Effects of climate change abroad – risks and opportunities for Switzerland

Summary

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Ship owner Juarez Conceicao looks on as soya bran is loaded onto a grain ship in the port of Paranagua in Paranagua, Brazil on Wednesday, 24 March 2004. After an unprecedented five-day stoppage and strike, which helped to drive international soya prices up given rising global demand, the operators and forwarders returned to work.
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Auswirkungen des Klimawandels im Ausland – Risiken und Chancen für die Schweiz, im Auftrag des Bundesamt für Umwelt. Zürich: Infras, 2018.
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Table of content

Climate change abroad – risks and opportun

Climate change is a global phenomenon with effects on the environment, the economy and society. In an increasingly globalised wor social interrelationships. Dealing with the consequences of climate change therefore has not only a national dimension, but also an

Switzerland's engagement is important for increased climate resilience in countries with major climate risks

The engagement in countries with high climate risks must be maintained and their resilience strengthened. This is not only of advantage to these countries, but is also in Switzerland's interest. If vulnerable countries are supported in handling climate change, there is less risk to human safety locally. Therefore, climate change should be integrated adequately into the various policies as a cross-disciplinary topic.

Investments in climate protection help to minimise future risks

Climate protection is a core element of minimising risk. Investments in climate protection are essential in order to master the risks of climate change abroad.

Switzerland is heavily exposed to climate change abroad

Studies show that Switzerland is strongly affected by the impact of climate change in other countries due to its close trade links. However, there are also specific features which reduce international risks in Switzerland. For example, only a small number of foreign loans from Swiss banks appear to be at risk because of climate change. And climate-related migration mostly takes place in the region affected and rarely reaches distant countries like Switzerland.

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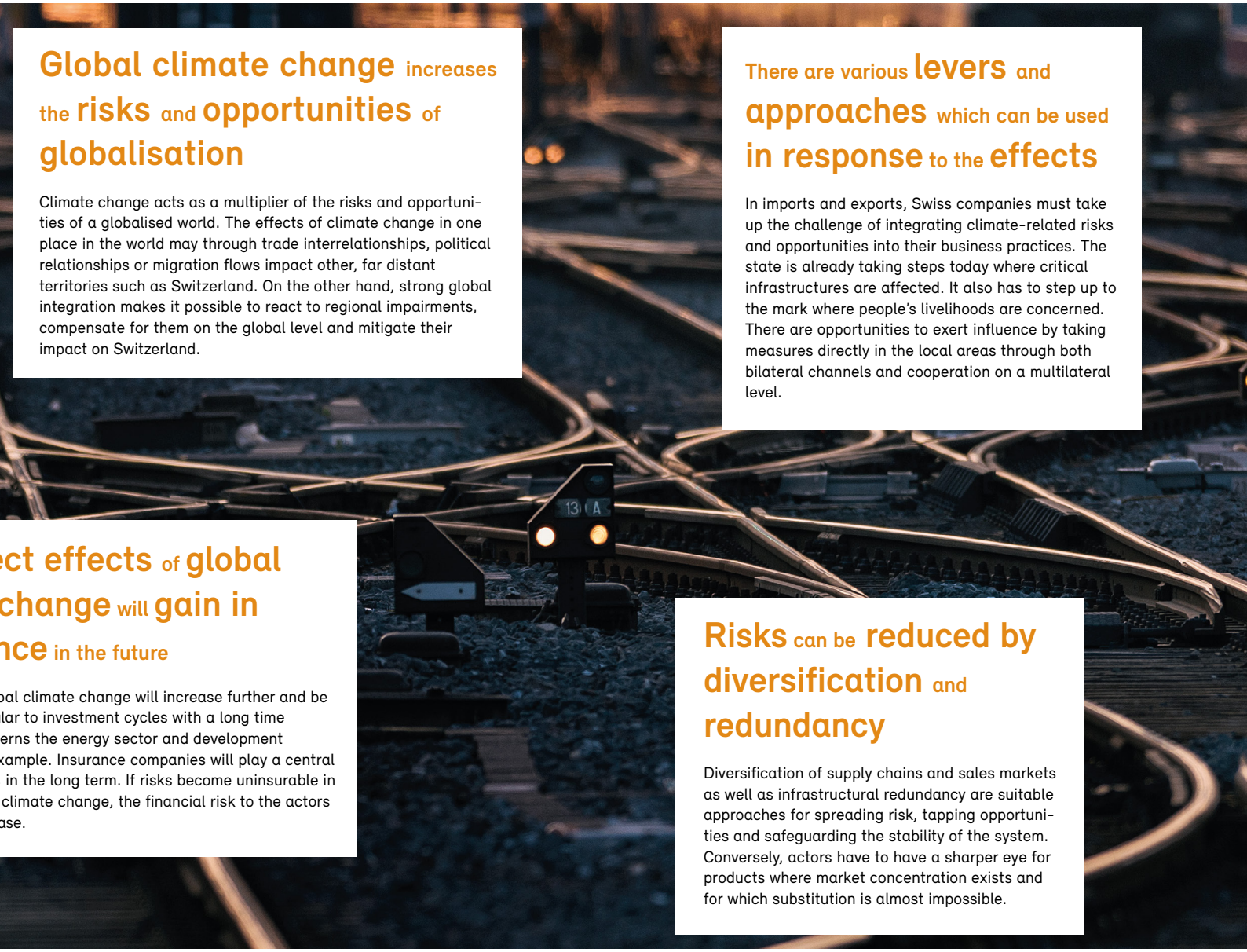
The effects of glob relevant in particu horizon. This conc cooperation, for ex role for all sectors future because of involved will increa

