
EXPORT CONTROLS: LANCASTER UNIVERSITY GUIDANCE AND TOOL KIT¹

1. Introduction

Export controls are needed for a variety of reasons, including national security and international treaty obligations. In the UK, the control of strategic goods and technology is undertaken by the Export Control Joint Unit (ECJU) (formerly ECO), and compliance with export controls is a serious obligation. The British Government recognises that UK researchers in various fields are frequently in contact with scientists and researchers in a wide variety of other countries. Their aim is not to restrict the publication of scientific papers and research but to prevent the misuse of knowledge and materials. The Government provides helpful guidance on [export controls applying to academic research](#).

Both researchers and their universities must adhere to the legal requirements of export control legislation, although many activities conducted in universities are [exempt](#) from export controls. The University is committed to complying with UK Export Control law as set out in the University's export control statement ([available on the university website](#)). The responsibility for compliance with export control regulations ultimately rests with the Principal Investigator (PI) and guidance is available to help researchers fulfil their obligations under UK law. It is important to note that **failure to adhere to the requirements of the legislation is a criminal offence** and penalties may involve fines, legal costs and potentially a prison sentence (up to a maximum of 10 years).

PLEASE NOTE: Following the UK's exit from the European Union, from 1 January 2021 export control requirements have been expanded to include all exports of controlled dual-use items and technologies to the European Union, including **within the consortium of an EU-funded research grant**. For detail please see the University's guidance on exporting controlled items and technologies to the EU.

2. Guide for researchers

Export control can affect research activities and occasionally teaching. All University researchers need to know whether their work has the potential to be subject to export control legislation.

It is particularly relevant to researchers in the scientific and engineering disciplines but is the duty for all researchers to ensure that any University business they undertake is carried out in compliance with all applicable legal obligations.

¹ This Tool Kit is adapted from the Higher Education Guide And Toolkit on Export Controls V.1 2015 produced in partnership by Association of University Legal Practitioners and Project Alpha of King's College London.

In the academic context, export controls are most likely to apply in relation to scientific and technical research with potential military or Weapons of Mass Destruction (WMD) applications, particularly relating to but not limited to the following:

- the development of military and security-related goods, software or technology;
- nuclear science or engineering;
- missiles, aerospace and space technology;
- autonomous vehicles and stealth technology;
- some high strength materials and material production techniques;
- some chemicals with toxic properties;
- some viruses, pathogens and vaccines;
- some sensors and lasers;

Scope

Export control affects the physical, electronic or oral transmission **outside the UK** of the following:

1. **Direct military use:** Items as listed on the [UK Strategic Export Control Lists](#).
2. **Dual-use technology:** Technologies designed for civilian end uses but have the capability to be used for WMD or military purposes as listed on the Control Lists.
3. **WMD end use:** Items that are not specifically listed on the Control Lists, but are intended, either in their entirety or in part, for WMD purposes. WMD controls only apply if you have been informed of, are aware or suspect WMD end use.
4. **Sanctions/embargoes:** Items to be exported to a specific country, which is subject to an embargo or sanctions (note that sanctions may include items that are not included on the Control Lists). End use controls apply to sanctioned activities; i.e. an export cannot occur if the exporter knows that the items would be used in relation to a sanctioned activity.
5. **Military end-use:** Items that are not specifically listed on the Control Lists, but you are aware or are informed that the items are (or may be) intended for the incorporation into or for the development, production, use or maintenance of military equipment in a location subject to an [arms embargo](#), or where you are aware that items will be used as parts or components of military goods illegally obtained from the UK. (These circumstances are unlikely to apply to academic research).

Transfers of items or information **within the UK** are only subject to export control when it is known that the ultimate end use is related to WMDs (Weapons of Mass Destruction) outside the UK.

Controls may apply to material goods (e.g. equipment, materials), and also software, data, technology (e.g. blueprints, plans, diagrams, models, specifications, formulae, manuals or instructions) and know-how (through e.g. consultancy or, in some cases, teaching).

With the exception of nuclear technology, technology listed in the UK Consolidated Lists is only controlled if it is 'required' and 'necessary' for the development, production or use of the controlled items. The fact that it is for civilian use does not dispense with the need to seek a licence, though it would be relevant to whether a licence would be granted.

