20th century, Switzerland's resident population has increased by a factor of 2.7, to over 8.6 million. Meanwhile, food production has increased thanks to technological progress and advances in cultivation methods. However, production is taking place on an ever-smaller area. Between 1985 and 2009, 850 km² (-5.4 %) of agricultural and alpine farming land was lost (BFS, 2020). Switzerland is therefore one of the European countries with the least useful agricultural land per capita (see Figure 3). The average gross food self-sufficiency rate has therefore changed little in the last 20 years, and is around 60 %. The supply situation with regard to foodstuffs in Switzerland is very good.

Domestic production is supplemented by imports. Basic foodstuffs, such as durum wheat, rice and feedstuffs, are imported. In the event of poor domestic harvests, other imports make up the additional shortfall. Many inputs which are necessary for domestic production also have to be imported. The combination of domestic production and imports is therefore essential in ensuring Switzerland has a good supply of foodstuffs.

Figure 3: Agricultural land per capita



(FAO, 2020)

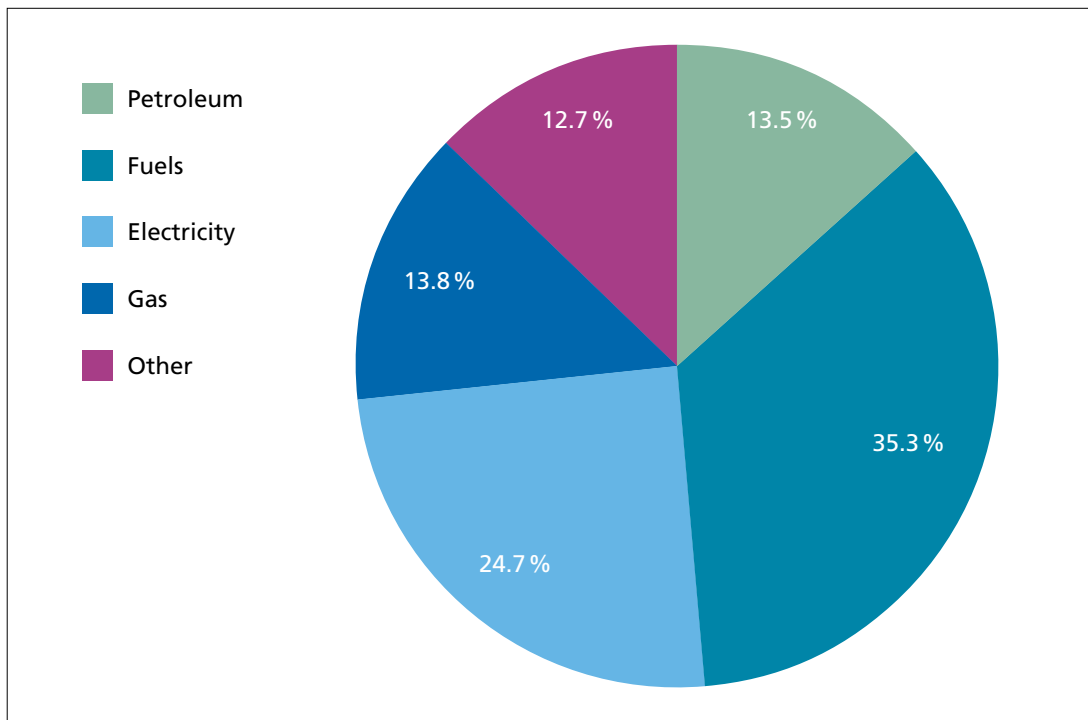
Crude oil:
diversified
imports

Energy

Switzerland's demand for oil was around 10 million tonnes in 2019, which is around 0.2% of global oil consumption. Contrary to global trends, oil consumption in Switzerland has declined slightly for a number of years, mainly due to the decrease in heating oil consumption. Sales of heating oil have approximately halved since the year 2000. This is due to the use of alternative heating systems, improved building insulation and a reduction in the number of heating degree days due to milder average temperatures.

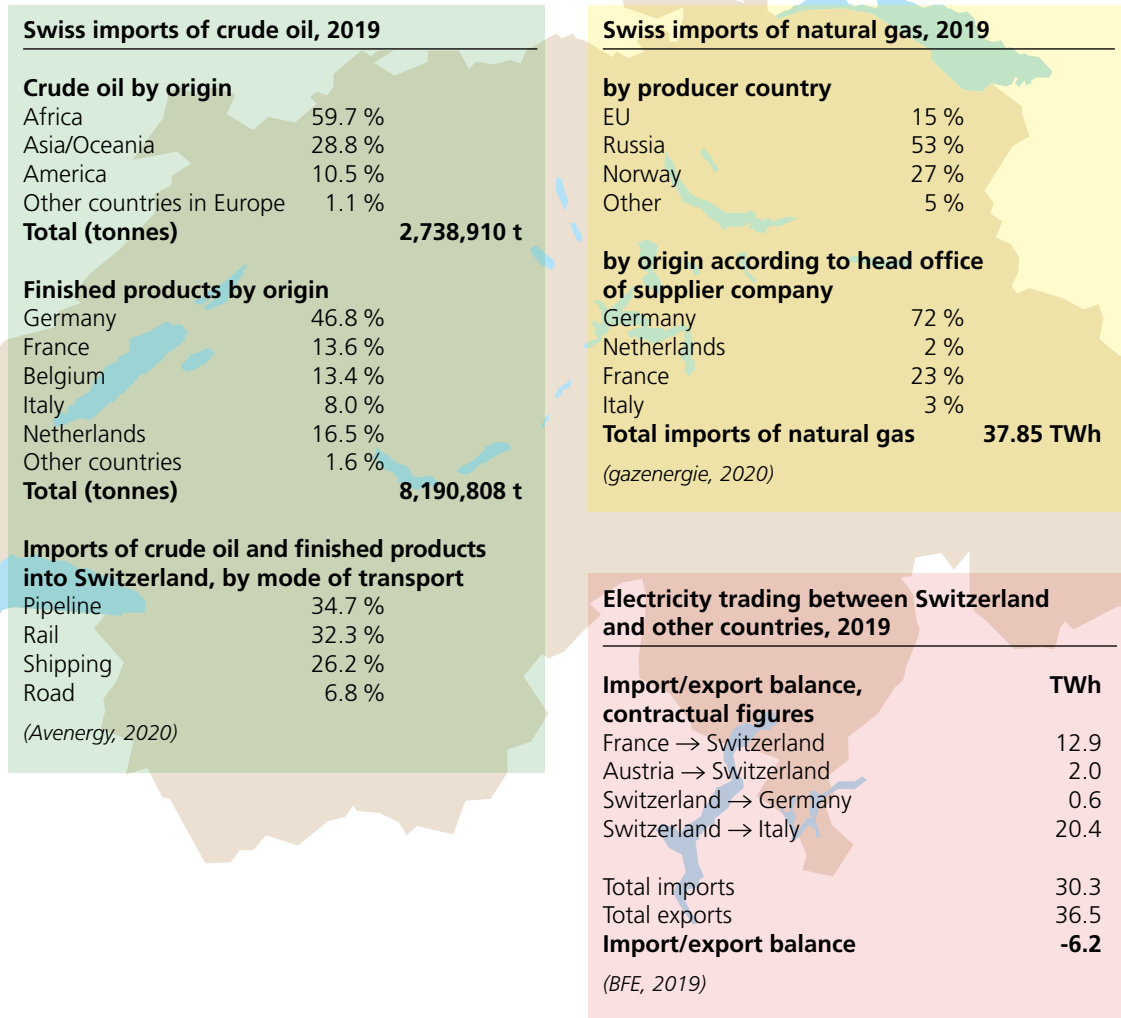
Accounting for just under 50% of final energy consumption, oil continues to be the most important energy source in Switzerland's energy supply (see Figure 4). In many areas, no other source of energy can be used as a substitute within a reasonable timeframe. This makes oil a critical good in supply policy terms. Switzerland does not have any oil reserves of its own and is 100% reliant on imports. A further factor is that many of the world's largest reserves are located in politically unstable regions.

Figure 4: Breakdown of energy consumption by energy source (2019)



(BFE, 2020)

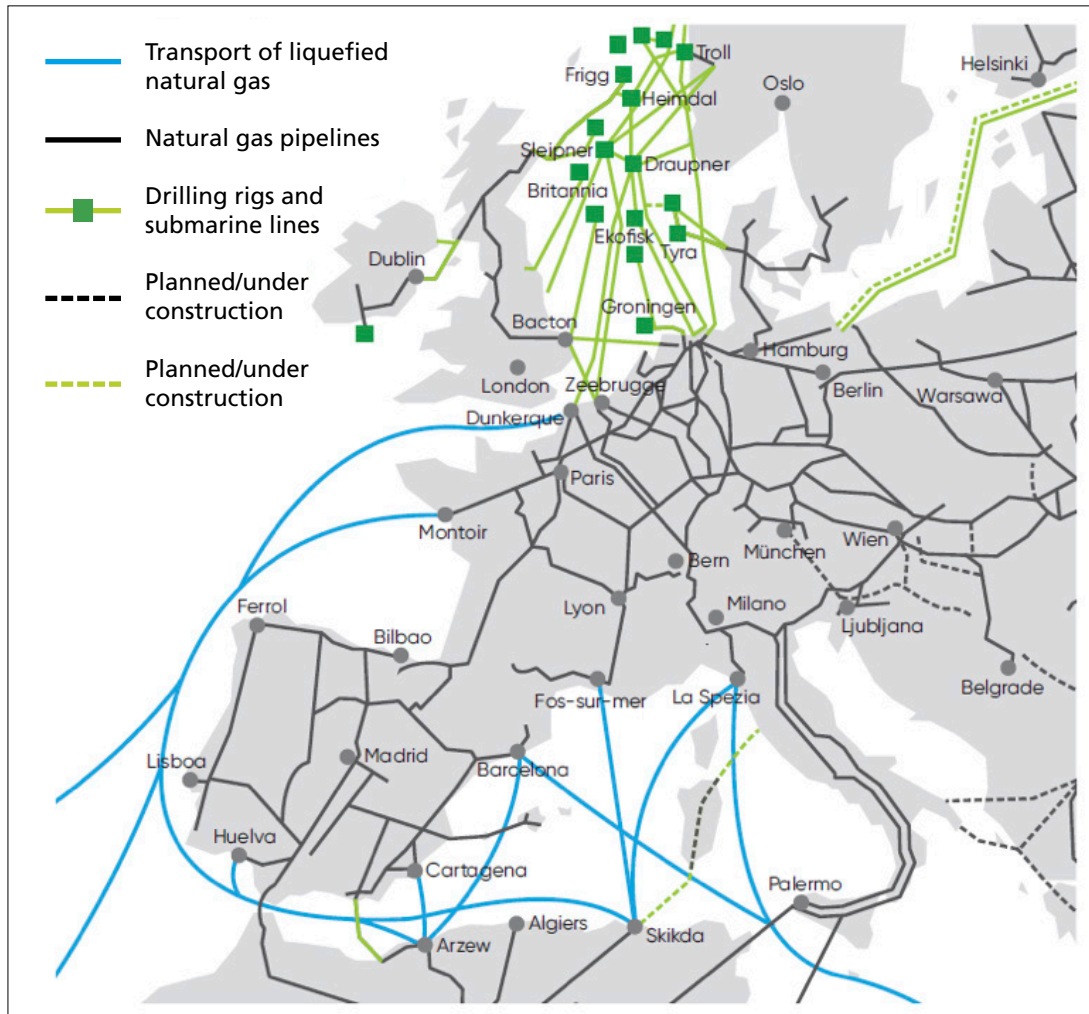
Figure 5: Swiss energy figures 2019



Switzerland is supplied with oil from a wide range of sources and in the form of ready-to-use mineral oil products and crude oil. Diversifying sources and delivery routes reduces the risk of a supply shortage. The crude oil is processed into finished products at Switzerland's only remaining refinery in Cressier (NE), which meet around 25–30 % of domestic demand. The origin of Switzerland's imported crude varies considerably from year to year. In recent years, it has come primarily from North and West Africa, North America and Central Asia, reaching Switzerland via a pipeline from the

Mediterranean port of Fos-sur-Mer near Marseille. The already processed mineral oil products that are imported into Switzerland mainly come from refineries in the European Union (see Figure 5). These refineries currently procure most of their crude oil from the Commonwealth of Independent States (CIS), the Middle East and North and West Africa.

Figure 6: The European natural gas transport network



(VSG, 2019)

Natural gas: integrated in the European transport network

In 2019, natural gas accounted for 13.8% of Switzerland's overall final energy consumption, all of which had to be imported. Previously, gas was imported mainly on the basis of long-term supply contracts with major suppliers from neighbouring countries that could offer a broad network of different producing countries, transport routes and storage facilities. In recent years, however, the Swiss gas sector has increasingly procured natural gas on the short-term spot markets in European trading hubs. The contract partners are European intermediaries in Germany, the Netherlands, France and Italy. The natural gas purchased via the NCG central trading hub in Germany mainly comes from

Russian production areas. Production in Western Europe is declining. Significant sums are currently being invested in the Nordstream II gas pipeline for the transport of natural gas from Siberia. The share of imported natural gas from Russia has therefore substantially increased, rising from a third in 2015 to 53% in 2019. In addition, natural gas was also imported from Norway and the EU, as well as smaller quantities from Algeria, Libya and Qatar in 2019. Thanks to the abundant supply of gas on the open market, security of supply is generally high. However, indirect reliance on natural gas from Russia has increased.

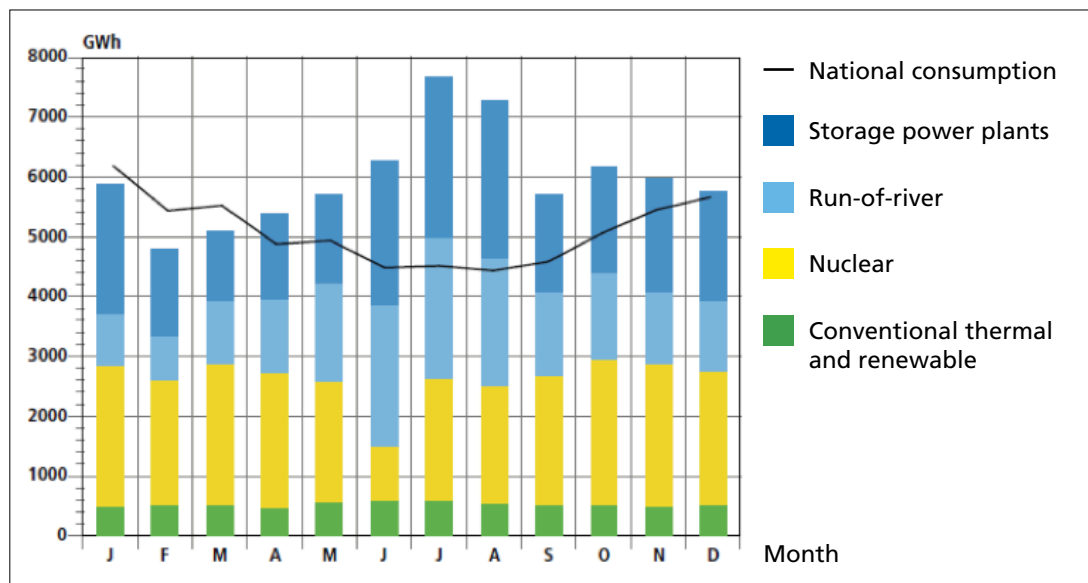
**Electricity:
seasonal fluctuations in supply and demand**

The transport of natural gas in liquid form (liquefied natural gas or LNG) is not reliant on pipelines and may be delivered from the Middle East or overseas to European ports, where it is often transformed back into gas and fed into pipelines. LNG expands the range of suppliers and logistics routes, and as a result makes supply overall more robust.

