

An aerial photograph of a city, likely Zurich, showing a river with a dam, various buildings, and a large domed structure. A blue semi-transparent box is overlaid on the left side of the image, containing text.

# Information event on the security screening of applications

**Webinar**  
06 November 2024

## Overview of the Presentation:

1. History – The reason for Export Control
2. The legal Basics of Export Control
3. What is checked for Export Control?
4. Why Export Control at ETH Zürich?
5. Questions to Security Screening



# 1<sup>st</sup> Part of the Presentation:

## History – The reason for Export Control



# Historical events that led to Export Controls (1/2)

- **World War I:**

The world witnessed the use of **toxic chemicals in warfare** to an unprecedented extent during World War I, with the first large-scale attack using chemical weapons taking place at Ieper, Belgium, on 22 April **1915**. By the war's end, some 124,200 tonnes of chlorine, mustard and other chemical agents had been released, and more than 90,000 soldiers had suffered painful deaths due to exposure to them. Close to a million more people left the battlefields blind, disfigured or with debilitating injuries.

*Source OPCW Website, History*

- **World War II (1939 – 1945)** – use of **chemical weapons** and dropping of two atomic bombs (06.08.1945) in Japan by the United States
- **Iraq:** the construction of a toxic gas factory in Samarra/Iraq with the support of western suppliers (1982/1983)
- **Libya:** the construction of a chemical weapons factory south of the capital of Libya (1989)
- **Kuwait/Iraq:** the occupation of Kuwait by Iraq under Saddam Hussein (1990)
- **Syria:** Use of chemical weapons in civil war (2012)



# The Basis of Export Control (2/2)

## Treaties

(1997) Chemical Weapons Convention, *193 Member States*

(1975) Biological Weapons Convention, *191 Member States*

(1970) Treaty on the Non-Proliferation of Nuclear Weapons, *178 Member States*

**Switzerland signed the three treaties and all four regimes, on which national export control laws are based.**

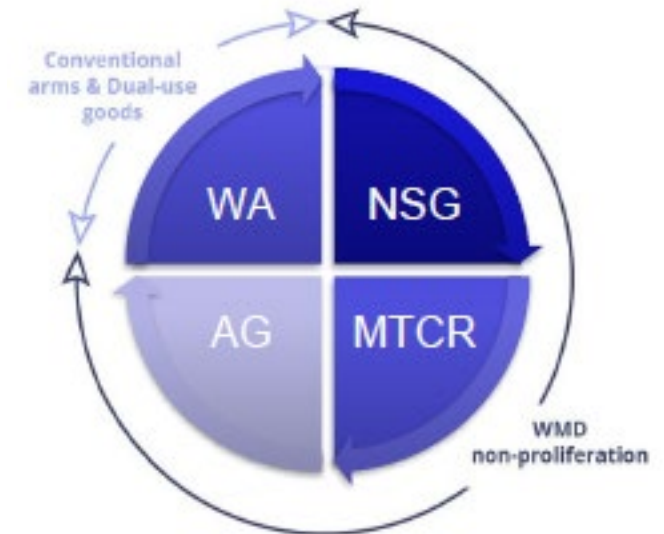
## Four international Export Control Regimes:

(1985) Australia Group (AG)

(1996) Wassenaar Arrangement (WA)

(1987) Missile Technology Control Regime (MTCR)

(1974) Nuclear Suppliers Group (NSG)



## 2<sup>nd</sup> Part of the Presentation:

# The legal Basics of Export Control







# The purpose of Export Control? (1/3)

- ⇒ Preventing the spread of weapons of mass destruction ('proliferation') and conventional weapons
- ⇒ Safeguarding national security interests
- ⇒ Ensuring the security of the countries and their citizens
- ⇒ Securing the peaceful coexistence of nations
- ⇒ No intensification of conflicts in crisis areas
- ⇒ Adherence to human rights
- ⇒ Protection against terrorism
- ⇒ Enforcement of political and economic objectives