Export may involve a physical transfer of goods, or it may involve a transfer of software, technology or knowledge by any means e.g. via the internet; in physical or virtual meetings, telephone conversations, emails, presentations or conferences; or licensing of IP overseas. Controls also apply to trafficking or brokering goods *between* two overseas countries and for exports of items.

An activity may be classed as an 'export' for the purposes of export control if it involves:

- Transfer (physical or electronic) of goods, technology, software and / or know-how from the UK to a destination outside the UK (including transit through the UK).
- Arranging or being involved in a transfer between two overseas countries.
- Transfer within the UK when it is known that the ultimate end use is WMD-related outside the UK (this includes teaching taking place in the UK).

In brief, key concerns are:

1. Technologies, material, equipment or know-how that could be used in nuclear, chemical, or biological weapons or their means of delivery of WMD.
2. Items that have been specially designed or modified for military use and their components
3. Dual-use items (those that can be adapted for use for civil or military purposes) which meet certain specified technical standards, and some of their components.

ATAS, which controls access by students from abroad to courses, and from May 2021 researchers, which might be relevant to non-proliferation objectives, runs in parallel to export control legislation and compliance, does not satisfy export control obligations. Both need to be addressed: ATAS focuses on entry to the UK. Export control focuses on knowledge and material leaving the UK. Information and advice about ATAS can be found [here](#).

2. Decision Tree

A Decision Tree (Q 1 – Q4 below) and [flow diagrams](#) are provided to help you make an initial assessment about whether the rules apply and what needs to be done. These can be found on the university export control webpages. The first flow diagram is simply for awareness raising. The second is more detailed and the following decision tree questions provide further explanation. Use the questions and the second flow chart together and if you answer “**yes**” to any of the following questions, seek advice as you may need to apply for a licence.

Question 1) Was the technology imported from the US?

Universities should be aware that in some instances, controls from other territories may apply in addition to UK-administered controls. This is particularly common for **US technologies**, where re-export clauses often apply which prevent not only the goods, software or technology being re-exported to particular countries, but also can prevent it being transferred to or shared with foreign nationals *within* the UK.

If the technology is subject to [US Export Controls](#) this may affect exporting and also sharing with researchers *within* the University who are from overseas or have dual nationality. These rules need to be satisfied, as well as UK export control requirements. Do not forget to consider UK Export Controls also.

Is the technology to be used for any purpose related to **armaments, nuclear energy, weaponry or other military use**? This needs to be cleared with the supplier.

Are you going to **disclose the technology to non-UK nationals** either *inside* or *outside* of your Department whether in the UK or abroad?

Question 2) The Technology:

The primary question that must be answered is whether the technology appears on the Export Control list. The ECJU offers a range of services to help with the process of classification to determine whether the technology is listed.

There are three key points to establish here:

Firstly: Is the item or technology specifically designed for military or nuclear end uses? Secondly: Does the export include encryption software or hardware?

Finally: Do you need to check the UK controlled list of military or dual use items?

Are you unsure about whether the export control legislation applies to your work?

Is the technology in an area where teaching is ATAS controlled?

Are you collaborating with people or organisations based outside the UK, particularly in areas of conflict?

Do any red flags apply? (See below)

Might the output or application of your research assist in the development of weapons, armour or defence?

Are you collaborating with an organisation which operates in any military related areas (e.g. a defence contractor)?

Does the funder support any military related research (e.g. a defence ministry)?

Is it on Annex 4 of the Controlled Lists?

Question 3) End use controls: Who are you working with?

The end use controls look at who the end user is and what the end use is. The following list of questions may help you establish an end use or end user issue that you need to look into further. Even if the item, technology or software is not listed in the UK Consolidated Lists, a licence could also be required if the exporter knows, has been informed or suspects there is a WMD end use.

Have you been made aware that the item, information or software to be shared, shipped, hand carried, transmitted or transferred may support the design, development, production, stockpiling or use of a nuclear explosive device, chemical or biological weapons, or missiles?

Do you otherwise know or have any reason to suspect that such end use is envisaged?

Does the end-user country definitely, probably or possibly have a WMD or delivery system programme?

Are the items potentially of high, medium or low utility in relation to any of the activities listed in the WMD End-Use Control?