Electrical energy plays a crucial role for Switzerland. On account of its key role in many areas of application, such as communications and automation, it is practically impossible to find a substitute source of energy. Domestic power generation can cover consumption in an average summer. In the winter, however, Switzerland is heavily dependent on imports due to the higher energy demand and the lower production volumes from run-of-river hydro-power plants (see Figure 7). The shutdown of the Mühleberg nuclear power plant at the end of 2019 has further increased reliance on imports. In addition, the more frequent periods of drought reduce the output of run-of-river power stations, causing an increase in imports every so often.

Broken down according to type of power station, annual average domestic electricity generation figures for 2019 were as follows: 56.4% hydroelectric (31.8% storage power and 24.6% run-of-river), 35.2% nuclear and 4.2% conventional thermal. Renewable energy sources accounted for an additional 4.2% and this share is steadily rising. A large proportion of the electricity needed in the higher-demand winter months comes from nuclear power plants. Meanwhile, in the summer months, run-of-river facilities account for a larger share, when water volumes are greater and nuclear plant operators take their plants temporarily offline for maintenance work.

Figure 7: Monthly power generation shares and domestic consumption in 2019



(BFE, 2019)

Wood fuel: still untapped potential

Wood is an indigenous natural resource, which can be used as a substitute for other fuels that are not available during a severe energy crisis, particularly for heating. The existing stocks of wood fuel in commercial storage and forests could cover the normal demand of two winters if demand remained constant. The potential of wood fuel has not yet been fully exploited, but in many cases does not yet make economic sense because the sale price in Switzerland barely covers the high costs of timber harvesting. The annual increase in forest area is currently 5,000 m² a year.

In 2018, NES added wood pellets to the compulsory stocks system. However, given that wood pellets currently only make up 2 % of the heating market, import volumes are stable, domestic production capacity has been expanded, and wood pellets can sometimes be substituted by wood chips, this is not necessary.

Therapeutic products

The pharma industry is very important in Switzerland and is very successful, particularly in the areas of biotech, genetic engineering, personalised medicine and diagnostics. In 2018, Switzerland exported chemical and pharmaceutical substances worth over CHF 104 bn – more than any other sector. Owing to the small domestic market, these exports account for some 95 % of Switzerland's chemical and pharmaceutical production. Around 50 % went to Europe and some 24 % to the United States (Interpharma, 2019).¹

The picture is different in primary healthcare, however, where products that are off patent² and generics are used. These cover some 75 % of Switzerland's drug supply (PharmaSuisse, 2020).³ Like many other European countries, Switzerland is almost completely reliant on imports in this area. Just under 80 % of imported drugs come from the EU area; the second-biggest trading partner is the United States (Interpharma, 2019).⁴ Various products have to be imported, including vital insulin, various anti-infectives (antibiotics, antifungals), blood pressure drugs, established cancer medications, important painkillers and sedatives, and vaccines. The production of active agents in particular has been relocated to the Middle East and Far East in recent years, with four out of five currently manufactured in China or India (*Bundesrat, Sicherheit in der Medikamentenversorgung in Erfüllung des Postulats Heim [12.3426] vom 4. Juni 2012, S. 13, Bericht des Bundesrates der Schweizerischen Eidgenossenschaft, 2016*). The situation is similar for medical devices. Swiss manufacturers mainly focus on the production of speciality and niche products.

Single-use bulk products, such as face masks and protective gloves, are mainly imported from Asia. The stockpile of ethanol – the raw material needed to manufacture disinfectant and sanitiser – was diminished as a result of the ending of the Swiss Alcohol Board's import monopoly and the privatisation of Alcosuisse AG. In the longer term, there are plans to hold compulsory stocks of ethanol. To secure supplies until the definitive compulsory stockpile is put in place, the federal government procured a readily available ethanol reserve in the autumn of 2020.

Logistics

Raw materials, semi-finished and finished goods find their way to the right place at the right time only thanks to sophisticated logistics systems. Many critical goods reach consumers via specific logistics chains tailored to the type of good in question and involving a variety of modes of transport. It is thus crucial to have well-functioning trans-shipment platforms between these different modes of transport. In Switzerland, smooth goods flows would be impossible without the ports on the Rhine, marshalling yards on the railways, and the country's numerous combined transportation terminals (CT terminals).

The roads bear the largest share of the tonnage carried by both cross-border and domestic Swiss freight transport. The railways and shipping along the Rhine are also important elements of the national supply network, however. They ensure that Switzerland has good links to the ports in Amsterdam, Rotterdam and Antwerp, those in northern Germany and Italy, and various economic centres throughout Europe. In the transport of strategic goods, the railways and the Rhine are generally used to cover longer distances, while the roads take over the finalstage distribution.

4 Risks

Contingencies such as natural disasters, conflicts in regions of the world with rich natural resource deposits, and widespread outages in key communications, logistics and power networks, can have a significant and direct impact on a country's economic supply. The failure of a dominant supplier of important basic goods or commodities can quickly lead to supply shortages around the world. Or a regional natural disaster can have national or even global consequences. A stable electricity supply and functioning logistics and communication systems are therefore essential to businesses, but also private households. A longer power, logistics or ICT failure would severely impact all areas of supply. It is therefore vitally important to NES to have sound knowledge of the risks to security of supply in Switzerland, so that the country can prepare for contingencies which begin far beyond its sphere of influence.

4.1 Foodstuffs

In a referendum held in 2017, almost 80% of voters accepted Article 104a of the Federal Constitution on food security. To ensure that the population is supplied with foodstuffs, the federal government has put in place structural conditions to safeguard the basis for agricultural production. This includes agricultural land in particular; food production that is adapted to local conditions and which uses natural resources efficiently; an agriculture and food sector that responds to market requirements; cross-border trade relations that contribute to the sustainable development of the agriculture and food sector; and using food in a way that conserves natural resources. The ultimate goal is to secure long-term food supplies.

Agricultural land is paramount to domestic production. It is also important to maintain domestic production capacities so that production can be adapted to meet demand in crisis situations. At the same time, Switzerland is reliant on international

trade, both for domestic production and for food supply. The sudden loss of imports due to a crisis related to the introduction of export restrictions by Switzerland's main supplier countries can only be offset with stocks for a short time and for vital goods. However, this risk is mitigated by the fact that foodstuffs are often substitutable and can be purchased from different regions of the world. Climate-related or extreme weather events present an additional risk. The resulting loss of harvests or protracted disruption to logistics can result in NES having to shore up supply through import promotion programmes, switching domestic production or reducing consumption.

Various contingencies occurring simultaneously may cause a severe shortage lasting from several weeks to several years in the worst case. It can be assumed that risks to food supply are set to further increase due to rising demand internationally and extreme climatic conditions.

4.2 Oil

Attacks or war, as well as extreme weather events and unplanned business closures, can jeopardise the availability of mineral oil products in Europe and Switzerland. Stoppages to refinery output, for example as the result of accidents or strikes, hit supplies particularly hard if they coincide with logistical problems. Logistics, meanwhile, can be disrupted by damage to important pipelines or to restrictions to shipping on the Rhine owing to excessively high or low water levels or problems with rail or road traffic. All in all, a shortage of imported finished products is more likely than a global crude oil shortage. The supply risks are therefore primarily extraordinary events in Switzerland or neighbouring countries, or a combination of damaging events in the supply chain.

Dependence on imports and transport disruption

**Transitgas pipeline:
a cluster risk**

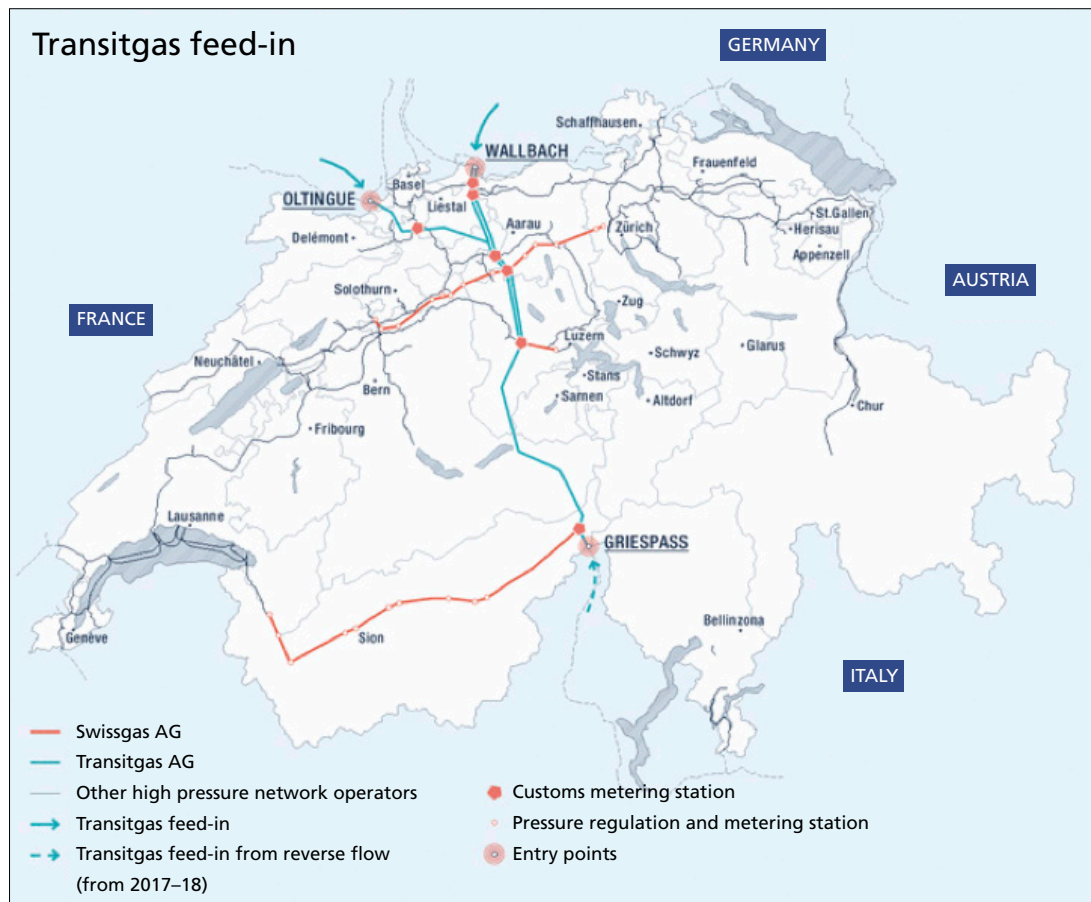
4.3 Natural gas

Switzerland does not produce any natural gas itself and is fully reliant on imports. The Transitgas pipeline presents a certain cluster risk, as three quarters of Switzerland’s gas consumption is imported via this pipeline. However, in view of its key importance to gas supplies for neighbouring countries, foreign gas suppliers also have a guaranteed interest in feeding the pipeline, even in times of crisis.

Because one of the two Trans Europa Naturgas Pipelines (TENP) – one of the most important trans-European transit lines for natural gas – broke down in the winter of 2017/2018, additional capacity was created at the northern entry point of the Swiss

transitgas pipeline in Wallbach (AG). The capacity of one TENP line alone is powerful enough to meet Switzerland’s demand. Thanks to installation of the reverse flow, it has also been possible to import gas in the opposite direction, from Italy to Switzerland, since autumn 2018. On the whole, this has increased security of supply. The logistics of gas supply are complex, and conflicts or environmental influences in producing countries can rapidly affect the international supply chain. However, interruptions to imports from individual producer countries, or infrastructure failures, have to date not had any significant effect on gas supplies in Europe or Switzerland.

Figure 8: Feeding the transit gas pipeline



(Swissgas, 2020)

Limited import options and high utilisation

4.4 Electricity

The processes in the economy and society are highly dependent on a smooth electricity supply. The current supply situation depends on domestic output, the transmission infrastructure, the distribution grid and imports. All four of these elements are vulnerable to environmental factors such as extreme weather or natural disasters, as well as to disruption caused by humans, such as accidents or sabotage. In the event of disruption, the limited capacity of the transmission grid means that Switzerland cannot simply import as much electricity as it needs. The growing use of decentralised and stochastic renewable energies – such as wind and solar energy – further exacerbates this problem. It cannot be predicted when this sort of energy will be produced and fed into the grid. To cover regional consumption peaks, this type of power generation therefore requires additional storage capacities, as well as a smoothly functioning international electricity market, including reserve generation capacity. It creates additional redundancies in the event of disruption, but also makes the system more complex and increases the overall load on the grid. The safety margins in the Swiss power grid are designed for normal operation and not for crisis situations. The expansion of renewables also offers potential to boost domestic production and thus reduce reliance on imports in the medium- to long-term.

The initial step towards opening up the electricity market has now divided responsibility for the security of Switzerland's electricity supplies between a large number of different suppliers. It is therefore essential that the parties concerned agree on a clear division of roles, and that they coordinate their activities closely. Cyber attacks on the SCADA systems pose an additional risk.⁵ These systems allow users to monitor and control power generation, transmission and distribution centrally.

4.5 Drinking water

A secure supply of drinking water requires well-built and well-operated infrastructure to extract and distribute the water. Even in Switzerland – the reservoir of Europe – disruptions to water supply can occur, for example during the periods of drought in 2003, 2015 and 2018.

Water supply is currently stuck between the conflicting priorities of agriculture, the expansion of built-up areas, water conservation and water suppliers. Water conservation areas are not always delineated in conformity with the law, leading to water catchment areas having to be abandoned due to contamination. This in turn reduces the number of hydrologically independent sources of supply and undermines water supplies. A number of water catchment areas on the Swiss plateau had to be closed in 2019 due to contamination.