# National and International Export Control Regulations (2/3)

Countries	Dual-Use Items	Sanctions	Armaments	Applicable
	<ul style="list-style-type: none"> <li>- Goods Control Act (GCA)</li> <li>- Goods Control Ordinance (GCO)</li> <li>- Chemicals Control Ordinance</li> <li>- Safeguards regulation</li> <li>- VIM*</li> </ul>	Embargo Act (EmbA)  Switzerland is UN-Member since 2002  ⇒ Sanctions imposed by the UN Security Council are incorporated into Swiss law.	<ul style="list-style-type: none"> <li>- War Material Act</li> <li>- War Material Ordinance</li> </ul>	In Switzerland for all export transactions
	<b>Export Administration Regulation (EAR)</b>	<b>International Emergency Economic Power Act (IEEPA)</b>	<b>International Traffic in Arms Regulations (ITAR)</b>	<b>Worldwide</b> for US origin items
	Regulation (EU) No. 2021/821 of 20 May 2021	Art. 215 «EU restrictive measures»	Common Position 2008/944/CFSP of 8 December 2008	<b>Worldwide</b> for all EU citizens regarding EU embargo
	Export Control Law (latest update Oct 2024)  Anti-foreign Sanctions Law (AFSL)  Data Protection law	<ul style="list-style-type: none"> <li>- Unreliable Entity List</li> <li>- Blacklist</li> </ul>	National Security Laws	In China and <b>worldwide</b> for resale of export-controlled Chinese products

\*VIM = Ordinance on the export and brokering of goods for internet and cell phone surveillance





# Criminal Consequences of Non-Compliance (3/3)

Non-compliance of Swiss and U.S. export control regulations may result in penalties...

- against the **institution** and
- against the **responsible individual involved** in the export transaction.

The penalties are considerable and in serious cases it even can **lead to imprisonment for the individual**.

Here two examples:

**2004 Case in the USA**  :

**Imprisonment of professors for following violations:**

- 30 vials of a potentially deadly plaque bacteria (*Yersinia pestis*), classified with **ECCN 1C351** were exported to Tanzania without export license from the U.S. authority. **Penalty: 2 years in prison**, resignation from Texas Tech University, loss of export privileges for 10 years.

**2022 Case in Norway**  :

- A German-Iranian professor at a Norwegian technical university was charged with **violating sanctions on Iran** by inviting four guest researchers from Iran and giving them access to a laboratory. **The visiting researchers had access to knowledge that could be useful to Iran's nuclear program**. The professor was charged with violating the Iran sanctions, export control regulations and Norway's data breach legislation. **Penalty:** He was found guilty and was sentenced to **8 months of prison**.



## 3<sup>rd</sup> Part of the Presentation:

What is checked for export control?



# What is Export Control about? (1/4)

To control **items**,  
like products, software and technology,  
that cannot only be used for **civilian**  
but also for **military** purposes **and leave**  
**Switzerland**, i.e. are **exported**

⇒ **commonly known as “Dual-Use Items”**



# Topics with high Export Control Risk also in Research (2/4)

Applied research and the development in certain fields is high-risk and could potentially be misused for military purposes. These areas are usually in the subjects of **S**cience, **T**echnology, **E**ngineering and **M**athematics (**STEM**):

They comprise:

- Aerospace technology
- applied chemistry, biochemistry and chemical engineering
- applied physics
- Biotechnology
- Electrical and mechanical engineering
- Measurement technology and sensors
- Material engineering
- Nuclear technology
- Production and process engineering
- Telecommunication und information technology



# Exclusions from Export Control – where no export control applies (3/4)

- **Publications & Open-source Software**

«In the public domain» means **technology such as research results, reports, designs, source codes, etc.** that has been made available to the public and are already in the public domain without restrictions upon its further dissemination.

***But note:*** *Export controlled technology (>TRL 3) that is **intended (!)** to be published requires an export approval from SECO if it has **not yet been published** at the time of export (initial publication).*

- **The mere use of an equipment**

The **mere use or operation** of an export-controlled product or equipment is **not** subject to export control.