ities for Switzerland: key results

rld, the effects of climate change anywhere in the world can have an impact on other countries through economic, political and international one.



Global climate change increases the risks and opportunities of globalisation

Climate change acts as a multiplier of the risks and opportunities of a globalised world. The effects of climate change in one place in the world may through trade interrelationships, political relationships or migration flows impact other, far distant territories such as Switzerland. On the other hand, strong global integration makes it possible to react to regional impairments, compensate for them on the global level and mitigate their impact on Switzerland.

There are various levers and approaches which can be used in response to the effects

In imports and exports, Swiss companies must take up the challenge of integrating climate-related risks and opportunities into their business practices. The state is already taking steps today where critical infrastructures are affected. It also has to step up to the mark where people's livelihoods are concerned. There are opportunities to exert influence by taking measures directly in the local areas through both bilateral channels and cooperation on a multilateral level.

ect effects of global change will gain in nce in the future

bal climate change will increase further and be lar to investment cycles with a long time erns the energy sector and development xample. Insurance companies will play a central in the long term. If risks become uninsurable in climate change, the financial risk to the actors ase.

Risks can be reduced by diversification and redundancy

Diversification of supply chains and sales markets as well as infrastructural redundancy are suitable approaches for spreading risk, tapping opportunities and safeguarding the stability of the system. Conversely, actors have to have a sharper eye for products where market concentration exists and for which substitution is almost impossible.

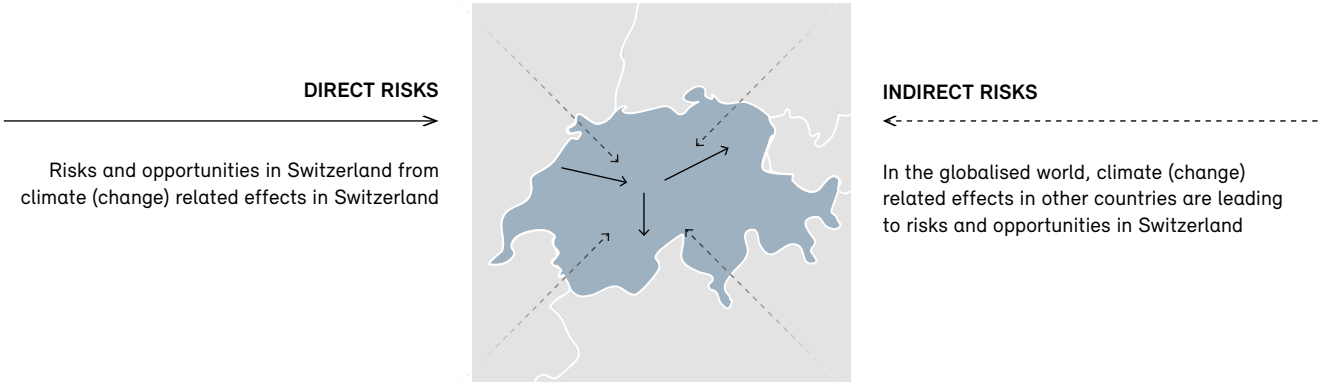
Climate change: risks in Switzerland and abroad