4.6 Therapeutic products

Switzerland's production of therapeutic products is efficient, and the country has an effective distribution system. Despite this, recent years have seen an increase in supply bottlenecks affecting many drugs. These bottlenecks do not primarily affect innovative and expensive products, but rather active substances and finished medicinal products that have been on the market for some time and that are essential to primary healthcare. The causes of this supply disruption are the relocation of production facilities to Asia and the heavily segmented and therefore vulnerable logistics chains. In addition, there is barely any scope for balancing or compensation in the market to counter shortages. Market withdrawals of older primary care drugs and the relatively small number of domestic authorisations further restricts the product range. Finally, in recent years, domestic industrial companies and hospitals have scaled down many infrastructures for the processing of raw materials into marketable therapeutic products. The use of compulsory stocks – in some cases in conjunction with sale restrictions – is therefore increasing. A particular challenge is

The challenge of conflicts of use

also emerging with regard to non-specific immunoglobulins.⁶ Availability of these costly therapeutic products is already critical and demand is set to rise further in the next few years owing to demographic and medical developments. Compulsory stocks have therefore been built up since 2020.

As part of the implementation of medical device regulation (MDR, 2017) in the EU, many medical devices have to be recertified so they can continue to be used legally. Many firms are therefore likely to reduce their product ranges on account of the increasing costs and administrative effort involved in certification. Furthermore, if the Mutual Recognition Agreements belonging to the first series of bilateral agreements (*Schweizerische Eidgenossenschaft, 1999*) between Switzerland and the EU are not updated, the trade of medical devices will in future no longer be possible without technical barriers. This is likely to weaken the supply situation and the competitiveness of Swiss SMEs operating in this area.

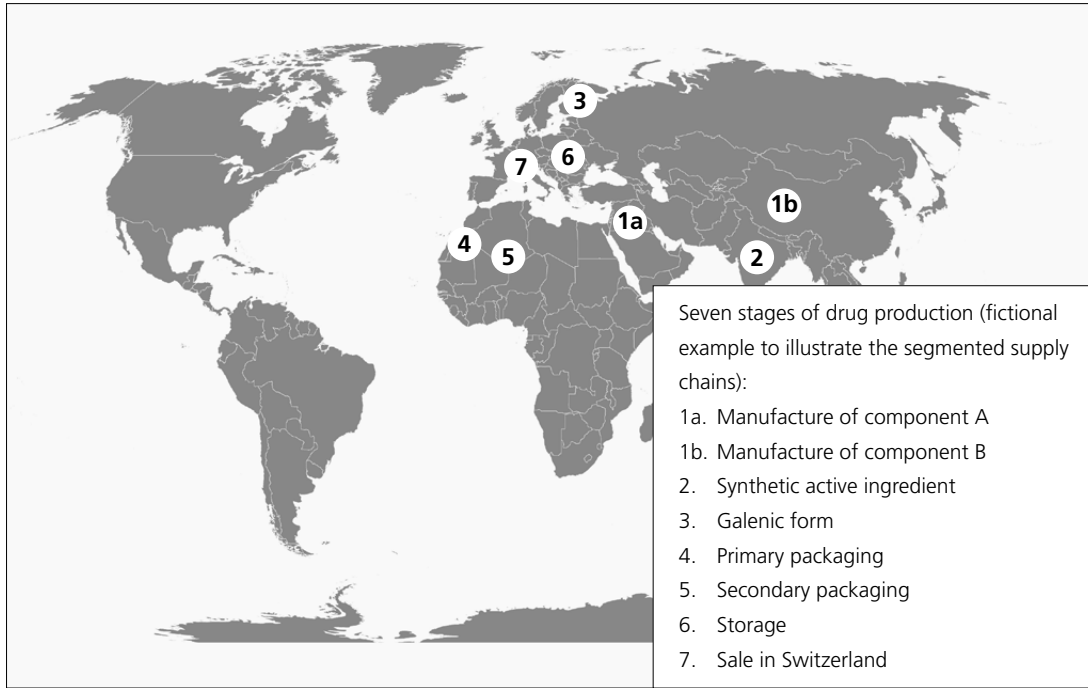
The supply of therapeutic products faces particular challenges in the event of a pandemic. In such cases, there is a sharp rise in demand for antiviral drugs, PPE (face masks and surgical gloves), disinfectants and sanitisers, and antibiotics to treat secondary infections. As with the production of active substances for pharmaceutical products, many countries are heavily reliant on suppliers in Asia when it comes to single-use PPE. During the coronavirus crisis, this led to Switzerland having to urgently procure the necessary equipment on an already fraught global market.

The pandemic also led to efforts to set up mask production capacity in Switzerland, but this is still unable to cover demand. At the beginning of 2021, monthly domestic production capacity was 25 million surgical face masks (type II R) and 2 million respirators (FFP2). The question of whether it will be possible to maintain domestic production in the longer term will depend, among other things,

on the extent to which customers are prepared to accept a certain additional cost for products manufactured in Switzerland on a permanent basis. In terms of the raw materials needed to manufacture masks, production capacity has been expanded in Germany and other European countries, but this means that here, too, Switzerland is still reliant on imports from abroad. Stockpiling of PPE in Switzerland will thus be inevitable in future. It is therefore worth exploring whether the recommendations to healthcare facilities set out in the FOPH Influenza Pandemic Plan (BAG, 2018) with regard to pandemic stockpiling should in fact be replaced by more binding regulations issued by the federal government and cantons. On the basis of the recommendations, stockpiles may need to be supplemented with additional stocks, although the possibilities of national economic supply will only be able to play a subsidiary role.

In Switzerland, some 80% of deliveries of therapeutic products to healthcare institutions are carried out by five large logistics providers. If one of the suppliers fails to deliver, the other companies have committed to step in and close the gap in an industry agreement. As it is not always possible to do so, vital pharmaceutical products can be prioritised.

Figure 9: Segmented supply chains (fictional example)



4.7 Logistics

Logistics processes depend to a considerable degree on the availability of the various sources of energy. Fuels, in particular, are essential to transportation by road and air. If electricity supplies were to be disrupted, transport by rail would be impossible and road transport would be hampered due to the failure of signals and tunnel closures. In addition, warehousing and transshipment logistics, but also petrol stations in particular, rely on electricity. Bulk goods, such as mineral oil products, feedstuffs and fertiliser, are mainly imported via the Rhine. Excessively high – and to an even greater extent low – water levels can massively affect the required capacity.

The just-in-time principle requires efficient logistics and transport processes, which in turn demand that each link in the supply chain functions smoothly. Logistics processes are thus heavily dependent on sub-processes such as production, purchasing, warehousing, order-picking, handling, distribution

and customs clearance. Disruption to one of these sub-processes, such as the failure of a particular resource, can interrupt the logistics process as a whole. Logistics processes also usually depend on the availability of skilled workers, such as train drivers. Short-term staff shortages owing to a pandemic, for example, can cause the whole process to falter.

The volume of goods being transported will increase over the long term. Passenger and freight traffic often share the same infrastructures, placing them under ever-greater strain. This trend can increase the risk of severe disruption in these means of transport.

Complex logistics processes involve different means of transport crossing international borders, not to mention a number of different companies. Today it is possible to plan and execute these processes only thanks to the information and communications

infrastructures that support them. Efficiency gains, traceability requirements and the need for goods to be available at all times place great demands on ICT systems. Alongside shortages in energy supplies, the failure of ICT services poses the greatest risk to logistics processes.

4.8 ICT

Information and telecommunications systems are themselves a critical infrastructure that have become essential to public safety and security – for example for emergency calls or crisis communication – and to the functioning of the economy and government. At the same time, the availability of ICT services is also a critical resource for the other processes of national economic supply, such as power supply, logistics processes and payment transactions.

The availability of critical ICT services currently faces diverse risks:

Physical vulnerabilities:

ICT services are built on physical infrastructure. This includes data centres, data lines and mobile base stations. These infrastructural elements can be damaged by weather events or natural disasters, such as storms, flooding, thunderstorms or landslides. Unintentional physical damage, such as data transmission lines being severed during construction work, also occur regularly. In terms of the IT systems that monitor or control industrial processes, sensors are also critical elements of ICT that have physical vulnerabilities.

Power outages:

The availability of ICT services is highly interdependent on power supply. Power outages pose a major risk to the ICT supply process. But the opposite is also true: without ICT services, controlling the distribution of electricity is impossible.

Human error:

Various forms of human error pose a risk to ICT services. For example, a system can fail due to a faulty update, or accidental deletion of files or software components. Human error may only emerge at a later date, if for example errors in software source code remain undetected.

Cyber attacks:

The risk posed by cyber attacks has risen sharply. Cyber attacks may be motivated by political or ideological views, financial gain, terrorism, power politics, or they may be intelligence-led or militarily-motivated. They can potentially compromise the confidentiality of data and the integrity and availability of data and systems. If, for example, a critical system is corrupted by malware that encrypts data and then demands payment of a ransom to restore access (ransomware attacks), the availability of data is no longer guaranteed.

Systemic and political risks:

In terms of IT systems, there is a great reliance on a relatively small number of manufacturers both for hardware and for software. Microsoft Windows systems in particular are used by almost all businesses. There is therefore a risk that e.g. software errors become an issue for a large number of businesses simultaneously. ICT hardware is mainly produced in Asia, especially in China. The majority of the leading software providers are from the United States (e.g. Microsoft, Apple, Google, Oracle), with the exception of the German firm SAP. The leading providers of cloud solutions – Amazon, Microsoft and Google – are also from the United States.

4.9 NES interventions 2017–20

Year	Contingency	NES action
2017	Disruption to the supply of therapeutic products	Use of compulsory stocks in 22 cases (antibiotics)
2018	Rhine shipping only possible to a limited extent due to low water levels	Use of compulsory stocks of petrol, diesel, heating oil, kerosene and nitrogen fertilisers Release of compulsory stocks of cooking oil and protein-rich feedstuffs (stocks were not needed in the end as the water levels in the Rhine rose again)
	Disruption to the supply of therapeutic products	Use of compulsory stocks in 21 cases (antibiotics)
2019	Disruption to freight train logistics	Release of compulsory stocks of kerosene
	Disruption to the supply of therapeutic products	Use of compulsory stocks in 63 cases (antibiotics)
2020	Disruption to the supply of therapeutic products	Use of compulsory stocks in 92 cases (antibiotics, respirator masks)
	Coronavirus pandemic	Temporary suspension of ban on Sunday and night-time journeys Temporary use of the original total permitted tonnage for trucks Temporary introduction of more flexibility in terms of driver deployment Confirmation letters for businesses that are relevant to national supply, primarily to make it easier for employees of the relevant companies to cross the border into Switzerland.

5 Instruments and measures

5.1 Instruments for the systematic monitoring of the supply situation

Background

The dynamic nature of modern supply processes requires swift responses in the event of disruption. It is crucial that NES recognises looming shortages in vital goods and services as early as possible, so that it can rapidly initiate measures where needed and be able to minimise the adverse effects for the population. Many part-time members of the NES organisation are active in the crucial sectors of the economy and therefore have their fingers on the pulse when it comes to the current supply situation. NES also bases its assessment of the situation on other information sources.

Degree of preparedness

The national grid company Swissgrid provides information, for example on national consumption, available energy reserves and available transport capacity. This information forms the basis of NES's assessment of the supply situation.

Monitoring of power supply by Swissgrid

On account of increasing supply disruption in human medicines, in June 2014 the Federal Council commissioned the EAER to develop an information and coordination platform for essential human medicines. The online platform in question, which was developed by the FONES Therapeutic Products Division in collaboration with the federal offices concerned⁷ and other stakeholders⁸ has been in operation since June 2016. Pharma companies have since been required to report any bottlenecks in the supply of essential medicines (Federal Council, Ordinance of 12 August 2015 on Essential Human Medicines Reporting Office, SR 531.215.32, 2015). The platform allows shortfalls of essential human medicines to be anticipated so that NES can clarify at an early stage how to respond to shortages. It can then use compulsory stocks or put in place quotas for vital therapeutic products. Pharmaceutical companies report shortages by means of an electronic form. They can also apply for the release of compulsory stocks at the same time. Hospitals and wholesalers can also report supply bottlenecks on a voluntary basis. These voluntary reports allow NES to also register disruptions that are not reported by the reporting companies. It also provides NES with an overview of the supply situations for non-vital drugs. In critical supply situations, data on existing

Reporting office for essential human medicines

Figure 10: Evolution of reported supply disruption

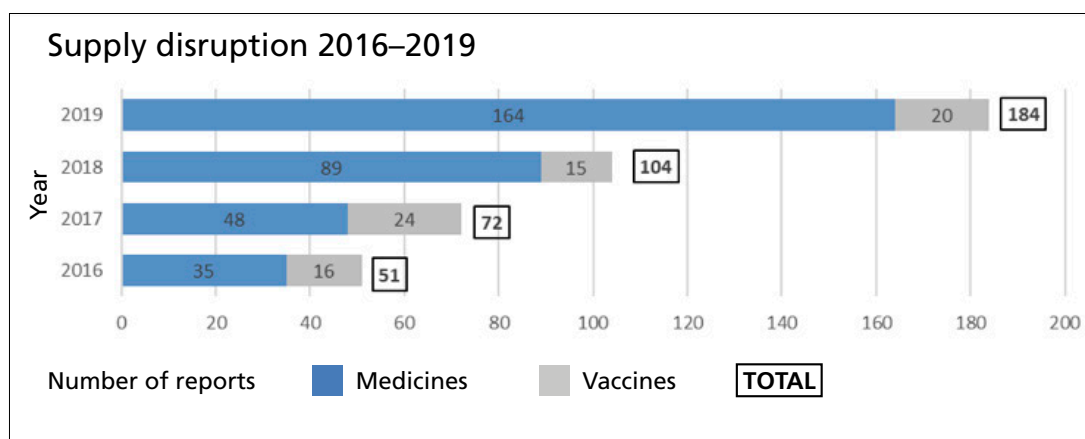
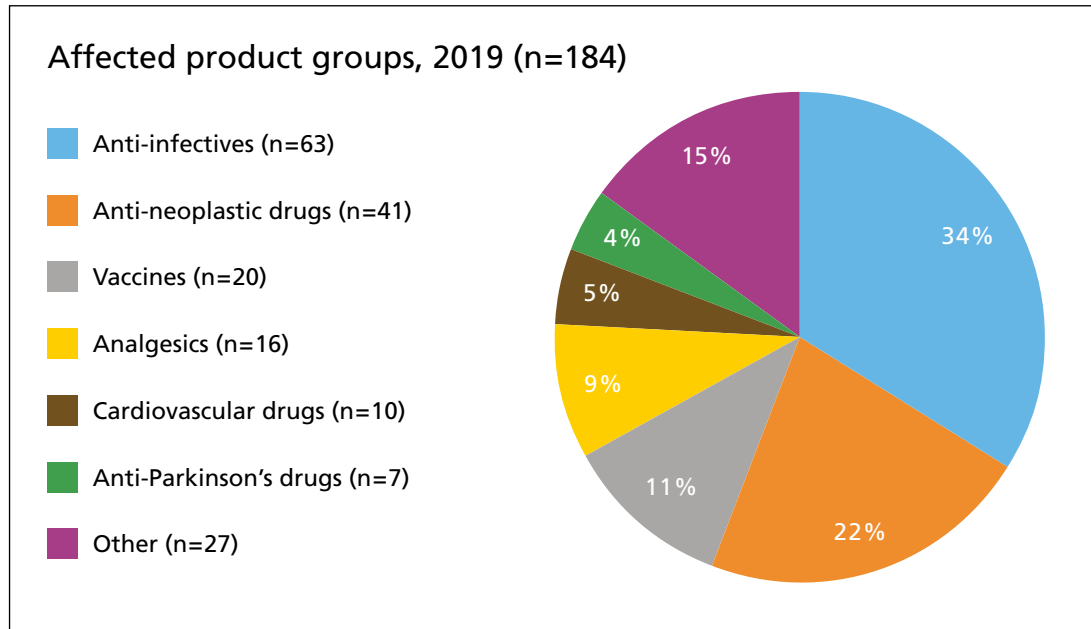


Figure 11: Product groups affected by supply disruption



stocks held by companies can be retrieved via the online platform, which allows timely and precise monitoring of the market situation and current sales figures. On this basis, NES can initiate measures and issue recommendations.