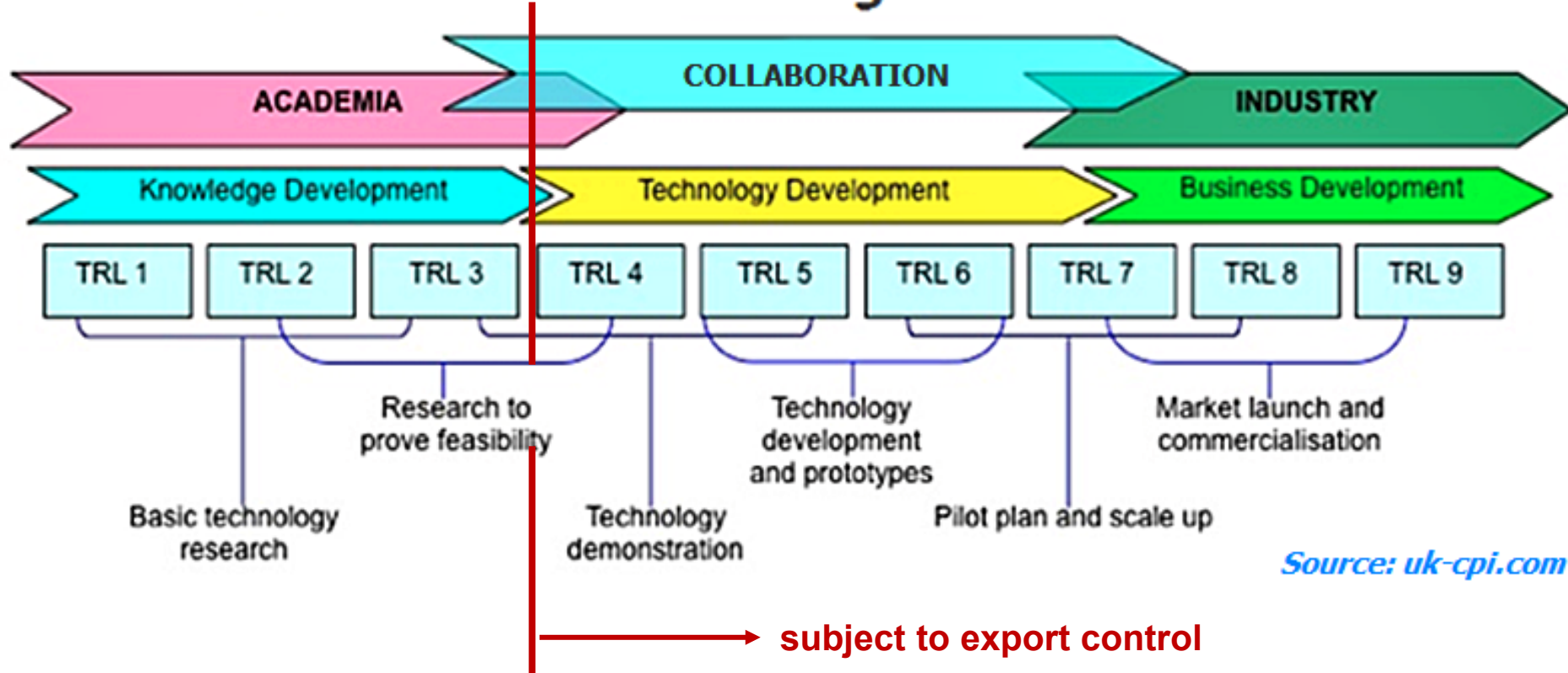
- **Basic scientific research (TRL 1-3) *Applicable for technology only!***

**basic scientific research** is **purely knowledge-oriented or knowledge-driven research** and is related to fundamental questions and problems of a discipline and is not primarily directed towards a specific practical aim or objective.



# Technology Readiness Level TRL (4/4)

## The Innovation Chain: Converting Science into Wealth



Source: uk-cpi.com



## 4<sup>th</sup> Part of the Presentation:

# Why Export Control at ETH Zürich?



# ETH Zürich – Why does it need an export control? (1/6)



China has its own dual-use regulation since 01.12.2020 latest update 10.2024



Economic risks in the form of cooperation or business prohibitions (sanction lists)



Cross-border transactions of goods, know-how and services

Reputational damage in public, vis-à-vis the authorities and the cooperation partners



Procurement of goods and services

Research collaborations and grants



Criminal consequences due to the persecution by authorities (with prison sentences)



Licensing process

Employment process

Financial risks e.g. due to non-compliance with contractual clauses, fines etc.



Invitation from visiting professors and academic guests





# The Federal Council decision in 2016 (2/6)

The legal requirement (Art. 5 GCO) for the granting of an export license is that the applicant must provide the Swiss authority SECO with **proof of reliable internal controls**.