*To date, the Confederation has focused its strategy to adapt to climate change and its analyses of the risks and opportunities of climate change on the direct, immediate effects of climate change on Switzerland (*fig. *1, FOEN 2012, FOEN 2014, Köllner et al. 2017, INFRAS and Egli Engineering 2015). Switzerland, with well-developed international connections, is, however, also affected to a considerable extent by indirect changes in the climate which take effect via other countries as well as by their consequences. The consequences of climate-related events abroad may proliferate across different areas of influence and long chains of cause and effect. The link between the cause in a foreign country and the effects in Switzerland need not always be recognisable (fig. 1), but may still exist.*

The issues are increasingly gaining in significance internationally. For the European countries in particular, studies assume that the effects of climate change via international chains of cause and effect will have a more significant impact that the direct national effects (Climate Change Post 2017). In its assessment of climatic consequences and vulnerabilities in Europe, the European Environmental Agency devotes a chapter to the analysis of the vulnerabilities due to climate change in other countries (EEA 2017). Some European countries such as Germany, the UK and the Netherlands have already initiated studies on the international effects (e.g. Challinor et al. 2016, Vonk 2015, Peter et al. 2017&2019). In general, however, the subject has seen little attention to date and the knowledge is mostly of a qualitative nature. A study on behalf of the Federal Office for the Environment from the year 2007 already estimated that the international effects of climate change on the Swiss economy could be equal to or even greater than the direct effects of climate change (INFRAS et al. 2007).

Fig. 1: Direct and indirect risks

Switzerland is not only affected by direct risks of climate change, but also by indirect risks.



Impact of climate change in other countries

Switzerland has well-developed international connections. It is connected to a very wide variety of world nations and their players, whether through trade relations, direct investments, tourism, foreign policy, migration or development cooperation. As a result of this integration, Switzerland is also indirectly affected by developments and events abroad, such as climate-related changes.

Swiss integration through trade relations

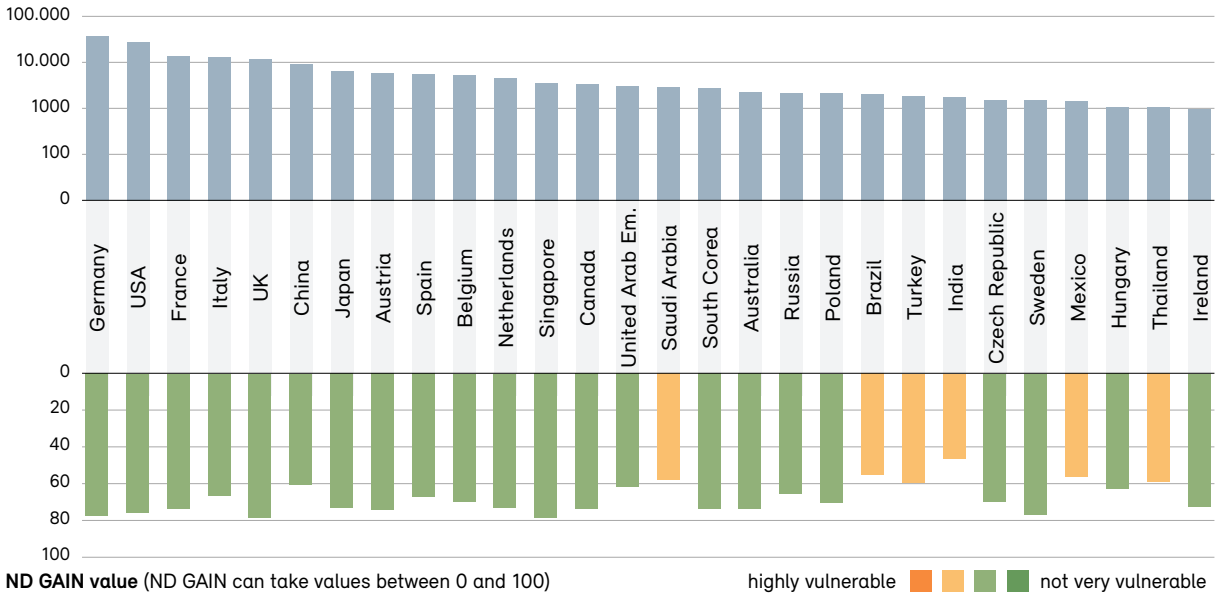
Switzerland is part of the pronounced division of labour across the globe, a country with vital international trade relations and deeply interconnected industrial manufacturing processes. In addition, great importance is attached to imports and exports (FCA 2017)

Switzerland's most important import and export countries are mainly in Europe, North America and Asia. Other countries are particularly relevant to some imports: Indonesia (textiles, clothing, footwear); Malaysia (machinery, equipment, electronics); Columbia, Ghana, Costa Rica, Peru, Ecuador (food), Nigeria and Libya (fossil fuels).