The Annex to the Ordinance on the Essential Human Medicines Reporting Office lists the crucial active substances for which the NES Therapeutic Products Division stipulates a reporting requirement. The division regularly analyses supply chains and the medical necessity of active substances, and arranges for the ordinance to be updated if necessary. In 2015, the federal government introduced a reporting requirement for all active substances that are held in compulsory stocks. When the ordinance was last updated in 2020, the reporting requirement was extended to include insulin, certain immunoglobulins and contrast agents.

Since the platform went into operation, the number of interruptions to supply has been steadily increasing (see Figure 10). A total of 51 reports were registered in 2016. In 2019 that figure had increased to 184. The number of voluntary reports made by hospitals or wholesalers – 38 in 2019 – increased more than six-fold compared with the previous year (BWL, 29.05.2019).

In recent years, anti-infectives (e.g. antibiotics) and drugs to treat cancer have been particularly affected by supply disruption (see Figure 11).

Increase in disruption to the supply of therapeutic products

Monitoring the availability of ICT services

ICT is repeatedly affected by disruption, both minor and major. Providers of telecommunications services must report these incidents promptly to the Federal Office of Communications OFCOM in accordance with certain technical and administrative regulations. The ICT Division relies on such reports for its contingency planning, and to be able to act in good time. Under a May 2014 agreement with OFCOM, information on all disruptions to ICT services that are subject to the reporting requirement is immediately made available to the FONES.

MELANI – the Reporting and Analysis Centre for Information Assurance

Another body within the Federal Administration that is involved in the monitoring of ICT services is MELANI, the Reporting and Analysis Centre for Information Assurance, which is part of the National Cyber Security Centre NCSC. MELANI records and analyses both reports on disruption to ICT systems from businesses and individuals, and information from intelligence services. It informs NES about incidents that are relevant to supply. The ICT Division at the FONES liaises regularly with MELANI and the NCSC via the National strategy for the protection of Switzerland against cyber risks NCS.

5.2 Securing power supply

Background

The power industry usually resolves short-term power outages itself. By contrast, NES intervenes to manage power shortages. These occur where a lack of generation, transmission and/or import capacity means that the supply of electricity is unable to satisfy demand for several weeks or months at a time. In the event of a power shortage, NES puts in place crisis management measures to balance production and consumption at a reduced level. It always acts in accordance with the principle of subsidiarity, only intervening in the structures of the economy where this is absolutely necessary to manage the crisis.

Degree of preparedness

To secure power supply when there is a shortage, supply and consumption can be managed. Electricity cannot be stored directly, so power generation must constantly cover current consumption.

Since full supply is no longer guaranteed as soon as there is an electricity shortage, demand side measures are introduced straight away. As a first step, NES calls on the public to use less electricity. It then puts in place various management measures where necessary to control consumption and demand. These can be roughly divided into two groups.

Demand side measures:

The demand side measures include appeals to reduce consumption, restrictions on consumption. Bans on certain uses and appliances, quotas for major consumers and – as a last resort – shutting down the grid for certain periods.

Supply side measures:

NES has two instruments to manage electricity supply. First, it can order a central operational unit to manage the available electrical energy reserves in Switzerland. This kind of central management overrides the principles of the market economy as the central unit holds all authority for electricity procurement and delivery. Second, in exceptional circumstances, NES can temporarily restrict the export of electrical energy to ensure that its reserves are only available to Swiss consumers.

The measures are deployable, although some have limited potential. In the event of a crisis, NES delegates implementation of the measures to the electricity sector (OSTRAL).

Organisation of electricity supplies in extraordinary situations (OSTRAL)

NES requires expertise from the private sector to prepare and implement electricity management. The federal government entrusted the execution of these measures to the Swiss Association of Electric Power Producers and Distributors, which founded OSTRAL for this purpose. As an organisa-

tion set up by the private sector, OSTRAL operates on the basis of public law and is supervised by the FONES Energy Division. More information on OSTRAL can be found at: www.ostral.ch

Action areas and outlook

In order to deploy the measures smoothly, all stakeholders need to be kept fully informed. Over the next few years, NES will work with OSTRAL to improve communication and the training of all stakeholders involved in an electricity shortage. It also regularly reviews the crisis management measures and gears them towards new political, social and technical realities where necessary. The transfer of ordinary responsibilities under the Electricity Supply Act to the NES in the event of a severe shortage also needs to be clarified.

5.3 Securing information and communication technologies

Degree of preparedness

Disruptions to the supply of ICT services typically occur with no or very little prior notice. But a failure of ICT services has a direct impact on the functioning of other supply processes, and on the economy and government in general. Unlike other sectors of the economy, strategic stockpiling is not possible.

Under the National Economic Supply Act, the following ICT services are deemed strategic in supply terms: access to emergency call services, the public telephone service, data transmission via public networks (internet) and access to the corresponding services, and the transmission of radio and television services. Technically speaking, there are now barely any differences between these services.

The NES ICT Division distinguishes between preventive measures, which reduce the likelihood of a contingency occurring, precautionary measures which limit the extent of the damage after an incident, and reactive measures which seek to restore normality as efficiently as possible.

Because interruptions to the supply of ICT services occur without warning and have an immediate impact, preventive measures are particularly important. In the previous reporting period, the ICT Division concentrated on identifying risks and carried out detailed ICT vulnerability analyses for critical supply processes. This work was done as part of the National strategy for the protection of Switzerland against cyber risks (NCS). Building on the vulnerabilities identified, the ICT Division worked with various trade association to develop ICT minimum standards for various sectors as a preventive measure. These minimum standards, which are tailored to the needs of the sectors in question, currently exist for electricity, foodstuffs, water, public transport, natural gas and wastewater. The ICT minimum standards offer businesses and organisations a universally applicable resource which they can use to evaluate, assess and improve their ICT resilience.

ICT minimum standards for various sectors

For the supply of relevant ICT services

The ICT Division is also working with OFCOM, the FOCP and telecoms companies that are relevant to supply to develop preventive action to improve the resilience of mobile infrastructure. The aim is to maintain critical ICT services at a reduced level in the event of a failure of a larger number of transmission facilities. To be able to respond efficiently and effectively in a crisis situation, the ICT Division carries out regular drills with the companies relevant to supply and with representatives of various authorities.

Action areas and outlook

The work on development and implementation of ICT minimum standards in the various sectors relevant to national supply is not yet complete. Following the ongoing work on gas supply and public transport, work is being done on ICT minimum standards for hospitals. To allow users of the ICT minimum standards to make comparisons within a given sector, an online benchmarking database is planned.

5.4 Securing logistics

Background

It is extremely important to the Swiss economy that goods flow smoothly through the system. National logistics services can be influenced directly by national government action. As Switzerland also depends on properly functioning cross-border freight traffic, international logistics are also factored into NES deliberations. If vital logistics services are not sufficiently available in a crisis, it is the job of the Logistics Division to support the transport sector so that it is once again able to ensure transport for the volumes of goods that are required.

To this end, the Logistics Division promotes the coordination of logistics services along the supply chains for vital goods. It also develops action programmes, especially for specific means of transport, and creates the legal foundations which facilitate the transport of vital goods along the main logistical routes via key transport nodes and, where necessary, enable the appropriate priorities to be set.

Degree of preparedness

Under the principle of subsidiarity, the federal government should not act until companies in the logistics sector have exhausted their potential to cooperate with each other. This is why the Transport Division supported the establishment of OTRAL ('organisation of transport logistics in extraordinary situations') with the aim of coordinating processes to optimise goods carriage and thereby increase transport capacity. This nonetheless requires companies to be prepared to cooperate closely in the event of a crisis. The form that this cooperation should take is laid down in industry agreements.

- OTRAL Mineral Oil Products is responsible for coordinating logistics in the event of supply bottlenecks affecting mineral oil products that are the result of problems with the related logistics services. The OTRAL Mineral Oil Products group encompasses rail transport companies, rail infrastructure operators, and the operators of tank facilities at the Swiss Rhine ports, which work together on the basis of an industry agreement concluded in 2015.
- OTRAL Terminal coordinates the trans-shipment of goods and containers at Switzerland's primary logistical nodes in the event of supply bottlenecks.
- OTRAL Mobile crane coordinates the deployment of mobile cranes in a crisis situation (e.g. earthquake, power outage) that could lead to a shortage of mobile cranes. A corresponding industry agreement was signed in 2016.

Coordination
and prioritisation
of goods

Industry
agreements

Cooperation with the FOT and FEDRO

The Logistics Division takes on a subsidiary role in dealings not only with the private sector, but also with other federal agencies. Certain process flows have been agreed between NES and the Federal Office of Transport FOT, and the Federal Roads Office FEDRO. Based on the legal foundations which apply to these offices, such agreements provide for measures such as deviations from the ban on driving trucks at night and on Sundays, an increase in the total tonnage that trucks can carry and the temporary extension of working hours for train and truck drivers. Furthermore, it has been agreed with the Directorate General of Customs that customs opening hours will be extended in the event of supply shortages.

Based on the NESA, the Logistics Division has developed the following measures:

- In a crisis, prioritising rail transport enables track capacity to be provided quickly and as needed to transport strategic goods.
- From the logistical perspective, prioritising goods trans-shipment at terminal facilities ensures that optimum use is made of the trans-shipment capacity remaining (in a crisis) at the Swiss Rhine ports, marshalling yards and combined transportation terminals.

Action areas and outlook

The NES system and – where they are involved directly – the other federal agencies are familiar with the measures that have been described here, and are able to implement them promptly in the event of a contingency. However, the companies that are affected by these measures are not adequately involved in the preparation of measures. Prioritising trans-shipment at goods terminals affects not only their operators, but also countless other users of terminal services, such as forwarding and transport companies. In the event of a contingency, the latter should be informed quickly of these measures, so that they can take action abroad to ensure that non-priority goods are not shipped to the terminals in the first place.

The financing facility used to guarantee loans for ocean-going vessels expired in 2017 and the federal government has not renewed it. The last loan guarantees for the financing of ocean-going vessels under the Swiss flag will expire at the latest in early 2032. The report on the supply policy significance of deep-sea shipping, which was presented to the Federal Council by the EAER in 2016, was updated in early 2020. It confirmed that transport with deep-sea vessels is the least vulnerable link in the logistics chain and that having its own deep-sea vessels at the described bottlenecks in the logistics chain makes no difference. These findings are still valid.

Information for companies

Loan guarantees for ocean-going ships

5.5 Stockpiling

Background

Switzerland is heavily dependent upon imports, so maintaining reserves of certain goods is a very important preventive measure in ensuring security of supply. If an unforeseen crisis means that the market is no longer able to satisfy demand for vital basic goods, reserves which may be released as needed are a valuable instrument for NES. The federal government does not hold such reserves itself. Instead, it delegates this function to companies which not only manage the inventories, but also manufacture or trade in the goods which are subject to strategic stockpiling. This means that the reserves are embedded in the distribution network and can be dispatched quickly if needed. Various instruments are used to maintain reserves, the most important and best-known of which is the system of compulsory stocks.

Compared with other means of holding reserves, the compulsory stocks system is the one which is of the greatest importance to NES in terms of inventory volume. Under this system, the federal government defines the goods that are subject to compulsory stockpiling. It also defines the level of such stocks, by setting the period for which inventories should satisfy average domestic consumption (demand coverage). Goods which are stockpiled include certain basic foodstuffs, fertilisers, fuel and therapeutic products. All companies which import a set minimum quantity of such goods, or which are their initial distributors on the Swiss market, are obliged to conclude a compulsory stock agreement with the FONES. These agreements set out the good in question, the quantity, the quality, and the location at which the stocks are to be held. At the beginning of 2020, some 300 companies held compulsory stocks for NES purposes, with a market value of some 3 billion Swiss francs.

Under the compulsory stocks system, the affected sectors of the economy have the option of setting up independent support organisations under private law, known as compulsory stock organisations. Such organisations currently exist for liquid fuel (CARBURA), food and feedstuffs (réservesuisse), therapeutic products (Helvecura) fertilisers (Agricura) and natural gas (Provisiogas). Compulsory stock organisations may set up guarantee funds on the basis of the NES to cover the costs of storage. Companies that import goods which are subject to compulsory stockpiling or which distribute them for the first time in Switzerland pay a contribution to the guarantee fund. Guarantee funds are administered by the compulsory stock organisations and are used to cover the costs and price risks incurred by the companies concerned as a result of holding compulsory stocks. The compulsory stock organisations also conduct compulsory stock agreement compliance checks on behalf of the federal government. In its capacity as the supervisory authority, and bearing in mind Switzerland's international obligations, the FONES ensures that the level of contributions to the guarantee funds is appropriate, and that the funds are being used for their intended purpose.

In addition to compulsory stocks as required by the federal government, NES can also enter into agreements with individual companies that they will stockpile other vital goods on a voluntary basis. This 'complementary' arrangement is an appropriate means of holding stocks of strategic goods for which there is only very low demand under normal circumstances, or which are offered by only a small number of suppliers (e.g. certain medicinal products or raw materials for yeast production). In contrast to the compulsory stock system, companies are not forced to enter into a contract with NES. However, should they decide to conclude an agreement about complementary stockpiling, they are subject to the same obligations as apply under the compulsory stockpiling system.