⇒ **No ICP ⇒ No export license ⇒ Inability to act for the exchange of export-controlled findings from research with partners abroad.**

## **Important to know:**

**The decision to consider universities and research institutions is based on the common understanding of all members states of the export control regimes. This is no Swiss phenomenon – the same development can be observed in Europe and the USA.**

## **Challenge:**

Export control licences are required and have to be applied for at the Swiss authority when Dual-Use technology shall be exchange with partners abroad ⇒ applies to ETH Zürich.

# ETH Internal Compliance Program (ICP) - Available Online Supports since 2019 (3/6)

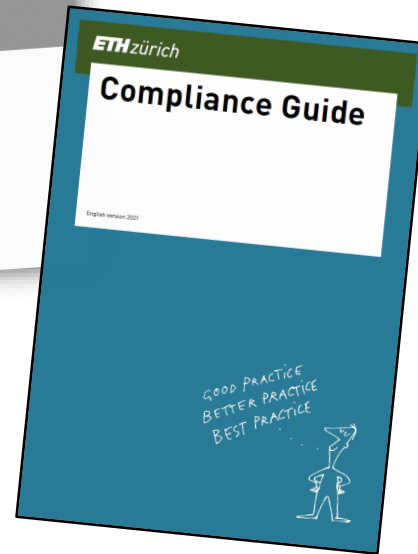


## E-Learning

## Trainings

**Seminars**  
Basic and advanced seminars for Export Control

## Flyer



## ETH own Sanctions Search Program

## ETH Export Control Webpage

**ETH Zurich is affected in several areas by export control:**

- Procurement of goods and software
- Sale, rental, brokerage or donation of equipment
- Research collaborations and contracts with third parties
- Employment process
- Invitation of academic guests
- Participation of students in research projects

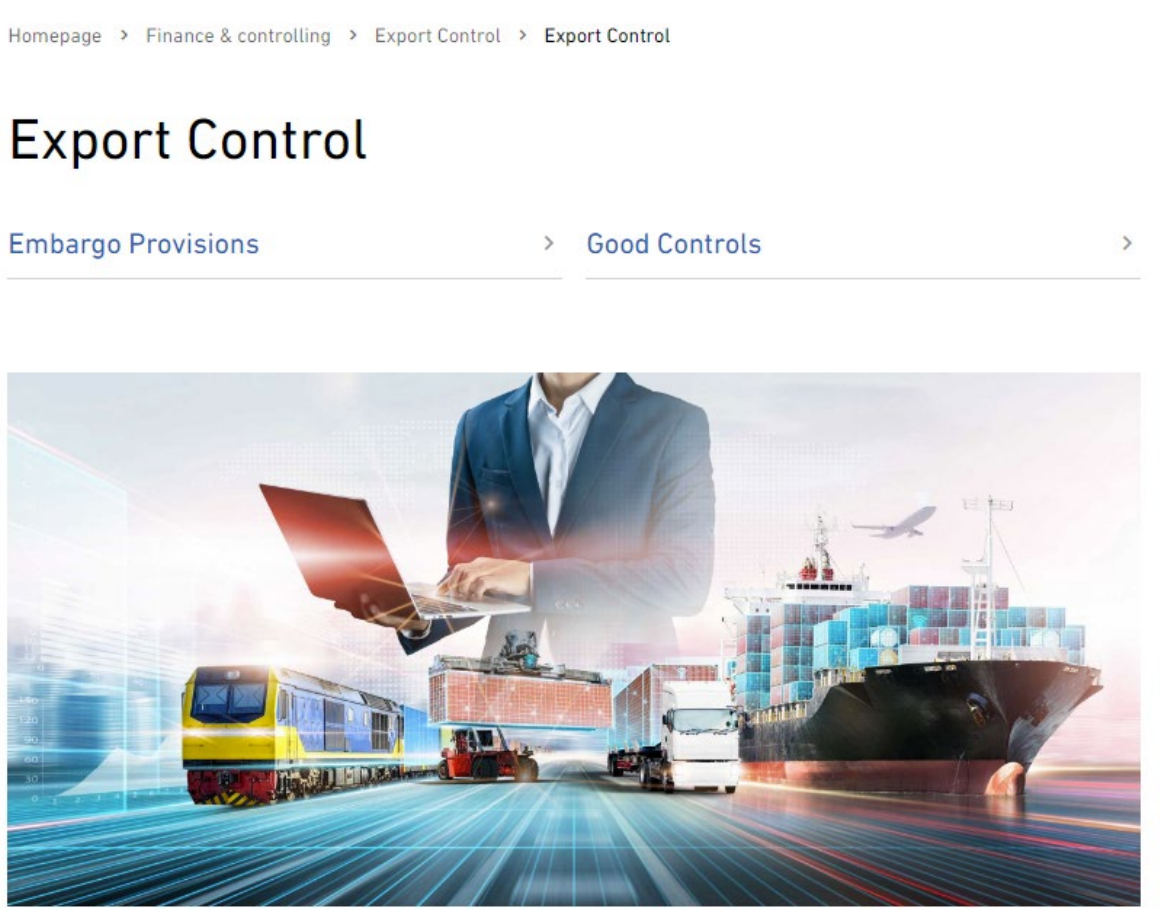
These areas need more attention if the exchange includes dual-use items and leave Switzerland. Dual-use means that items can be used not only for civilian but also for military purposes. This affects **goods, software and technologies**, summarized **items**, when they have contact to foreign countries, e.g. by