The most important import and export countries for Switzerland show widely varying vulnerabilities to climate change. The susceptibility of countries to the effects of climate change is shown using the ND-GAIN Index (see fig. 2 and 3). Countries with low (red) ND-GAIN values are more vulnerable, countries with high (green) values are less vulnerable. In this way, the charts enable a statement to be made about the combination of relevance and vulnerability of Switzerland's individual trade partners.

Fig. 2: Relevance and vulnerability of key export countries year 2015

Export volume in CHF million (log scale)



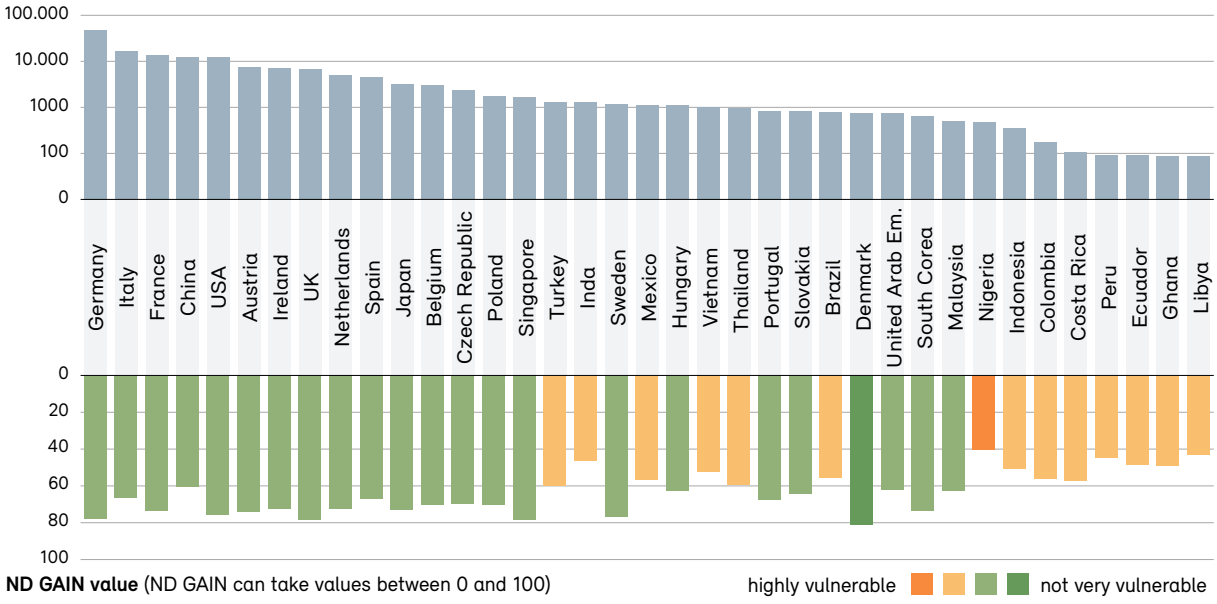
When this index is compared to the trade volume, it appears that countries with higher import or export volumes tend to be less vulnerable to climate change. However, it is likewise evident that for both the import and the export side there are countries with low ND-GAIN values among the 30 countries with the biggest trade volumes. On the import side, India and countries of particular relevance to certain import goods, i.e. Nigeria, Libya, Peru, Ecuador and Ghana, are vulnerable countries with an ND-GAIN value of less than 50. On the export side, India is also among the 30 countries with the highest trade volume.

Swiss integration through foreign policy

Switzerland maintains close foreign policy contacts with countries that are vulnerable to global climate change. There are several vulnerable countries in the Mediterranean region, particularly in North Africa. Of the Central Asian countries, the main ones are Turkmenistan and Uzbekistan, and finally there are also vulnerable countries among the G20 states, particularly India.