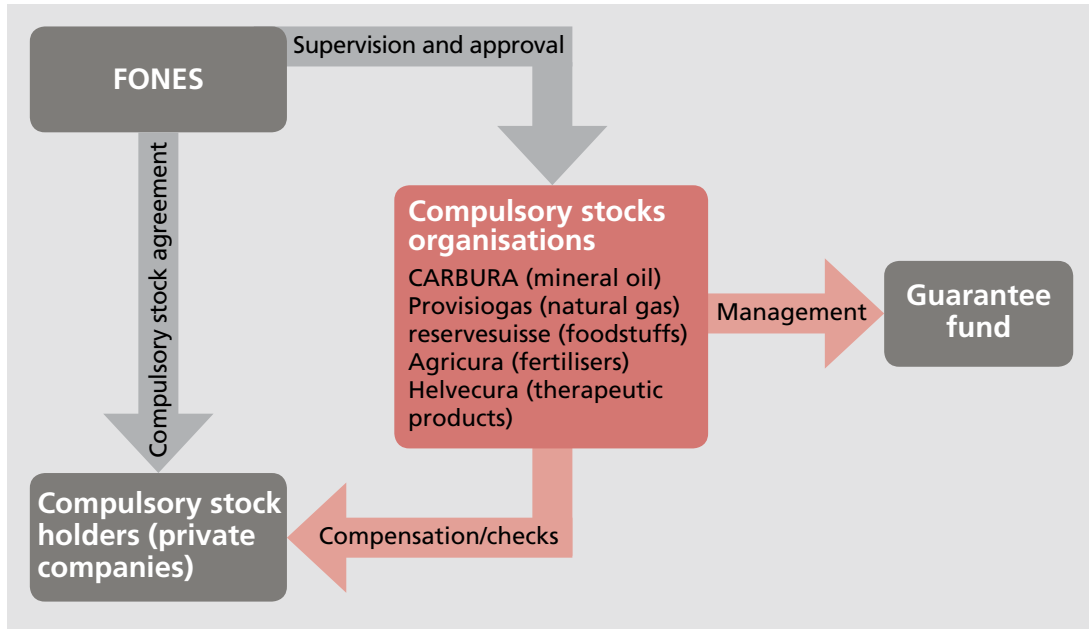
Compulsory stock organisations

Complementary stocks

Importance of stockpiling

Compulsory stocks

Figure 12: System of compulsory stocks



Other forms of stockpiling

There are also other forms of stockpiling. These include 'secure supply agreements', which permit contracts to be entered into with producers, warehouse operators and service companies to hold reserves of specific goods. Minimum reserves are an additional instrument. Here, the federal government is able to force companies to maintain minimum levels of stock for a limited or indefinite period. For example, in the event of an impending pandemic, the government is able to order that minimum

stocks of disinfectants be held for healthcare institutions. A further form of stockpiling involves inventory levels being determined by industry agreements. For example, electricity supply companies have undertaken to keep electricity pylons in stock to secure the transmission network, and to support each other in the event of a crisis.

Figure 13: Compulsory stocks and demand coverage

Compulsory NES stocks:		
	Stockpiled product	Demand coverage ⁹
Foodstuffs	Sugar	3 months
	Rice	4 months
	Cooking oils and fats	4 months
	Coffee	3 months
	Common wheat for human consumption	4 months
	Durum wheat for human consumption	4 months
	Common wheat for dual use	3 to 4 months
	Carbohydrate-rich feedstuffs	2 months
	Protein-rich feedstuffs	2 months
	Nitrogen fertilisers	1/3 of the requirement for one growing season ¹⁰
	Raw materials for yeast production	1 month
Energy	Petrol	4.5 months
	Kerosene	3 months
	Diesel	4.5 months
	Heating oils	4.5 months
	Natural gas for dual form systems (in the form of extra light heating oil) ¹¹	4.5 months
	Uranium fuel bundles	Sufficient to recharge 3 reactors ¹²
Therapeutic products	Antibiotics used in human medicine: – Commercially available packaged doses	3 months
	– Active substances	2 to 3 months
	Neuraminidase inhibitors	Treatment for 25% of the population; prevention for healthcare workers for 40 days
	Strong analgesics and opiates	3 months
	Vaccines	4 months
	Antibiotics used in veterinary medicine	2 months
	Blood bags	3 months
	FFP2 and FFP3 respirators	168,400
Industry	Plastics: Polyethylene (PE), various additives	81 t

(FONES, 01.11.2019)

Financing of compulsory stocks

The federal government enables companies to finance their strategic compulsory stocks on preferential terms by acting as guarantor for the relevant loans. Should the holder of compulsory stocks subsequently become insolvent or enter into composition proceedings, the federal government will repay the loan to the bank and, in return, become the owner of the goods. In this capacity, the FONES concludes agreements with the banks, examines guarantee applications, approves them, and where necessary takes action to avoid loss to the state as far as possible in the event of insolvency. The federal government has not sustained any losses from compulsory stock guarantees in recent years.

Costs of holding compulsory stocks

The costs of holding compulsory stocks include compensation to companies from the guarantee funds, as well as the administration costs of the compulsory stock organisations. Over the past 25 years, the volumes of foodstuffs and energy held under the compulsory stock system have been reduced significantly, and the range of goods that must be held has been streamlined. This has been done through a reduction of the demand coverage stipulated by the federal government, and an overall decline in mineral oil consumption, which means that if demand coverage remains unchanged, the volume to be held in compulsory stocks decreases. Since 2013, certain compulsory stocks of therapeutic products have been increased, and new products added. The additional costs incurred as a result were low in comparison with the reductions that had been achieved in the other two areas, however. As a result of the overall decline in the volume of compulsory stocks, the costs also decreased. The current very low level of interest rates in the financial markets is also helping to keep costs down. Importers and initial distributors of goods subject to the compulsory stock system generally pass on their own costs in the sale prices for their products.

Evolution of compulsory stocks

In 2019, the FONES drew up a report on strategic stockpiling in Switzerland. It contained a detailed account of changes in reserves, as well as the current level of preparedness. The most important changes in stock levels over the past four years can be summarised as follows:

- Where mineral oil is concerned, demand for petrol and heating oils declined in the period under review, while demand for diesel and kerosene increased. These changes reflect market trends. The proportion of diesel-powered passenger cars has increased in recent years to the detriment of petrol vehicles. Meanwhile, demand for kerosene rose as a result of steadily growing demand for air transport. There was a clear decline in heating oil. Very few new oil-fired heating systems are installed nowadays. The compulsory stocks were significantly reduced to reflect the decline in demand.

- For technical and economic reasons, compulsory stocks of extra light heating oil are kept as a substitute for natural gas. Industrial firms that own dual-fuel systems (which can be operated with natural gas or heating oil) may be obliged to switch to heating oil in the event of a shortage, thereby easing supplies of gas to other users, such as private households and companies with gas heating systems. The volume of compulsory stocks is geared towards the consumption of natural gas in dual-fuel systems. The share of consumption in dual-fuel systems has been declining for some years, adversely affecting the effectiveness of strategic stockpiling. The gas sector's stockpiling requirement therefore needs reviewing.

- Vaccines were added to compulsory stocks on 1 October 2016.

Changes to compulsory stocks

Action areas and outlook

The stockpiling instruments are not expected to undergo any fundamental changes in the next few years. However, depending on market trends, there will be changes in quantity for all categories of goods. The range of goods held in compulsory stocks is regularly reviewed, which may lead to goods being added or removed from the compulsory stock system.

As a temporary solution, the federal government has been working with a private company since the autumn of 2020 to build up stocks of 6,000 tonnes of ethanol to be able to meet the short-term pandemic demand and secure the required quantities to manufacture disinfectants and pharmaceutical products. Various parliamentary procedural requests were submitted on ethanol stocks in 2020.¹³ The temporary solution is to be converted into an ordinary compulsory stockpile in early 2022.

Following a comprehensive review of the stockpiling strategy in the 2019 report on strategic stockpiling, the Foodstuffs Division concluded that various changes to compulsory stocks were necessary. It requested changes to compulsory stocks of cereals, cooking oils and fats, and sources of protein. It also proposed that rapeseed be added to compulsory stocks.

On the basis of an NES proposal, the Federal Council launched a consultation in the summer of 2019 on removing coffee from compulsory stocks. However, on the basis of the results of the consultation, the EAER decided to maintain the compulsory stockpiling in its current form. The level of coffee stocks should therefore be adjusted to reflect the increase in consumption.

In addition, the changes both to existing compulsory stocks and regarding the introduction of new compulsory stocks – particularly if they are financed through customs duties – must comply with Switzerland's international obligations towards the World Trade Organization (WTO) and free trade partners.

In the electricity sector, Switzerland's Energy Strategy 2050 is expected to lead to some sweeping changes. In view of this strategy and its planned restrictions to the operating life of nuclear power plants, decisions will need to be made with the operators of the nuclear plants concerned regarding at what point the remaining compulsory stocks of uranium fuel bundles should be abolished. The Energy Strategy 2050 will also have a lasting impact on the compulsory stockpiling of mineral oils. The quantities to be stockpiled will have to be continuously adapted to the changing demand. There may be further adjustments to the volumes of mineral oil products that are held to cope with the probable rise in demand for diesel and the fall in demand for petrol and heating oil. The private sector has created additional local tank capacity for kerosene in recent years to ensure the required level of demand coverage. However, the coronavirus pandemic put an end – at least temporarily – to the increase in kerosene sales that had lasted almost 20 years.

There has been an increasing number of isolated supply shortages in the supply of therapeutic products, which have necessitated the release of compulsory stocks on numerous occasions. Antibiotics for human and veterinary medicine and virostatic agents have long been included in compulsory stockpiling. Strong analgesics and opiates were added to compulsory stocks in 2013, and a number of vaccines were included in 2016. The problems in the supply of therapeutic products are set to increase. The FONES is monitoring developments and, with due regard to medical necessity and the supply risks of individual product groups, will apply for compulsory stocks to be expanded if necessary. With regard to the stocks of PPE that are necessary during a pandemic, the tasks, powers and responsibilities of the federal government need to be defined more clearly, based on experience gained from the COVID-19 pandemic.

Implications of the federal government's energy strategy

Coping with shortages of therapeutic products

Changes to compulsory stocks of foodstuffs requested

Compulsory stockpiling of coffee to remain

Financing in keeping with Switzerland's international obligations

5.6 Use of compulsory stocks

Background

Compulsory stocks can be released in the event of severe supply bottlenecks for one or more goods held in compulsory stocks, or a general severe shortage. This is designed to prevent or at least mitigate shortages of the most vital storable goods. The release of compulsory stocks can be implemented quickly and – compared with most other instruments of national economic supply – is a less drastic market intervention.

If disruption to supply is imminent, NES carries out a situation analysis. The divisions then liaise with sector associations, compulsory stock organisations, trade organisations, importers and domestic producers. On the basis of the findings from the situation analysis, a decision is made about whether a release of compulsory stocks would be advisable.

To bridge short-term supply bottlenecks, the FONES can independently authorise a shortfall of a maximum of 20% in the total amount held in compulsory stocks for each category of goods. If compulsory stocks are needed on a larger scale, the delegate for national economic supply requests the release of the required goods from compulsory stockpiles from the EAER. The EAER approves the release of compulsory stocks by means of an ordinance. On the basis of this ordinance, the competent division defines the use limits and the period during which the compulsory stocks will be available.

Degree of preparedness

Over the past four years, several different sectors have experienced disruption to supplies that has necessitated recourse to compulsory stocks. Use of compulsory stocks has proven to be a practical, workable and effective instrument of NES.

In the area of therapeutic products, medicines are consistently needed from compulsory stocks to plug shortages. Over the past four years, antibiotic supply has been particularly affected, with supplies of certain preparations regularly becoming tight throughout Europe as a result of suspended production and batch recalls. It is common in the therapeutic products sector for only a small number of companies to offer a particular active substance or medication. The sudden loss of a producer thus cannot (immediately) be offset by increased output by other market participants. The shortage in one brand of medication often creates shortages of preparations with a similar range of indications. The use of compulsory stocks nonetheless means that until now, Swiss hospitals have received adequate supplies.

In the autumn of 2018, a protracted period of low water levels had a significant impact on Rhine shipping, with imports via the Rhine being severely hindered for months. This led to bottlenecks in the supply of mineral oil, cooking oils and fats, and feedstuffs and fertilisers. The federal government therefore approved the temporary use of compulsory stocks. In total it released 235,000 m³ of diesel, 80,500 m³ of petrol, 30,000 m³ of kerosene and 4,000 tonnes of nitrogen fertiliser. In the end, 191,000 m³ of diesel, 58,000 m³ of petrol, 8,000 m³ of kerosene and 13 tonnes of nitrogen fertiliser were used. In addition, compulsory stocks of protein-rich feedstuffs and cooking oils and fats were released by the EAER. During the approval process, the Rhine shipping situation eased again as a result of rainfall, which meant that some of the released compulsory stocks of liquid fuels and fertilisers had to be used, but not the feedstuffs or cooking oils and fats.

Therapeutic products: structural issues

Low water levels in the Rhine

Use of compulsory stocks

In the spring of 2020, healthcare institutions required the supplementary compulsory stocks of FFP masks as a result of the COVID-19 pandemic. The Armed Forces Pharmacy purchased these masks from stock holders and passed them on via the federal government's resource management to the cantons. These FFP masks supplemented the pandemic stockpiles held in hospitals and other institutions in the healthcare sector.

Implementing IEA requirements

As a member of the International Energy Agency (IEA), Switzerland is under an obligation to support the emergency measures determined by the IEA. The country is able to fulfil this obligation at all times, thanks to available stocks of mineral oil products, as well as demand-side measures.

Action areas and outlook

Compulsory stocks are not the same as operating stocks

To continue responding to the supply situation in the future, NES is maintaining its efforts to optimise the use of compulsory stocks and make the system as fit as possible for its intended purpose. It should be borne in mind that compulsory stocks are not designed to replace operating stocks. It is generally difficult to decide when is the right time to release compulsory stocks. An overly rapid use of compulsory stocks sends out the wrong signal to economic actors. If they can rely on the rapid use of compulsory stocks, they have less incentive to hold their own stocks. This has a negative impact on security of supply. Goods should therefore only be released when there is no other way of guaranteeing Switzerland's supply. Efforts are therefore being made to define the requirements and processes of compulsory stock releases in more detail, so that businesses can adjust the level of their operating stocks accordingly.

5.7 Import promotion schemes

Background

Release of compulsory stocks is often the first measure taken when there is an impending or existing shortage. If this is not enough to offset supply problems with vital goods, to the desired extent or if no compulsory stocks are held of the goods that are in short supply, the import of these goods may be encouraged in cooperation with the federal offices concerned, and the Swiss Federal Customs Administration in particular. Such programmes to promote additional purchasing options include expanding tariff quotas, reduced customs duties, simplified customs procedures, and the temporary suspension of legislation limiting imports. NES is also able to support transport and logistics processes for imports in the event of a crisis.