- The shipment of equipment abroad --> the export of goods
- Open source of new software for information security and for Internet and mobile phone monitoring (see also: [Licensing Software to Third Parties](#)), or making U.S. software available for research at the ETH
- The exchange of knowledge, the transfer of technologies whether in oral or written form

If the item for dispatch or exchange is mentioned in **goods lists** provided by the authorities, the export is subject to authorization by law.

The goods control laws with the embargo laws form the basis for the export control regulations. The links to Goods Control and Embargo Provisions deepen the topic and highlight what is important for compliance with export control regulations.

# ETH Export Control-Website (4/6)



## Overview of export control relevant transactions at ETH Zurich:

The following links will help you to better assess export control in your daily work.

+ Open all

Temporary Exports of Equipment Abroad	+
Sales/Donation/Rentals of Equipment with other Countries	+
Technology Transfer at Home and Abroad	+
Orders of Goods and Software	+
Contracts in the Field of Research	+
Use of US-Software	+
Travelling Abroad for Meetings, Conferences, etc. with your own Laptop	+
Invitation of Guests	+
Employment	+
Participation of Students in Research Projects	+

Person-related check

# Person-related export control assessment – Security Screening (5/6)



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

The Rector

## Fact Sheet

### Evaluation of applications to Master's degree programmes - security screening

Applications from countries that have been placed on the sanctions list by the United Council (UN) and adopted by UN member states, such as Switzerland, in their nation considered for the security screening. Also included are countries that are categorised as high-risk countries in terms of proliferation<sup>1</sup> or are sanctioned by the EU and the USA (see

In addition, the legally applicable provisions<sup>2</sup> regarding the export of goods, technologies and countries must be complied with to be admitted to a Master's degree programme at ETH Zürich, may result in criminal consequences. ETH is obliged to assess and minimise the risk of mis knowledge and skills.

Admitted students have access to the resources of their degree programme and to the course programmes. This applies to both existing knowledge and the available research infrastructure.

If sanctions are issued by foreign states, these must also be complied with by their nationals if they in Switzerland. Non-compliance with such sanctions can lead to serious disadvantages for the must therefore protect its employees from the risk and consequences of violations of foreign sanctions (duty of care).

For this reason, applications for Master's degree programmes from the above-mentioned countries security screening. In addition to the applicant's nationality, place of residence and education desired Master's programme is also taken into account, as applied research in certain areas could be misused for military purposes. The dual-use nature of the technologies covers the following areas:

#### Areas of dual-use technologies and emerging technologies<sup>3</sup>

- Additive manufacturing
- Applied Chemistry, Biochemistry and Chemical Engineering
- Applied physics
- Blockchain
- Biotechnologies
- Chemical technology
- Cyber surveillance
- Nuclear technologies
- Digital technologies
- Electrical and mechanical engineering
- Advanced and intelligent ma
- Engineering and production
- Artificial intelligence
- Aerospace technology
- Measurement technology and
- Nanotechnology
- Photonics and lighting techno
- Production and process engi
- Quantum technologies
- Telecommunications and inf