Are the items potentially of high, medium or low utility in relation to any WMD programme in the end-user country?

Consider if there are reasons to suspect use in connection with the development, production, handling, operation, maintenance, storage, detection, identification or dissemination of chemical, biological or nuclear weapons or other nuclear explosive devices, or the development, production, maintenance or storage of missiles capable of delivering such weapons

Are the items relevant to identified procurement requirements of such a WMD programme, either in the destination country or, where the destination country is known or suspected of being involved in passing on WMD-related items to a third country, in any of the suspected end-use countries?

Is the end user, importer, or any third parties to the transaction known to be of concern?

Is the identity and circumstances of the end user sufficiently known? Lack of information or any doubts about the end user may indicate the need to apply for a licence. If there was insufficient information a licence might be refused.

Are there diversionary concerns in relation to any of the parties?

Is the stated end-use credible - bearing in mind that a credible end-use will not necessarily preclude a risk of actual use in connection with WMD?

Are these goods that could be used in the development of the WMD infrastructure? Are there WMD research and development programmes at universities you are collaborating with?

Are there unsafeguarded civil nuclear reactors - where a risk of diversion of fissile material exists?

Is this a civil space programme that may also be involved in ballistic missile development?

Question 4) Sanctions

Additional restrictions can apply when dealing with countries that are subject to sanction. These can include restrictions on the actions of individuals and entities, including their ability to travel or to use financial systems, and they can include additional restrictions on exports or trade activities, which often have the effect of broadening the UK Consolidated Lists to include items which would not normally be included in the UK Consolidated List.

Does the transfer include parties from any country that is subject to UN or EU sanctions, as listed on the [gov.uk website](https://www.gov.uk)? If so take advice from the ECJU.

3. Red Flags

There will be some areas of research and collaboration where researchers should always take advice. These are commonly known as the “Red Flags”. If the research involves any of the following things then the [UK Consolidated Lists](#) need to be checked.

Red Flags	
Viruses and pathogens or related research.	Materials production techniques.
Vaccine technology, which might be used to inoculate troops using chemical or biological weapons.	Carbon fibre with high tensile properties, high nickel alloys, high grade aluminium, vacuum systems, propellants etc.
Civil technology which could be used or adapted as a component for military purposes.	High grade radio-active material – could it be emitted into the atmosphere and contaminate the environment?
Technology which could support activities in facilities which house weapons technology or delivery programmes (including hardened underground facilities and hermetically sealed buildings).	Ancillaries and support equipment at some facilities, such as those which house uranium enrichment centrifuges or nuclear fuel reprocessing facilities, can also be of concern even if the technology is itself ubiquitous
Hydrophones or sonar equipment.	Electromagnetic absorption.
Chemicals with toxic properties can cause serious injury or death. Could your research be applied for this purpose?	Unmanned equipment (even if used by you only for atmospheric research).
Fissile materials or radioactive materials or equipment for their detection or handling.	Uranium enrichment for non-civil nuclear energy.

Materials characterisation equipment.	Autonomous vehicles.
Opto-electronics (lasers).	Ground penetrating radar.
Ocean bottom survey equipment.	Stealth technology.

Does the activity raise any WMD end use control concerns?

Red Flags – WMD End Use Concerns

Is the partner reluctant to offer information about the end-use of the items?

Has the partner asked that the goods be transferred to a forwarding address in the UK? Are unusual shipping, packaging or labelling arrangements requested?

Is the partner new to you and is your knowledge about them incomplete?

Is the partner located in an area under strict security control or in an area to which access is severely restricted, or which is unusual in view of the type of equipment being installed?

Are there unusual requirements for excessive confidentiality about final destinations, or customers, or specifications of items?