Degree of preparedness

The Foodstuffs Division can initiate import promotion in collaboration with the Federal Office for Agriculture (FOAG). Government restrictions and other barriers to trade that hinder the import of agricultural goods can be temporarily adjusted. For example, in 2020, the FONES increased the tariff-rate quotas for butter and eggs. This cooperation proved effective during the COVID-19 pandemic. The Division will analyse the insights from the COVID-19 pandemic and specify further practicable measures in the next few years.

Foodstuffs

Therapeutic products cover both medicinal products and medical devices. In the case of medical devices, through the Mutual Recognition Agreement (*Schweizerische Eidgenossenschaft, 1999*) belonging to the first series of bilateral agreements, Switzerland is currently part of the EU domestic market and is involved in European market surveillance, which affords a certain amount of protection against disruption to supply. In view of the revision of medical device legislation in the EU, which is to enter into force in 2021, Swiss law will also be amended to achieve equivalence. At the same time,

Therapeutic products

the Mutual Recognition Agreement with the EU is to be updated to be able to guarantee the continued free movement of goods for medical devices. By contrast, in the case of medicinal products, national licensing conditions impose narrow restrictions on any import promotion programmes. Upon application from a company that has a product licensed in Switzerland, pursuant to the Therapeutic Products Act, Swissmedic may approve temporary imports of foreign packs of the identical drug (HMG, 05.12.2000). Such approval would be granted if competitors were unable to close the supply gap, and the lack of the drug might have serious consequences for patients. Here, the new therapeutic products platform will help to identify problems with supplies of medicinal products or medical devices at an early stage. Healthcare professionals also have the option of importing small quantities of a drug from abroad, provided it has been approved in a country with a comparable pharmaceutical licensing system and the drug is not available in Switzerland at that time (AMBV, 14.11.2018).

5.8 Production management

Background

Production management to secure the supply of vital goods is a highly interventionist measure. Targeted incentives may be used to promote the production of certain goods in the event of a crisis. Furthermore, the NES provides a means of managing the nature and quantity of products which are to be produced or manufactured, and controlling their designated use.

Degree of preparedness

At intervention level C (see Figure 2: NES supply objectives) – in other words in the event of longer, severe shortages of foodstuffs – changes to production are envisaged. Optimisation of production aims to increase the self-sufficiency ratio. The Foodstuffs Division has been working on these types of measures since 2019. The computer-aided model DDSS-ESSA¹⁴ can also compute the necessary change to domestic agricultural production on the basis of available goods and production factors at any time and therefore provide data sets to combat severe shortages (Agroscope, 2015).

In the event of an acute energy crisis affecting fossil fuels, there would be increased public demand for wood for heating purposes. In such a case, demand would likely be several times higher. In a level A situation (see Figure 2: NES supply objectives), demand could be met by existing stocks in forests, which are sufficient for around two years. At level B, additional usage – i.e. more lumbering – would be recommended, and at level C the recommendation would become an official order.

5.9 Restrictions on consumption

Background

If major supply gaps continue to exist despite supply management programmes, the NES strategy also provides for demand-side action. This is intended to ensure the controlled distribution of the goods that remain. Depending on the severity of a supply crisis, a range of instruments may be deployed, in accordance with the principle of proportionality.

Adjusting
agricultural
output

Use of
wood fuel

Sale restrictions

Appeals to reduce consumption

The first level of the strategy provides for appeals to the population to reduce their consumption. This is a relatively simple way of reducing consumption. An important aspect of such a measure is raising public awareness of the national crisis, and thereby motivating people voluntarily to consume less.

Electricity management

In the event of a power shortage, other NES electricity management measures are deployed after appeals to reduce consumption. These include restrictions on consumption for certain uses, electricity quotas for major consumers and – as a last resort – periodic grid shut-downs.

Switchover of dual-fuel systems

In the event of a shortage in supplies of natural gas, the federal government can order on a non-contractual basis that dual-fuel systems be switched over to heating oil. This enables the consumption of natural gas to be reduced significantly within a short time.

Sale restrictions

Sale restrictions can be put in place relatively quickly in the event of impending shortages and cause relatively little market distortion. If there are fears that a temporary shortage will lead to consumers stockpiling goods for their own use, the sales outlets concerned can be forced to limit the quantity that an individual may purchase in a single sale. This stops people panic buying. Although this measure cannot prevent multiple purchases, it can help to calm the situation somewhat.

The Foodstuffs Division completely overhauled its measures in this area in 2019 and 2020, and continuously developed them during the COVID-19 pandemic to be optimally prepared for deployment. In the end, they did not need to be implemented during the COVID-19 pandemic.

However, the sale restriction measure was used in the area of medicinal products, where a uniform and nationwide supply of certain medicinal products had to be ensured (see Section 8.3). Limited quantities of drugs from compulsory stocks can also be released onto the market if necessary to better control the range of coverage. If necessary, recommendations on alternative treatments or restricted consumption can be issued. This is done through a change to the therapeutic guidelines by the professional associations and ensures that the goods that are in short supply are used where they are most urgently needed.

If all restrictions on sale prove insufficient to ensure supplies in the event of a contingency, demand for vital goods can be cut indirectly by introducing quotas. In this case, providers (merchants, importers and producers) would not be able to release all of their stocks on to the market at the same time, but would have to comply with quantity restrictions set by the federal government and potentially only supply certain recipients. This would constitute massive intervention in the free market. Provision is made for the cantons to introduce quotas for therapeutic products (Tamiflu, respirator masks) and energy supplies (kerosene, heating oil, natural gas and electricity).

Quotas

Rationing is a very interventionist measure. Under this system, each consumer is given the right to buy a particular quantity of a particular good within a limited period of time. Rationing may be introduced in the event of severe, long-lasting supply problems with foodstuffs, as well as with petrol and diesel. It is an administratively complex measure which is imposed at very high cost to the economy, and takes a long time to prepare. The FONES Foodstuffs Division has completely overhauled the basis on which rationing might be introduced. To date, plans for rationing involved the cantons issuing ration cards. Due to the structural change, priority is now given to a nationwide, centralised solution with cards issued by post.

Rationing

5.10 Securing drinking water supplies in emergencies

Water is a public good that falls under the responsibility of the cantons. The cantons and communes are responsible for drinking water supply. Under the new Ordinance on Guaranteeing Supplies of Drinking Water in Situations of Severe Shortage (DWSO), federal provisions are intended to help ensure the normal supply of drinking water is maintained for as long as possible in situations of shortage, disruptions to supply are rapidly rectified and the drinking water necessary for survival is available at all times. The DWSO calls for a second source to be established for essential facilities in order to reduce the vulnerability of water supply in situations of severe shortage. This allows shortages due to drought to be better mitigated.

NES works on the assumption that the public is responsible for their own drinking water supply for the first three days. But studies have shown that most households do not have an adequate emergency supply available. NES has therefore drawn up an agreement with the Swiss Mineral Water and Soft Drink Producers Association to guarantee that the public is provided with a minimum quantity of drinking water between the first and fourth days of a shortage, particularly in the event of regional interruptions to supply.

5.11 Securing supplies of industrial goods in emergencies

The pharma industry uses ethanol in the production of medicines. Large quantities of ethanol are essential for the production of disinfectants, particularly in the event of a pandemic. Alcohol-based disinfectants are manufactured from a mixture of ethanol (70%) and auxiliary substances. In the

food industry, ethanol is a raw material used for the manufacture and dilution of flavours and aromas and for the production of vinegar. It is also used as a preservative and cleaning agent. In the chemicals industry, ethanol is one of the most important solvents on account of its properties and is used as a raw material for many chemicals.

In the spring of 2020, there was a surge in demand for ethanol due to COVID-19, which far outstripped the available supply. Since putting in place a temporary solution to secure ethanol reserves in the autumn of 2020, the federal government has been trying to meet the short-term pandemic-related demand for ethanol for the manufacture of disinfectants and for the pharma industry. There are plans to convert the temporary solution into an ordinary compulsory stockpile in the long term.

In the event of a more protracted power outage, the public as well as authorities and organisations for rescue and security (AORS) require a minimum supply of fuel. NES therefore aims to get the cantons to equip selected petrol stations with an emergency power supply. It drew up a set of voluntary recommendations to this end for the cantons and summarised them in guidance issued in 2020. The guidance includes preventive measures for the cantons and communes that support the supply of fuel to the AORS in the event of a power outage. The recommendations can be broken down into three sub-areas: (1) clarifying political will; setting out goals and planning; (2) conducting a situation analysis regarding fuel supply for the AORS; (3) equipping power stations with emergency power supply, organising fuel replenishment and drawing up operating concepts. The guidance also includes information on financing possibilities, reference projects and answers to frequently-asked questions.

Emergency power supply for petrol stations

Ethanol

5.12 Payment transactions in emergency situations

Since the revised National Economic Supply Act entered into force in mid-2017, the FONES has been responsible for guaranteeing payment transactions in emergencies. On the basis of a Federal Council decree, households are to be encouraged to hold a cash reserve. Also, wherever possible, it is advisable to use the offline function of bank cards. This allows transactions of up to several hundred Swiss francs to be processed on bank cards even when

there is a telecoms system outage. The prerequisite for this is that outlets or ATM machines must be equipped with an emergency power supply. The FONES set up a new working group with representatives of the banking sector and federal government in late 2018. It is working towards a binding complete solution involving all relevant market actors and is also reviewing the use of payment instruments to buy vital goods.

6 Stepping up collaboration with the cantons

Background

The measures prepared by NES are geared towards market participants that are responsible for the provision or production of supply-critical goods and services. The focus is therefore solely on the private sector when it comes to implementing NES measures. In light of this, cooperation with the cantons was restricted to the preparation and implementation of rationing measures for fuel, heating oil and foodstuffs.

On the basis of the findings from the Swiss Security Network Exercise conducted in 2014, and following the entry into force of the revised National Economic Supply Act on 1 June 2017, which allows NES activities to be stepped up before a supply shortage to strengthen the resilience of supply chains, collaboration between NES and the cantons was reassessed. In its final report on the Swiss Security Network Exercise, the Federal Council stated among other things that the federal government and cantons should work with the private sector to highlight what measures are planned and could be developed to secure power supplies when there are shortages and to supply foodstuffs and necessities.

New focal points

Against this backdrop, NES has stepped up collaboration with the cantons and the Energy, ICT and Logistics Divisions have now become the focus of cooperation. Furthermore, at cantonal level, the role of cantonal delegate for national economic supply was created according to the following principles and implemented:

- The cantonal NES delegate is the cantonal point of contact for all questions related to NES. In particular, they are the ambassador for NES issues and concerns on cantonal management teams.
- The cantonal NES delegate is a generalist but someone who is informed about NES issues that are or could become relevant to the canton at the prevention as well as intervention phase.
- The cantonal NES delegate is responsible for:
 - ably representing the principles and functioning of NES on the relevant cantonal committees.
 - activating the cantonal ‘NES system’ where necessary and implementing measures according to NES requirements in a timely manner.

The cantonal NES delegate must:

- have access to the cantonal government and cantonal management staff.
- have a good network within the cantonal administration.
- be willing and able to convey information on NES actively and in various settings.
- be available for around two days a year for coordination and cooperation between the canton and the federal government.

The restructured cooperation of NES with the cantons is set out in EAER directives, which came into effect at the beginning of 2020.

7 International cooperation

International Energy Agency

The FONES fosters a variety of international contacts. The closest relationship is that with the International Energy Agency (IEA). Switzerland is one of the founding members of the IEA. By becoming a member in 1974, Switzerland made a commitment under international law to play an active part in implementing the measures determined by the IEA in the wake of the 1973 oil crisis, including the creation of compulsory stocks at national level. Switzerland may, for example, be required to take action as part of a campaign coordinated by the IEA (for example by releasing its compulsory stocks) to counter a shortage of oil on the international markets in good time.

The FONES represents Switzerland on the Governing Board of the IEA at the IEA headquarters in Paris within the framework of two working groups, namely the Standing Group on Emergency Questions (SEQ) and the Standing Group on the Oil Market (SOM), which meet several times a year. The SOM tracks trends on the international oil markets to help IEA members respond swiftly and effectively to market changes. The SEQ is responsible for all aspects of oil emergency preparedness and collective response to supply disruptions.

Around every six years, the IEA reviews its member states in terms of their level of preparedness to secure oil supplies in the event of a supply crisis. Switzerland underwent a country review in 2016. As a result, the IEA made recommendations for preventive action by NES, the SFOE, and the mineral oil and gas sector. In late 2019, the FONES presented the status of implementation of the recommendations to the IEA, and the presentation was well received. The next review is due to take place in 2022 or early 2023.

Partnership for Peace

Switzerland has participated in the Partnership for Peace (PfP) since 1996. The Partnership for Peace is a political alliance involving the 29 NATO member states and 22 partner states. The cooperation in sensitive areas relating to security and defence policy aims to enhance trust and transparency by promoting the security policy dialogue in the Euro-Atlantic area and enhancing peace, democracy and security in Europe through practical cooperation.

Switzerland uses the Partnership for Peace to selectively table its security policy interests with NATO and other partner countries and to take advantage of the exchange of information and experience. The FONES participates in various working groups directly or through the FDFA. In the year under review, the Civil Emergency Planning Committee (CEPC) further stepped up its work on increasing the resilience of societies and infrastructure. Meanwhile, the Joint Health, Agriculture and Food Group (JHAFG) compiled best practices on improving resilience and minimising supply shortages. Finally, the Industrial Resources and Communications Service Group (IRCSG) mainly looked at the interplay between electricity and IT systems.

Bilateral cooperation

Besides the involvement in the IEA and Partnership for Peace, the FONES also maintains bilateral contacts. In the period under review, it held discussions with delegations from Finland, Qatar, Austria, Sweden and South Korea on topics related to national economic supply in the event of severe shortages.

8 Tackling coronavirus (COVID-19)

8.1 Foodstuffs

Foodstuffs

Between February and June 2020, the COVID-19 pandemic led to significant market turbulence in the agriculture and food sectors, both in Switzerland and abroad. Demand for goods with a long shelf life significantly rose, while demand for catering and hospitality slumped. However, Switzerland's supply of vital agricultural inputs and foodstuffs was guaranteed throughout this period. The Foodstuffs Division put in place a continuous monitoring system to quickly identify an impending severe shortage of vital foodstuffs and feedstuffs. It also adapted the measures under intervention phase A (see Figure 2: NES supply objectives) on an ongoing basis to reflect the insights gained from the pandemic.

In April 2020, Agroscope was tasked with analysing momentous historical events that impact food supply, and drawing conclusions from their findings on the potential medium-term implications of COVID-19 for Switzerland's food supply. Overall, the study shows that there have been few risks to Switzerland's food supply during the course of the pandemic.