Fig. 3: Relevance and vulnerability of key import countries year 2015

Import volume in CHF million (log scale)

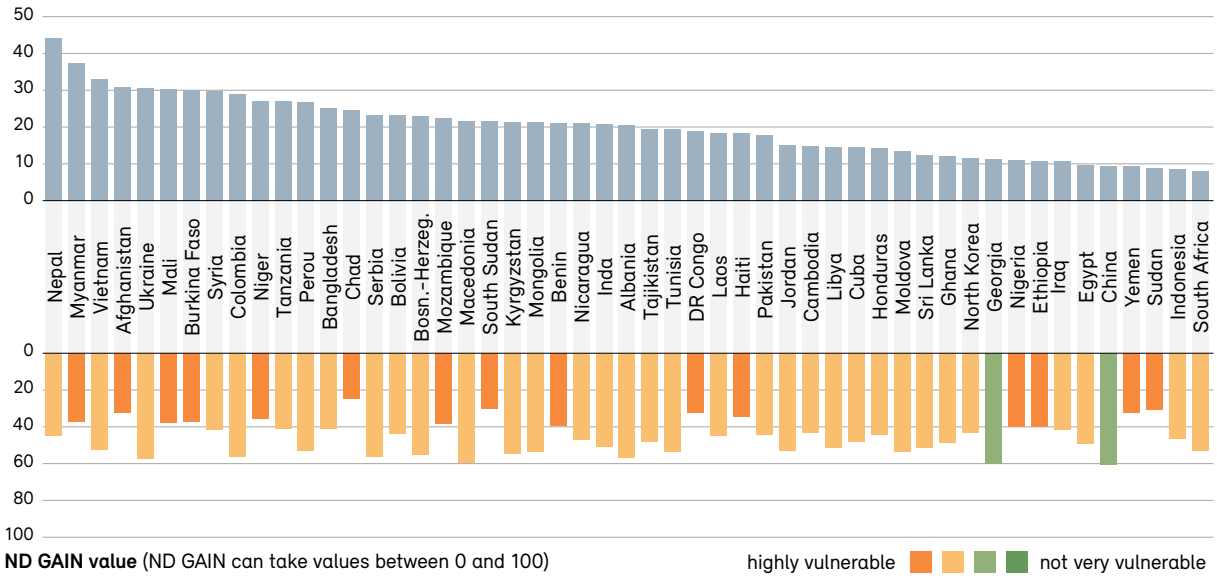


Swiss integration through development cooperation

Switzerland engages in development cooperation in a variety of countries. Long-term cooperation essentially exists with these countries in order to increase effectiveness and efficiency in combating poverty and to promote sustainable development. A clear majority of countries with which Switzerland conducts bilateral development cooperation are vulnerable (fig. 4). This result is hardly surprising, because the focus is on countries that require support, including in relation to measures to adapt to climate change.

Fig. 4: Vulnerability of countries with bilateral development cooperation and Swiss engagement year 2016

Swiss official development assistance (ODA) in CHF million



Exposure to climate change in other countries

Climate change in other countries has an effect on Switzerland by way of a number of channels and areas of influence. It affects both economic fields such as the import and export of goods and services (economic output, food supply, energy supply, financial services) and socio-political relations which are manifested for example in security, migration and development cooperation. In the following, the central areas of influence and relationships between climate change and the individual areas are explained and important cause and effect chains with an impact on Switzerland are identified.

Economic output: Switzerland has well-developed international connections through trade. Consequently, the impact of climate change abroad may also affect Switzerland through the import and export of goods and services. As a result of climate change, there could be changes in production conditions and losses of production in the procurement country, in contrast, economic development could be adversely affected and the demand structure could change in the sales country. The exposure of the Swiss economy to climate change abroad differs depending on the company, supply chains and the substitutability of imported goods. Particular risks occur with companies which have a high share of exports in vulnerable countries (fig. 2) or are highly dependent on goods from climate-sensitive regions (fig. 3). On the other hand, there are opportunities for exporters of products and know-how concerning adapting to climate change (see also fig. 5).

Food supply: Switzerland's level of self-sufficiency has been between 58% and 64% (OFAG 2016) in past years (1995-2014). If account is also taken of the fact that part of domestic production is based on imported feedstuffs, the level of self-sufficiency in the same period drops to 50% to 59% (OFAG 2016). Because of the dependency on imports, the impact of climate change abroad may also affect Switzerland. The majority of Switzerland's product imports come from the EU, whose countries exhibit low vulnerability to climate change. However, more vulnerable countries such as Ghana and India are among the 14 countries from which Switzerland imports most agricultural products. In particular, selected upstream inputs of importance to the Swiss food industry such as cocoa beans and coffee beans originate from areas vulnerable to climate change (see fig. 3 and 5). High market concentrations in individual countries, such as in soya from Brazil (fig. 3), also heighten climate-related risks.