The security screening applies to those Master's degree programmes at ETH Zürich that cover teach or research key content and knowledge from applied research in the areas and technologi

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Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

The Rector

## Fact Sheet

### Evaluation of applications for a doctorate - security screening

Applications from countries that have been placed on the sanctions list by the United Nations Security Council (UN) and adopted by UN member states, such as Switzerland, in their nation considered for the security screening. This list also includes countries that are categorised as high-risk countries in terms of proliferation<sup>1</sup> or are sanctioned by the EU and the USA (see

In addition, the legally applicable provisions<sup>2</sup> regarding the export of goods, technologies and countries must be complied with to be admitted to a doctorate at ETH Zürich, as failure to comply with criminal consequences. ETH is obliged to assess and minimise the risk of misuse of acquired Admitted doctoral students have access to the resources of their research group, both in available at and the research infrastructure.

If sanctions are issued by foreign states, these must also be complied with by their nationals in Switzerland. Non-compliance with such sanctions can lead to serious disadvantages for must therefore protect its employees from the risk and consequences of violations of foreign sanctions (duty of care).

For this reason, applications for the doctorate from the above-mentioned countries are screening. In addition to the applicant's nationality, educational background and place of topic for the doctorate is also screened, as applied research at Technology Readiness L4 could potentially be misused for military purposes in certain areas. The dual use of the following areas:

#### Areas of dual-use technologies and emerging technologies<sup>3</sup>

- Additive manufacturing
- Applied Chemistry, Biochemistry and Chemical Engineering
- Applied physics
- Blockchain
- Biotechnologies
- Chemical technology
- Cyber surveillance
- Nuclear technologies
- Digital technologies
- Electrical and mechanical engineering
- Advanced and intelligence
- Engineering and manu
- Artificial intelligence
- Aerospace technology
- Measurement technolo
- Nanotechnology
- Photonics and lighting
- Production and process
- Quantum technologies
- Telecommunications a

The **financing** of the doctorate is also the subject of the security screening. Scholarships from countries as well as scholarship programmes that are based on discriminatory selection on scholarship holders that violate fundamental values of ETH Zürich, such as academic or the protection of intellectual property are also subject to review.

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<sup>1</sup> Proliferation: Prevention of unwanted further processing of armaments and weapons of mass destruction.  
<sup>2</sup> Such as goods control legislation (export control) or applicable embargo laws (sanctions).  
<sup>3</sup> Manual on Export Controls and Academia, BAFA Federal Office of Economic Affairs and Export Control, 4

## Security Screening

Applications for a doctorate at ETH Zürich are mainly submitted directly to the professors. They carry out the initial triage according to the assessment criteria listed below.

The basic prerequisites for admission to the doctorate are the formal and qualitative standards of ETH Zürich: a university (Master's) degree that qualifies for admission, fulfilment of the excellence criteria, secured funding for the duration of the doctorate and the diverse composition of the research group (in particular regarding origin).

In addition, the professor evaluates enquiries from interested students (case-by-case examination) according to the following criteria for safety-relevant aspects.

#### Evaluation criteria:

1) Previous education relevant to admission at an institution with a security risk (see <a href="#">sanction search</a> <sup>4</sup> or at a military-related organisation from countries that require a security screening (see above). The most important relevant institutions of origin are listed in the <a href="#">appendix</a> .	YES	NO
2) Country of origin (nationality, place of residence) against which an embargo law (sanctions) is in force or Export Control Acts are applicable.	YES	NO
3) Funding through a scholarship from a sanctioned state, through a critical scholarship or exchange programme, or from improper or questionable sources.	YES	NO
4) Subject area in applied research (from <a href="#">TRL 4</a> ) <sup>5</sup> is subject to increased official supervision (embargo), falls under applicable export control regulations for dual-use goods or the topic of the doctoral thesis falls into the category of critical research areas or uses critical technologies (see page 1).	YES	NO

If there are several YES, it is recommended rejecting the application.

If the professorship still wishes to accept a top application, she or he will compile the following documents for the in-depth security check:

- Complete CV
- Project description of the doctoral project
- Completed export control questionnaire<sup>6</sup>

The dossier is forwarded to the Export Control Office ([exportkontrolle@ethz.ch](mailto:exportkontrolle@ethz.ch)) for examination. If necessary, the Export Control Office will also request the form for consent to the forwarding of the applicant's personal data. The Export Control Office informs the professorship of the outcome of its evaluation, with a copy to the Doctoral Administration in the Academic Services.