8.2 Energy

Energy supply

In terms of energy supply, ensuring the availability of staff to operate strategic infrastructures, such as network control centres and nuclear power plants, was particularly important. A significant proportion of staff working in the control centres of Switzerland's electricity and gas transmission grids and nuclear power plants are from neighbouring countries. The high demands of these roles and the specificity of the expertise mean that these members of staff cannot be replaced at short notice by skilled workers from Switzerland. The Energy Division therefore issued these companies with an individual letter of support, confirming their relevance to supply.

Arrangements were also made with the FDFA's Directorate for European Affairs to guarantee swift exemptions for key employees of infrastructure operators in the event of more restrictive border regimes.

When problems began to emerge in the unloading of Swiss oil tankers at the port of Marseille because other shipments for France had to be handled as a priority, contact was made with the French authorities via SECO and the FDFA to ensure that the deliveries for the pipeline could be unloaded to supply the Swiss refinery in Cressier in good time.

Finally, discussions regularly took place in the 'electricity supply security' coordination group with representatives of the SFOE, EICOM, the ENSI, Swissgrid and the industry. The aim was to identify staff shortages and supply bottlenecks at an early stage in order to coordinate any measures between the various actors. The group also analysed the potential implications of the COVID-19 crisis for stability of supply in the winter of 2020–21.

8.3 Therapeutic products

The global surge in demand for certain drugs as a result of the coronavirus pandemic was reflected in the number of reports received by the reporting office of the FONES Therapeutic Products Division. The reporting office analysed the reports and took action where necessary. To combat COVID-19, many active substances and therapeutic products were needed that were not subject to a reporting obligation or held in compulsory stocks before the pandemic. Under COVID-19 Ordinance 2 of 13 March 2020, some sedatives and muscle relaxants to treat severely sick COVID-19 patients were therefore temporarily subjected to a reporting obligation. The Division carried out weekly supplier monitoring. This information helped to ensure that deliveries to hospitals were optimally adapted to requirements.

Monitoring of the supply of therapeutic products

Manufacturers and suppliers of PPE and COVID-relevant medicinal products – including, for example, face masks and perfusor syringes for the administration of drugs to COVID-19 patients in hospital – were repeatedly asked about their ability to supply.

Release of compulsory stocks of medicinal products

Requests for the release of compulsory stocks – particularly antibiotics – rose sharply in March and April 2020. More drugs were needed to treat severely ill COVID-19 patients. Meanwhile, hospitals sought to stockpile more medical supplies due to the severe supply shortages. As manufacturers focused on the production of COVID-19 relevant products, the supply of other drugs was put under further strain. Shortages particularly affected therapeutic products in the area of primary care, which is mainly delivered using generic drugs. Compulsory stocks were released a total of 27 times between March and April 2020, affecting 19 products. This equates to around half of the releases of compulsory stocks in the whole of 2019 (57 releases, 23 products). In consultation with the Swiss Society for Infectious Diseases, in some cases additional guidance was issued on rational and restricted consumption. However, the crisis also showed that Swiss subsidiaries of global companies and SMEs are able to adapt their production within a short space of time for certain groups of drugs.

Sale restrictions for pharmaceutical products

In mid-March 2020, the sales figures of therapeutic products wholesalers rose so sharply that certain products could only be delivered to pharmacies on a reduced scale. In order to guarantee uniform and nationwide supply, the federal government issued restrictions on the sale and dispensing of certain pharmaceutical products. Pharmacies and doctor's surgeries could only dispense one pack per sale for certain products (exempt from this rule were chronically ill patients with a repeat prescription,

where several packs could be dispensed, although the total amount was not allowed to exceed two months' supply). The sale restriction affected various prescription-only drugs, such as blood pressure medications, analgesics and antifebrile drugs, oral antidiabetics and cough medicines.

The wearing of respirators (FFP2 and FFP3) is particularly useful for staff in hospitals to protect against infection when coming into direct contact with sick patients. During the coronavirus crisis, demand for FFP masks rose so sharply worldwide that it could not be met despite maximised production capacity. The majority of these masks come from China and were extremely difficult to procure during the crisis. On top of this, some countries introduced interim bans on the export of PPE and therefore also FFP respirators, and certain deliveries to Switzerland were temporarily held back. The FONES and the three participating compulsory stockholders gave the go-ahead back in late February 2020 for the sale of some 170,000 FFP2/3 respirators held in compulsory stocks to the Armed Forces Pharmacy, which then dispatched them to the cantons.

Release of supplementary compulsory stocks of respirators (FFP2 and FFP3)

The supply situation for hand sanitisers and surface disinfectants was also tense during the COVID-19 crisis, due to a sudden surge in demand. Ethanol in particular, as a raw material for the manufacture of disinfectants and sanitisers, was in short supply. During the crisis, the focus was on supplying hospitals, while wholesaler channels remained closed. This is why care homes, doctor's surgeries and Spitex home care services had to contend with shortages at the beginning of the crisis. The renewed government-mandated stockpile means that Switzerland should enjoy greater autonomy of supply of ethanol in future.

Disinfectants

8.4 Information and communications technologies

Working from home: a challenge at all levels

To control the spread of the novel coronavirus, the Federal Council recommended people work from home where possible in the spring of 2020, and during the second wave in the autumn. This led to a significant increase in data traffic and calls on the mobile network. The FONES ICT Division discussed potential preventive measures with the operators of telecoms networks to secure the supply of ICT services in the event of very high demand for capacity. For example, crucial applications could have been prioritised over other, data-intensive applications, such as video streaming. However, the supply of Switzerland's ICT services was never compromised. There were only isolated failures. It did become clear, however, that some companies were not equipped for their workforces to work from home in large numbers. For example, in some cases they were lacking hardware, software, networks and the expertise needed for people to work from a different location.

8.5 Industry

Ethanol

Although above-average quantities of ethanol were imported during the coronavirus pandemic, demand for ethanol to manufacture disinfectant and sanitiser far outstripped supply very soon after the outbreak of the pandemic. Only thanks to quotas and preferential deliveries to manufacturers of disinfectants and pharmaceutical products was just enough ethanol available for the healthcare sector. Sales increased by around 65 % in March 2020, by 30 % on average in April, and by 20 % in May. The FONES and other federal offices (FOPH, FCA) have therefore supported ethanol importers in seeking alternatives. For example, bioethanol, which is usually used as a fuel, was used as a raw material to manufacture hand sanitiser for use outside of hospitals and healthcare facilities.

Air separation plants and bottle filling lines are needed for the manufacture of medicinal gases. There are four such air separation plants in Switzerland and they are running constantly. They are only shut down once a year for servicing. All medicinal gases required in Switzerland are manufactured domestically, but the pressurised steel cylinders are procured from abroad. During the coronavirus pandemic, the healthcare sector was always supplied with sufficient oxygen. However, steel cylinders were in short supply at times. Swissmedic therefore temporarily allowed the use of other technically appropriate containers. To tackle the logistical challenges, NES requested that FEDRO grant companies that produce medicinal oxygen a temporary exemption to the ban on journeys on Sundays, public holidays and at night.

Medicinal oxygen

Packaging manufacturers recorded a sharp rise in orders. This sometimes led to longer delivery times than usual. Manufacturers had sufficient staff, raw materials and machinery to achieve maximum output. But the production capacities of some manufacturers could not be increased. There were temporary bottlenecks in the import of caps for dosing pumps and spray pumps, but this was largely rectified by the start of production of caps in Switzerland.

Production of packaging for disinfectants

The importation of plastic granulate for the manufacture of bottles for disinfectant was guaranteed at all times throughout the coronavirus pandemic. The existing compulsory stocks of plastic granulate did not need to be released. Despite packaging manufacturers operating at high capacity, longer delivery times and logistics problems, a reliable supply of packaging was always guaranteed.

Cardboard and plastic raw materials

8.6 Logistics

Early in the pandemic, back in March 2020, the Swiss association of full-line wholesalers contacted NES to point out that its members (pharmacies, doctor's surgeries and hospitals) could only continue to receive timely deliveries if the ban on night-time journeys for trucks was temporarily lifted. At the beginning of the first wave of the pandemic, even large retailers were temporarily unable to transport enough goods to stores via the normal logistics processes over the weekend to meet the exceptionally high demand. They also lobbied NES to approve a temporary suspension of the ban on Sunday and night-time journeys. The Logistics Division therefore quickly put in place the necessary measures via the competent bodies in the affected cantons.

To ensure heavy goods vehicles were able to transport strategic goods, NES worked with the Federal Roads Office FEDRO to temporarily suspend the ban on Sunday and night-time journeys, regulations on working hours and breaks for drivers, and tonnage restrictions for trucks. The requirement was that companies had to confirm to NES in advance that the goods affected were in fact critical to supply. The suspension of the ban on Sunday and night-time journeys applied until 2 June 2020, while the other exemptions expired at the end of April.

8.7 Cantons and communication

From the outset, demand for information was extremely high during the COVID-19 crisis – both from the public and from the cantons. In early 2020, the cantons therefore received daily updates on the supply situation. Action that had to be taken in the cantons was coordinated by the NES cantonal delegates, and questions from the cantons were answered professionally or forwarded to the competent authorities. The questions from the cantons mainly concerned the allocation of medicines and PPE, and the regulations on responsibilities and powers within the Federal Administration.

At the same time, there was a surge in the need for information from the media. Here, too, attention was focused on masks and PPE, as well as ethanol, logistics and crisis preparedness more broadly. Media enquiries were also received from abroad. Here, the focus was mainly on the compulsory stockpiling system.

The Cantons and Communication unit was able to rely on internal support, as well as the communications unit at the EAER General Secretariat.

8.8 Lessons learned from the pandemic and next steps

Various parliamentary procedural requests have been submitted as a result of the COVID-19 pandemic that directly affect the remit of the FONES and NES. This concerns the following three motions, four interpellations and one postulate.¹⁵

- Burgherr motion 20.3197: Review of compulsory stockpiling
- FDP – the Liberals faction interpellation 20.3238: COVID-19: review of compulsory stocks
- Romano interpellation 20.3269: Rebuilding of ethanol stocks for the manufacture of disinfectants Favouring local actors
- Müller Leo interpellation 20.3305: Compulsory stocks for food supplies
- Gigon Michaud motion 20.3448: For a rebuilding of compulsory stocks of ethanol in Switzerland
- Minder motion 20.3906: Securing Switzerland's national economic supply in major crises
- Grin postulate 20.4020: Compulsory stocks of ethanol – for a permanent solution
- Von Siebenthal interpellation 20.4585: Self-sufficiency and compulsory stocks

Some of the procedural requests refer to plans that NES had already embarked on before the COVID-19 pandemic. These include regularly reviewing the composition of compulsory stocks. For example, in terms of foodstuffs, there are plans to expand the compulsory stocks of grain and cooking oils/fats. The competent division established the foundations for this over the last few years. Starting in early 2021, it set about preparing a consultation. There are also plans to hold compulsory stocks of rapeseed in future. A separate consultation will be conducted on that in 2021.

Calls for the creation of ethanol stocks have been realised since the autumn of 2020. As a temporary solution, the federal government has been working with a private company since autumn 2020 to build up stocks of ethanol to be able to meet the short-term pandemic demand and secure the required quantities to manufacture disinfectants and pharmaceutical products. There are plans to convert the temporary solution into a compulsory stockpile in 2022, which will involve all companies that market ethanol in Switzerland.

During the COVID-19 pandemic, the supply of products that are needed in large quantities in the event of a pandemic, such as respirator masks and PPE, was coordinated by the Interdepartmental Working Group on Medical Goods, while the FOPH working group coordinated the supply of specific medicinal products. The FONES has a seat on both working groups and was responsible for monitoring the available medicinal products. Responsibility for updating the pandemic plan lies with the Federal Commission for Pandemic Preparedness and Response FCP. The FONES is also involved in the work of the FCP and on the basis of the findings, will review to what extent measures under the National Economic Supply Act can be implemented.

9 Evolution of NES

9.1 Megatrends

Megatrends are developments driving far-reaching social, economic, political and technological change and reshaping our world. In the reference section, there are various studies on current global megatrends emerging in the economy and society. Most of these define the trends in a more or less similar way, but sometimes use different terms. The most important megatrends that could impact the future activity of NES are outlined below. They are based on publications by the Swiss Society for Futures Research (swissfuture, 2018), the Future Institute in Frankfurt (Zukunftsinstitut, 2020) and a publication by the State Secretariat for Economic Affairs (SECO, 2019).

Connectivity

Connectivity is considered the most important megatrend. The networking principle dominates current social change and is having a lasting impact on the development of society and the economy. Digital communication technologies are fundamentally changing our lives, creating new sociocultural and economic interactions, and giving rise to new lifestyles and behaviours. Other technical infrastructures, such as those for electricity, are also becoming more extensively networked. A holistic understanding of technical change is needed to be able to adapt crisis response measures where necessary and ensure they remain effective.

Globalisation

Globalisation has long been a megatrend and is therefore highly relevant to NES. More and more vital goods are no longer produced in Switzerland, but in a small number of production sites in other countries or even on other continents. Globalisation therefore makes Switzerland more reliant on individual suppliers, trading partners and international logistics. Although protectionist tendencies are increasingly being felt at the moment, we can assume that the global interconnectedness of economic processes is set to increase.

Individualism is a central part of Western culture that is increasingly spreading across the globe. This megatrend is turning the structures of our society upside down. It not only impacts on our value systems and everyday culture, but also our consumption patterns. Individualism is closely interwoven with the megatrend of connectivity. The elements of this that should be considered for NES are the development of consumer behaviour and changes in the social fabric. For example, the increasing diversity of society and new communication channels should be borne in mind in crisis communication. Another point to note is that the public now expects support from the state in areas where in the past support would have come from the family or neighbours.

Individualism

In terms of the media, our society is in a constant state of alarm. It makes us think that crises are constantly taking place somewhere in the world. At the same time, we are materially better off than almost ever before. Yet we still have a strong need for security. Cautious crisis preparation and appropriate communication from state actors in particular convey a sense of confidence and security.

Spread of information

The need for mobility continues to rise. It is mainly characterised by increasingly diverse forms of mobility. Individualism, connectivity and urbanisation will all impact future mobility. Technical innovations and new human needs are changing the way we handle shipments and how we get ourselves from A to B. This is resulting in new interdependencies and risks. On the other hand, digitalisation is increasingly creating opportunities to reduce mobility (think working from home).

Mobility

Climate change The Paris Climate Agreement saw participating states commit to reduce their greenhouse gas emissions. Sustainable business practices and a sustainable lifestyle are increasingly dictating the political agenda. By 2040, two thirds of all new power plant investment globally will go to renewable energies, and they are set to account for 40% of global energy production. Switzerland is disproportionately affected by climate change, with temperature increases compared with pre-industrial levels twice as high as the global average.

The future of work In the future, machines will increasingly be able to perform certain tasks better than humans. Society will need to strike a new balance between life and work. But this will also bring a greater reliance on technology. We therefore need to think about what implications these social trends have on economic crisis preparedness and to what extent they should guide crisis response.