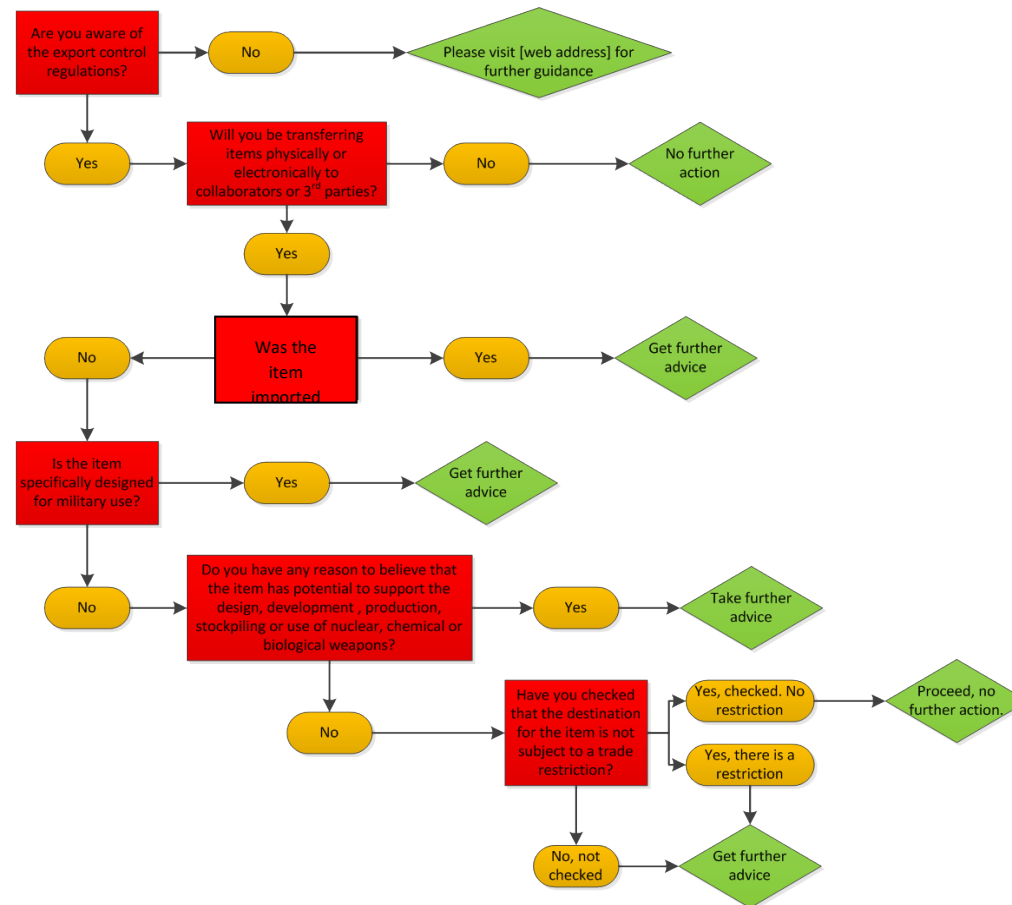
Is the partner or end user a military or government research body?

Is the project unusual in any way, e.g. the quantity or performance capabilities of the goods significantly exceed, without satisfactory explanation, the amount or performance normally required for the stated end use?

Appendix A: Export Control Flow Charts: Getting Started

A.1. Basic awareness – to help researchers understand if they need to know more about Export Control. (Note: This flowchart does not ask researchers whether their goods are controlled. It is intended for use as an awareness raising tool only.)

Export Control



Appendix B: Non-proliferation legislation - overview

The Structure of the Military and Dual Use Lists:

B1. Military List

This is a summary only – [consult the full list and guidance.](#)

ML	Description
1	Smooth Bore Weapons Small
2	Smooth Bore Weapons large
3	Ammunition and fuse setting devices
4	Bombs, torpedoes, rockets, missiles, other explosive devices
5	Fire control equipment and related alerting and warning equipment
6	Ground "vehicles" and components (military)
7	Chemical or biological toxic agents, toxic chemicals and mixtures containing such agents or chemicals, "riot control agents", radioactive materials, related equipment, components
8	"Energetic materials", and related substances
9	"Vessels" of war, special naval equipment, accessories, components and other surface "vessels"
10	"Aircraft", "lighter-than-air vehicles", unmanned aerial vehicles, aero-engines and "aircraft" equipment, related goods, and components
11	Electronic equipment, not specified elsewhere in this Schedule, as follows, and specially designed components therefor: <ul style="list-style-type: none"> a. Electronic equipment specially designed or modified for military use; b. Global Navigation Satellite Systems (GNSS) jamming equipment
12	High Velocity Kinetic Energy Weapon (KEW) systems and related equipment
13	Armoured or protective goods and constructions, as follows, and specially designed components therefor
14	Specialised equipment for military training or for simulating military scenarios, simulators specially designed for training in the "use" of any firearm or weapon specified in ML1 or ML2
15	Imaging or countermeasure equipment, as follows, specially designed for military use, and specially designed components and accessories
16	Forgings, castings and other unfinished "goods", specially designed for any of the "goods" specified in ML1 to ML4, ML6, ML9, ML10, ML12 or ML19
17	Miscellaneous goods, material and 'libraries', and specially designed components therefor
18	Production equipment and components as follows: <ul style="list-style-type: none"> a. Specially designed or modified production equipment for the "production" of goods