If the application is cleared as unobjectionable after the security screening of the dossier, the professorship can invite the applicant to register with the **Doctoral Administration**.

The Doctoral Administration checks the application documents. If the assessment is positive, the admission process is initiated in accordance with the ETH Zürich's Doctoral Degree Ordinance.

If the professorship does not agree with a recommendation for rejection, it can apply to the Vice-Rector Doctorate for reconsideration.

**The Fact Sheet applies with immediate effect. Persons already authorised are not affected.**

#### Enclosures:

- List of countries of origin that require a security screening (embargo and risk countries)
- List of the most important universities of origin that require a security screening

<sup>4</sup> [www.sanctionsearch.ethz.ch/app/en](#)  
<sup>5</sup> TRL = Technology Readiness Level  
<sup>6</sup> Questionnaire for the employment of academic staff

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# Person-related export control assessment – Security Screening (6/6) Helpsheets for the assessment

**ETH**  
Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

Procurement & Export Services  
Export Control

Status October 2024

## List of countries of origin that require a security screening (embargo and risk countries)

A) Country list for the due diligence audit

Countries that have been placed on the sanctions list by the United Nations Security Council (UN) and adopted by UN member states, such as Switzerland, in their national legislation are considered for the security review. It also includes countries that are categorised by Switzerland as high-risk countries in terms of proliferation<sup>1</sup> or that are sanctioned by the EU and the USA.

Applications from the following countries will therefore be considered:

Afghanistan	North Korea
Belarus	Pakistan
China	Russia
Haiti	Zimbabwe
Iran	Somalia
Iraq	South Sudan
Cambodia	Sudan
Democratic Republic of the Congo	Syria
Cuba	Venezuela
Lebanon	Yemen
Libya	Central African Republic
Myanmar (Burma)	

B) ETH search programme for the independent sanctions screening of persons, companies and organisations, such as universities

ETH sanctions search programme Link: [Sanctions search \(ethz.ch\)](https://ethz.ch/sanctions-search)

<sup>1</sup> Proliferation: Prevention of unwanted further processing of armaments and weapons of mass destruction.

ETH Zurich Page 1/1

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## List of the most important universities of origin that require a security screening<sup>1</sup>

The above list is **not exhaustive**. Other research institutions may be considered, particularly in the case of employment and invitations of guests. Current information can be checked via the internal search program: [Sanctions Search \(ethz.ch\)](https://ethz.ch/sanctions-search).

<b>CHINA</b>
Beihang University (Beijing University of Aeronautics and Astronautics)
Beijing Institute of Technology
Beijing University of Post and Telecommunications
China Academy of Engineering Physics
China Academy of Space Technology
Harbin Engineering University
Harbin Institute of Technology
Luoyang Institute of Science and Technology
Nanjing University of Aeronautics and Astronautics
Nanjing University of Science and Technology
National University of Defence Technology
Northwestern Polytechnical University, Xi'an
Sichuan University
Sun Yat-Sen University
Tianjin University
University of Electronic Science and Technology of China
University of Science and Technology of China
<b>IRAN</b>
Al-Mustafa International University, Qom
Baqiyatallah University of Medical Sciences
Imam Hossein University, Tehran
Malek-Ashtar University of Technology (Tehran, Isfahan, Urmia)
Shahid Beheshti University
Sharif University of Technology
<b>NORTH KOREA</b>
Pyeongang University of Automation
<b>RUSSIA</b>
Almetyevsk State Oil Institute
Budker Institute of Nuclear Physics, Russian Academy of Sciences, Siberian Branch
Grozny State Oil Technical University named after Academician M. D. Millionshchikov
Gubkin Russian State University of Oil and Gas
Institute for High Energy Physics, Protvino
Institute for Theoretical and Experimental Physics (ITEP), State Scientific Centre of the Russian Federation
Ioffe Physical Technical Institute, Russian Academy of Sciences
Landau Institute for Theoretical Physics, Russian Academy of Sciences
Moscow Aviation Institute (National Research University)
Moscow Institute of Physics and Technology

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## 5<sup>th</sup> Part of the Presentation:

### Questions