9.2 Future focus areas for NES

Importance of NES National economic supply and how it is organised took centre stage for the general public during the COVID pandemic – probably to a degree not seen since the Second World War. Many people – including federal and cantonal bodies – only realised the importance of national economic supply for the first time during the pandemic. It has become clear that awareness of the complex structure of NES is still too low, despite greater efforts in recent years. The public, but also policymakers, public bodies at federal, cantonal and communal level, managers associations, businesses and compulsory stock organisations need to be better aware of the tasks of NES, and the limits to supply. NES needs to communicate more proactively in this area. Enhanced communication is also needed to increase the public's sense of personal responsibility and thus boost the resilience of every individual.

Focus needs to be shifted back to individual responsibility on the part of businesses and citizens. To this end, emergency supplies and the cyber security standards, for example, need to be better publicised. NES is developing other suitable products and instruments that create enough added value to ensure they are actually used.

There are conflicting priorities between the national mandate on the one hand, and increasing globalisation and reliance on imports from abroad on the other. For example, Switzerland is heavily reliant on imports for fossil fuels, therapeutic products, foodstuffs, and information and communications technology. In addition, in many areas of supply, there are monopolising tendencies which lead to greater dependency on individual suppliers. NES will take even greater account of the rapidly changing environment when defining measures in future. It will also pursue international cooperation within the framework of the International Energy Agency (IEA) and the Partnership for Peace (PfP). Bilateral cooperation will also be stepped up.

NES will focus more strongly on the prevention phase going forward as modern, digitalised economies that are reliant on long supply chains are poorly equipped to cope with crises. The public expects the state to ensure full supply as far as possible, even when there are supply shortages. It should be possible to ease shortages of vital goods without price changes. NES is therefore increasing its focus on preventing supply problems. This is also because in certain areas of supply, such as electricity and ICT, prioritising certain consumers or consumer groups is not possible, or at least not yet. NES's most important prevention measure for the storage of vital goods is compulsory stockpiling. Owing to the changing market environment and as a result of

Promoting individual responsibility

Globalisation and dependence on imports

Focus on the prevention phase

**Process
orientation**

the lessons learned from the COVID-19 pandemic, various changes are called for, some of which have already been initiated. Meanwhile, the various crisis management measures that help to optimise resource allocation during a shortage, need to be continually developed.

Process-oriented thinking needs to be promoted within NES. The various supply processes and divisions need to be better coordinated and the measures need to be better and more effectively communicated. Institutionally speaking, NES is still organised according to supply areas, which are geared towards economic structures. It is therefore worth exploring to what extent organisational

changes to the structure of NES would be appropriate alongside communication measures and cooperation within the framework of joint projects. This could enhance process orientation and resources could be directed to core supply processes. These deliberations must also be incorporated in the follow-up work from the inquiry conducted in 2020, which among other things highlighted a need for action in the management and organisational structures of NES and in the areas of compliance and governance.

10 Appendix

10.1 Organisation of national economic supply

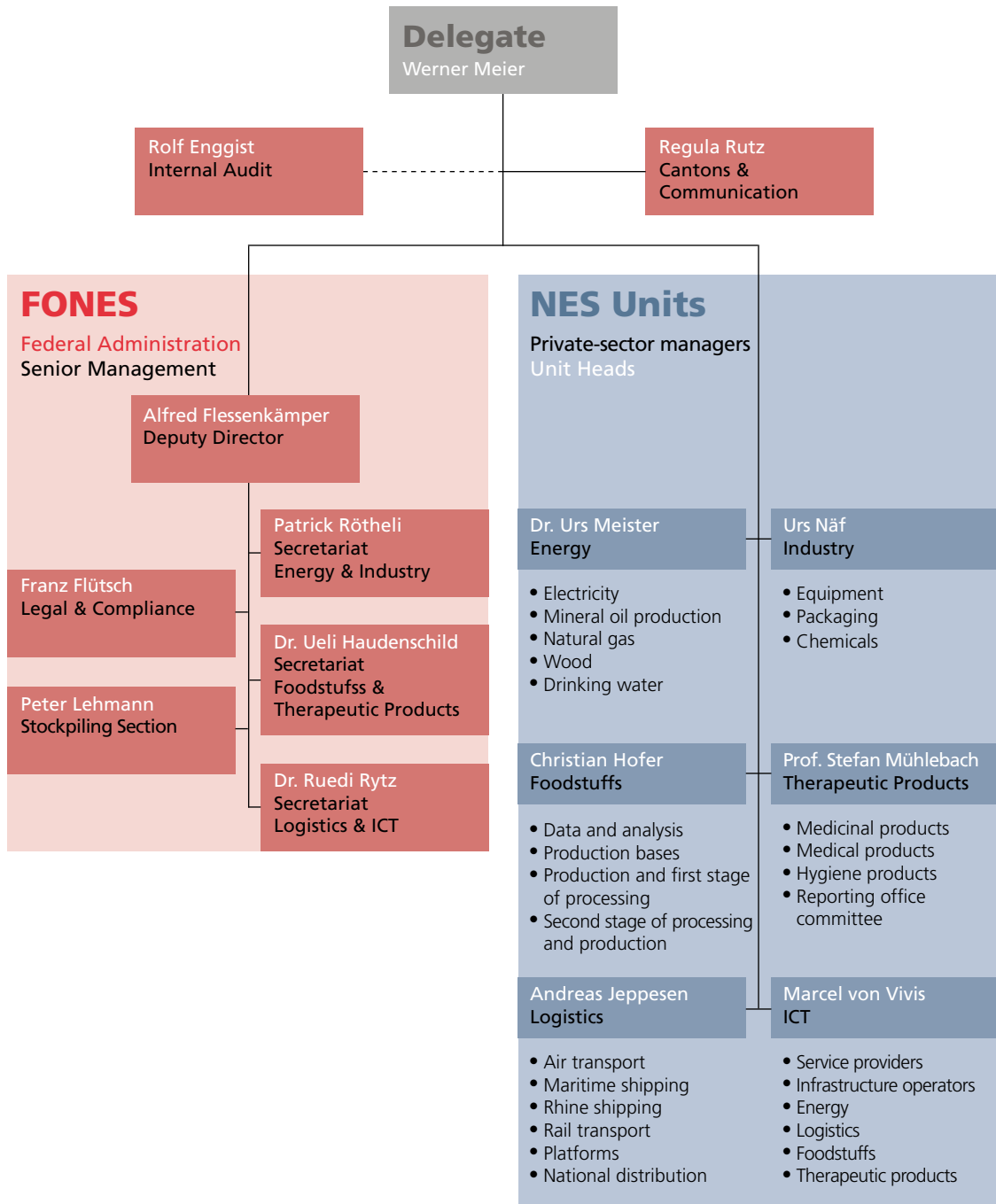


Figure 14: FONES and NES organisational chart

10.2 Additional data on stockpiling

The values of goods (as at end-2019) held in compulsory stocks are listed below for each product group:

Compulsory stocks	CHF millions
Foodstuffs: ¹⁶ sugar, rice, cooking oils/fats, grain, coffee, sources of carbohydrate, sources of protein, nitrogen fertilisers	502
Energy: ¹⁷ petrol, kerosene, diesel, heating oil ¹⁸	2,330
Therapeutic products: ¹⁹ antibiotics for human and veterinary medicine, neuraminidase inhibitors, strong analgesics and opiates, vaccines	44
Total	2,876

Complementary stocks	CHF millions
Foodstuffs: raw materials for yeast production	
Energy: uranium fuel bundles	
Therapeutic products: neuraminidase inhibitors (Swiss packs), blood bags, respiratory masks	
Industrial goods: plastic granules	
Total	56

Costs of holding compulsory stocks		
Year	Total in CHF millions	Per capita in CHF
1,995	307	43
2,000	164	23
2,005	126	17
2,010	116	15
2,015	105	13
2,019	108	13

The costs of holding compulsory stocks include compensation to companies from the guarantee funds, as well as the administration costs of the compulsory stock organisations (see Section 5.4).

10.3 Overview of measures

Measures relating to the supply of foodstuffs

- Secure supplies of drinking water
- Emergency stock
- Release of compulsory stocks of foodstuffs, feedstuffs and fertilisers*
- Import promotion programmes
- General sale restrictions at the point of sale
- Food rationing
- Production management

Measures relating to the supply of energy/oil

- Release of compulsory stocks of petrol, heating oil, diesel and kerosene*
- Release of compulsory stocks of mineral oil products, as ordered by the IEA*
- Accompanying measures
- Quotas for kerosene
- Rationing of petrol and diesel
- Management of heating oil

Measures relating to the supply of energy/gas

- Appeals to reduce gas consumption
- Non-contractual switch away from natural gas
- Release of compulsory stocks of heating oil as a substitute for natural gas*
- Management of single-fuel gas systems

Measures relating to the supply of energy/electricity

- Appeals to reduce electricity consumption
- Restrictions on electricity consumption
- Quotas for electricity
- Grid shut-downs
- Supply management
- Export restrictions

Measures relating to the supply of energy/wood

- Higher wood usage

Measures relating to the supply of therapeutic products

- Monitoring disruptions to supply
- Release of compulsory stocks of therapeutic products*
- Release of compulsory stocks of polyethylene granulate*
- Minimum stock levels for disinfecting agents
- Quotas for Tamiflu®
- Priority distribution provision

Measures relating to logistics

- Extension of customs opening hours
- Manual customs declarations
- Temporary use of original total permitted tonnage for trucks
- Temporary suspension of ban on Sunday and night-time journeys
- Temporary suspension of working hours legislation for energy supply companies
- Temporary introduction of increased flexibility in drivers' working hours
- Prioritisation of rail transport
- Prioritisation of trans-shipment of essential goods at terminals
- Mobilisation of maritime fleet
- Mobilisation of Rhine shipping

Measures relating to the supply of ICT

- Minimum standard to strengthen the resilience of ICT (ICT minimum standard)
- Appeal to users to voluntarily restrict use
- Prioritisation of ICT services
- Limiting bandwidth available to telecommunications end customers
- Increasing the transmission power of mobile phone base stations (only partially prepared)

The measures listed above are presented in full in the report on NES measures (FONES, 01.09.2019).

*Stockpiling is a separate measure. For reasons of clarity, this list does not include normal stockpiling among the measures given. Stockpiling is described in a separate section of this report and in the report on stockpiling (FONES, 01.11.2019).

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10.6 List of abbreviations

CEP	NATO Civil Emergency Planning
CEPC	NATO Civil Emergency Planning Committee
CIS	Community of Independent States
DETEC	Federal Department of the Environment, Transport, Energy and Communications
DWSO	Ordinance on Guaranteeing Supplies of Drinking Water in Situations of Severe Shortage
EAER	Federal Department of Economic Affairs, Education and Research
EU	European Union
FCP	Federal Commission for Pandemic Preparedness and Response
FEDRO	Federal Roads Office
FONES	Federal Office for National Economic Supply
FOPH	Federal Office of Public Health
ICT	Information and communications technologies
IEA	International Energy Agency
IMF	International Monetary Fund
IRCSG	NATO Industrial Resources and Communications Services Group
JHAFG	NATO Joint Health, Agriculture and Food Group
LNG	Liquefied natural gas
MELANI	Reporting and Analysis Centre for Information Assurance
MEM industries	Mechanical and electrical engineering industries
NATO	North Atlantic Treaty Organization
NCSC	National Cyber Security Centre
NES	National Economic Supply
NESA	National Economic Supply Act
OFCOM	Federal Office of Communications
OSTRAL	Organisation for electricity supply in extraordinary situations
OTRAL	Organisation for transport logistics in extraordinary situations
PfP	Partnership for Peace
SCADA	Supervisory Control and Data Acquisition
SECO	State Secretariat for Economic Affairs
SFOE	Swiss Federal Office of Energy
SRC	Swiss Red Cross
Swissmedic	Swiss Agency for Therapeutic Products, responsible for the authorisation and supervision of medicinal products and medical devices
TENP	Trans Europa Naturgas Pipeline
WEF	World Economic Forum

10.7 Notes

- ¹ The percentages are based on the value of the goods imported.
- ² When the patent protection on an original drug expires, other companies are allowed to bring imitation products (generic drugs) that are usually cheaper, onto the market.
- ³ The 75 % is based on the number of packs sold in 2018.
- ⁴ The percentages are based on the value of the goods imported.
- ⁵ SCADA: Supervisory Control and Data Acquisition. This means supervising and controlling processes using ICT systems. Businesses use SCADA systems to control their plants across all locations and to gather and record data on operation.
- ⁶ Concentrates of various antibodies from human plasma.
- ⁷ The online platform was set up in collaboration with the Federal Office of Public Health (FOPH), Swissmedic and the Armed Forces Pharmacy.
- ⁸ The cantons, Interpharma, Intergenerika, scienceindustries, Swiss Association of Public Health Administration and Hospital Pharmacies, the umbrella organisation of Swiss public and private hospitals clinics and care institutions (H+), the association of Swiss-based pharmaceutical companies (vips).
- ⁹ Demand coverage is expressed either as the target volume determined by the federal government, or as the length of time for which average demand must be met, in accordance with federal government requirements.
- ¹⁰ The remaining two thirds are to be covered by reserves held with producers, importers, merchants etc. and by the residual nitrogen in the soil.
- ¹¹ Extra light heating oil is stored as a substitute for natural gas. It can be used for 4.5 months to supply gas consumers who have dual-fuel systems.
- ¹² Strategic stocks are sufficient for one recharge each of two of Switzerland's four nuclear power stations. Generally, one recharge is needed per year.
- ¹³ Gigon Michaud motion: For a rebuilding of compulsory stocks of ethanol in Switzerland: <https://www.parlament.ch/fr/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203448>; Burgherr motion 04.05.20: Review of compulsory stockpiling <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203197>; Romano interpellation Rebuilding ethanol stocks for the production of disinfectants and sanitisers. Favouring local actors <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203269>; Minder motion: Securing Switzerland's national economic supply in major crises <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203906>; Grin postulate: Compulsory stocks of ethanol – for a permanent solution <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20204020>
- ¹⁴ Distributed Decision Support System of the food security strategy for supply management (DDSS-ESSA), developed by the Department of Informatics at the University of Fribourg.

¹⁵ Burgherr motion: <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203906>;
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Minder motion: <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20203906>;
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Siebenthal interpellation: <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20204585>

¹⁶ The values given for foodstuffs are market prices.

¹⁷ The values given for oil products correspond to values for additions to and withdrawals from compulsory stocks, calculated according to a standardised method, excluding mineral oil tax.

¹⁸ The figure includes the volumes for compulsory stocks of extra light heating oil – as a substitute for natural gas.

¹⁹ The values given for therapeutic products are cost prices.

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