Energy supply: Switzerland itself has very few energy resources and therefore depends on imports to cover around 75% of its energy requirements. Energy sources such as crude oil, natural gas, coal and coal products, nuclear fuel assemblies and, in the winter half year, electricity (Federal Statistical Office 2017) are imported. Some of these come from countries vulnerable to climate change (e.g. crude oil, fig. 3). That is, climate change can have a relevant impact in foreign countries on mines, refineries and transport routes for fossil fuels, and also on power networks and electricity production from renewable energy sources. Since the Swiss power grid is closely linked to those of other European countries (fig. 5) and increasing investments are being made in renewable energy sources in European countries, there could be adverse effects on fossil fuels and the electricity supply.

Financial services: Switzerland as a financial centre is a world leader in the cross-border management of private assets. It has a global market share of around 25%, and according to forecasts Switzerland is likely to remain the leading centre up to 2020 (SIF 2017b). Of the assets managed in Switzerland, almost 50% come from abroad (Swiss Bankers Association 2017). Switzerland is also home to one of the ten largest insurance markets in Europe. If the consequences of climate change affect the financial sector, this is highly relevant to the Swiss financial centre. Wealthy bank clients (from abroad) could suffer damage, because the climate-related risks in the asset management business have so far been borne mainly by the clients. However, a threat to Swiss investments abroad could also arise, because climate change is already highly relevant abroad, particularly in the case of long-term investments such as infrastructure and in the insurance business. Risks could increase for Swiss insurance companies, since they also operate in countries which are frequently hit by extreme events (fig. 5).

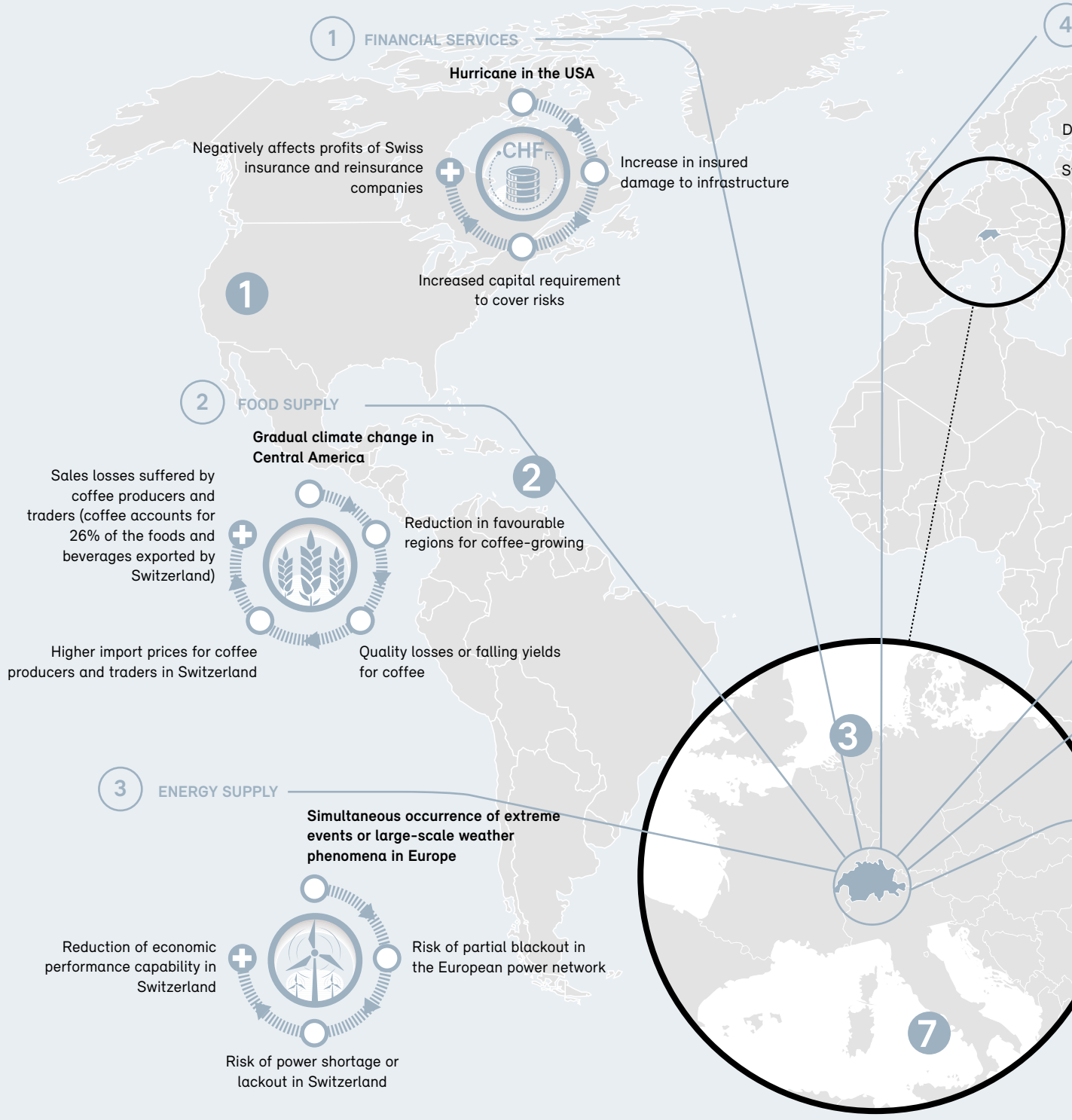
Security: Climate change as a multiplier can increase risks to human safety and of violent conflicts abroad. Vulnerable countries with fragile structures, in which Switzerland is engaged for example because of business activities, political interests or in development cooperation (e.g. Horn of Africa, fig. 4 and 5). Switzerland's current security policy report states that the fragility of states has increased in recent years as a result of climate change (Federal Council 2016a). The report identifies disasters and emergency situations as one of six clusters of threats and hazards. This cluster also includes the effects of climate change (Federal Council 2016a).