	specified in this Schedule, and specially designed components therefor; b. Specially designed environmental test facilities and specially designed equipment therefore, for the certification, qualification or testing of goods specified in this Schedule
19	Directed Energy Weapon (DEW) systems, related or countermeasure equipment and testmodels, as follows, and specially designed components
20	Cryogenic and "superconductive" equipment, and specially designed components andaccessories therefor
21	"Software" specifically designed or modified for the development production or use of other controlled technology
22	"Technology", other than "technology" specified in ML22.b., which is "required" for the "development", "production" or "use" of goods or "software" specified in this Schedule

B.2 Dual List

This is a summary only – [consult the full list and guidance](#).

The Dual Use List is split into nine categories, which are detailed below. Importantly, theDual Use List includes not only physical goods, but also software and technology.

Category	Title	Summary (Should not be taken as complete)
0	Nuclear Materials, Facilities & Equipment	Controls nuclear technologies which are specifically designed for a nuclear end use. <i>Note: licences are typically required for transfers <u>within</u> the EU</i>
1	Special Materials and Related Equipment	Controls high specification dual-use materials, such as alloys, composites, and similar; and chemical weapon precursors and toxins, <i>many of which require licences for transfers <u>within</u> the EU</i>
2	Materials Processing	Deals with a wide variety of advanced manufacturing equipment, including high-accuracy multi-axis machinetools
3	Electronics	Controls advanced electronic components with military, space, or nuclear applications
4	Computers	Controls high-performance and high-accuracycomputers
5	Telecommunications & Information Security	Controls communications and information security equipment, including some commercial grades of encryption
6	Sensors & Lasers	Controls a wide range of sensors with military application, including for use in space and a variety of lasers
7	Navigation & Avionics	Controls equipment that can be used for military navigation, including shock-proof gyros and accelerometers etc.

8	Marine	Controls underwater equipment
9	Aerospace & Propulsion	Controls space and aerospace technology

B3. Background

The proliferation of weapons of mass destruction (WMD) and missile systems for their delivery poses a threat to both regional and global stability. In keeping with international obligations set down in treaties such as the Nuclear Non-Proliferation Treaty (NPT), the British Government is committed to ensuring that UK science and technology are not exploited by WMD proliferators or terrorists.

Strategic Export Controls are one of the tools used by national authorities in most countries around the world as a barrier against proliferation-related trade. Export Controls prevent the transfer of ‘technology’ – tangible items and intangible information and expertise – to countries and programmes of concern. Another mechanism, which many countries have in place, is student vetting. In the UK, this takes the form of the Academic Technology Approval Scheme (ATAS) which concerns entry into programmes. This scheme applies to all students except EEA and Swiss nationals. However, while both of these tools are valuable, neither of these tools completely eliminates the need to be mindful of possible proliferation issues when running educational courses or embarking upon research.

The controls enacted by the UK are rarely used to prohibit an activity from taking place; however, by maintaining oversight of certain aspects of international trade and collaboration, the controls act to deter proliferators from seeking access to technologies in the first place. Nonetheless, both ATAS applications to study certain subjects submitted by applicants from outside the EEA and Switzerland and export licences applications to transfer technology to certain countries may be refused if a WMD connection is known (the researcher is informed or aware of or suspects this). Moreover, in line with international commitments, the UK prohibits the transfer of certain technologies to countries like Iran and North Korea, which at the time of writing were subject to UN sanctions.