Migration: Climate change is one of many factors that influence migration. It intensifies social, economic and political problems and, in combination with other factors, can only contribute to people's decision to migrate. Switzerland is not a primary destination for 'climate-influenced' migration, since as a rule such migration takes place over shorter distances (for example from the country to the city, to neighbouring countries) and is often of a temporary nature. For those fleeing from vulnerable countries and people faced with poor economic prospects, however, Switzerland does represent a possible destination (fig. 5). Because of economic inequalities and political conflicts, the existing pressure to migrate to Europe will also increase.

Development cooperation: Mitigating climate changes and adapting to climate change are two priorities in Switzerland's development cooperation. The main countries for development cooperation are primarily vulnerable ones (fig. 4). In addition, the focus is often on people in rural areas who are highly dependent on natural resources (fig. 5). Climate change has a major impact on the livelihoods of the target groups of development cooperation in many places and can pose a threat to the development progress already achieved.

Effects of climate change abroad – example

Climate change in other countries has an effect on Switzerland via a number of areas of influence. On the basis of examples, in influence.



es of risks and opportunities for Switzerland

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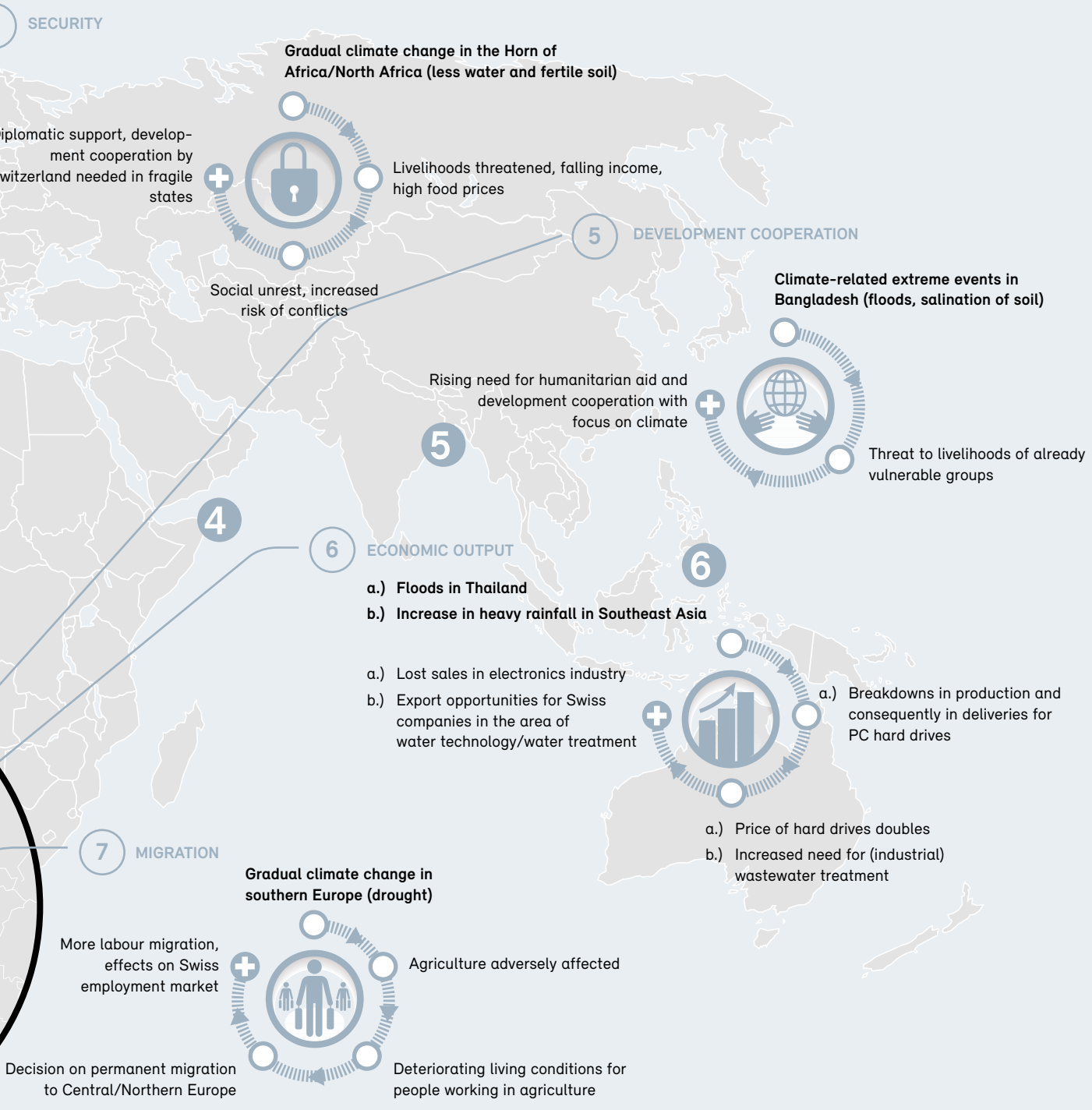

Handling risks and opportunities of climate change abroad

Depending on the area of influence, Switzerland has different options for dealing with the risks and opportunities caused by climate change abroad. Levers and priorities through which Switzerland can influence the risks and opportunities are indicated below for the areas of influence analysed.

Economic output
Private industry in Switzerland has levers to deal with the indirect risks, including through diversification of supply chains and sales markets or cooperation with suppliers to strengthen resilience. In addition, climate risks can and must be integrated even more systematically into management and investment decisions.

Food supply
Private industry has the possibility of building climate risks into its procurement processes. Some upstream inputs can be diversified: for seed, fertilisers and pesticides with a high concentration on individual countries, on the other hand, Switzerland has less of an opportunity to exert influence.

Energy supply
There are compulsory crude oil reserves for fossil fuels. Several natural gas pipelines and connections to European natural gas storage facilities spread the risk. The high cross-border capacity in electricity can cushion climate-related interruptions. Climate change should be taken more into consideration in the future for investments in foreign renewable energy sources.

Financial services
Climate risks are already taken into account to some extent in investment analyses in Switzerland. However, this can be expanded further. For Swiss insurance companies, considering the impact of climate change is part of the core business.

Security
Switzerland can reduce the risk to human safety in relevant countries through development cooperation, humanitarian aid and diplomacy. Swiss development cooperation is focused on fragile states.

Migration

Switzerland's opportunities lie in supporting the resilience of people in their countries of origin. In addition, support for countries of origin and transit and destination countries through development cooperation and humanitarian aid is crucial. Switzerland's labour market policy will play a key role in the case of labour migration (from southern Europe among other locations) due to the intensifying factor of climate change.

Development cooperation

Swiss development cooperation is already deeply engaged in climate protection and climate adaptation projects and has integrated climate change as a cross-disciplinary topic.

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