B4. Export Controls

Responsibility for implementing and managing Export Controls within the UK falls under the remit of the Export Control Joint Unit (ECJU) within the Department for Business Energy and Industrial Strategy (BEIS). There are two types of export control with which individuals in the sciences and HEIs should become familiar:

The first relates to the export of strategic goods (items and technologies which are defined by the UK Consolidated Lists);

The second relates to end use controls, which can be invoked on any export or technology assistance given to a foreign party, even if the technology itself is not listed on the control lists.

Under certain circumstances, in both cases, an export licence from the ECJU may be required to carry out an activity; failure to obtain one could result in a criminal offence being committed.

B5. Common Misconceptions

Finally, this Guide should be understood and followed whilst bearing in mind these common misconceptions:

1. *“Export Controls and student vetting is new”*. It is not the case that Export Controls have only recently been put in place. For many years, Export Controls have guarded against illicit trade activities. However, the emergence of new terrorist threats has made it even more vital to ensure that issues of responsibility and compliance are widely known and understood.
2. *“Non-proliferation controls are designed to restrict, vet or censor scientific research.”* The purpose and objectives of Export Controls are not to inhibit legitimate collaborative research, which on the contrary, the government works to positively encourage. The purpose of Export Controls is simply to prevent misuse, often unwitting and preventable in nature, of technology in programmes of concern.
3. *“Export Controls and student vetting are unique to the UK research community.”* It is not the case that research communities in the UK are disadvantaged vis-à-vis their international counterparts. Academics and researchers working in other countries are also subject to similar controls and legislation formulated by their countries of origin and codified by international treaties and obligations.
4. *“Not all countries are required to, and many do not, have an export control system.”* This was the case until 2004, when resolution 1540 (UNSCR1540) was adopted by the United Nations Security Council. UNSCR1540 stipulates that all states should have effective domestic controls in place to prevent the proliferation of WMD and their delivery systems. These controls include those relating to exports and trans-shipment.
5. *“Most advanced economies do not insist on the actual implementation of these controls.”* Whilst the effective implementation of export control regimes can sometimes present challenges, such regimes are followed, in many cases very rigorously, by most countries housing major producers of controlled technology. In the UK implementation includes robust enforcement by customs and border officials. Other countries also take seriously the implementation of non-proliferation controls by the academic community²⁸.
6. *“The UK’s licensing criteria are stricter than other countries.”* This is a common fallacy. Whilst successive governments have maintained a policy not to issue an export licence under certain circumstances, the UK’s criteria have also been adopted by the EU as best practices. Therefore, like-minded states will not issue licences for the export of strategic goods in those circumstances.

²⁸ The United States, for example recently prosecuted a professor at Texas A&M for exporting technology to China in breach of US Export Controls. See www.acsss.info for more information on that case.

ADVICE TEMPLATE (when asked about the impact of Export Controls on an international collaboration):

1. Look at the Decision Tree and red flags in and the flow charts in A1 and A2. You might also find it useful to look at the case studies in section 6 of the full Guide (Higher Education Guide on Export Controls).
2. If it seems the work might fall within the list of controlled items, check the Consolidated Lists.
3. If the item, technology or knowledge is on the list (i.e. the research is in the area of controlled technologies), there are 3 questions:
 - Is it “required” and “necessary” for the development, production or use of the controlled items? Only that needs a licence. (The fact that the knowledge is intended for civilian use does not dispense with the need to seek a licence, although it would be relevant to whether a licence would be granted) See section 2.2(d) of the Guide.
 - Is the work already in the public domain? If so it is decontrolled – see section 3.2 of the Guide.
 - Is the work fundamental scientific research? If so it is decontrolled – see section 3.3 of the Guide.
4. If it is not on a list (or is decontrolled), then a licence is not required unless the researcher knows or suspects that the recipients/collaborators are engaged on a WMD programme, when no assistance of any kind can be given – see sections 2.2(e) and(f) of the Guide.
5. If the research is within the controls, then no knowledge can be exported out of the EU (or in some cases out of the UK) without a licence; that includes project reports.
 - For the meaning of ‘export’, see section 1.2 of the Guide. For the impact on teaching see section 2.2(g).

Note: The legislation is backed by criminal penalties (for which the University and/or the individual researcher would be liable), so the matter needs to be considered carefully, most especially by the researchers, who are the people who will know what the research entails or might entail.