Response ID ANON-15GR-G2JN-G

Submitted to **National Security and Investment: Mandatory Notification Sectors**
Submitted on **2021-01-06 21:25:50**

About you

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Are you happy for your response to be published?

Yes

Would you like to be contacted when the consultation response is published?

Yes

How did you hear about this consultation?

Where did you hear of this consultation?:
Email from BEIS

Other (please specify):

Questions applying to all sectors

1 Are the sector definitions sufficiently clear to enable investors and businesses to self-assess whether they must notify and receive approval for relevant transactions? If not, how can the definitions be improved?

Please answer here.:
The Institute of Materials, Minerals and Mining (IOM3) is a charitable organisation incorporated by Royal Charter and is the professional body for the materials cycle from extraction, through characterisation and manufacture to use and end of life. Our more than 15 000 individual members work in a variety of sectors including packaging, polymers, ferrous and non-ferrous metals and mining/raw materials extraction and processing, in a variety of roles from chief executive to student and from independent consultants to academics and practitioners.

IOM3 has drawn on the extensive technical and practical knowledge of its members to prepare this response.

Energy

Sector definitions are clear but pertain only to hydrocarbon-based energy. Definitions should include energy transition sources linked to the UK government's legislation related to reaching net-zero by 2050 such as: wind energy, solar energy, wave and tidal energy, nuclear energy (especially linked to dual use), geothermal energy and the hydrogen economy. Renewable micro-generation which can be community based should also be considered.

Page 55 1.a. relates to upstream oil and gas assets as far down as the onshore reception and processing terminals. IOM3 recommends that if "infrastructure" is intended to include wells, wellheads and flowlines that this is made clear. Consideration may also need to be made for third party transportation and processing. Further clarity around whether the proposed 3,000,000 tonnes/year applies just to production from the asset would be welcomed. For example, if the asset also provides third party transportation and processing services would there be another threshold?

Further clarification for what specifically is sensitive/important may be helpful. Three major subcategories could be considered:
• financial / equity interest
• control, for example the ability to turn production on or off, which is often associated with operatorship
• access to information and intellectual property. For example, well log data, seismic and asset materials and equipment.

Page 55 1.b. refers to gas importation and storage. Further clarification would be welcome as to whether the gas importation is from a pipeline only (for example, section e. refers to Liquefied Natural Gas and Gas Reception Terminals) and whether the scope is specifically import and storage, for example would a gas

pipeline from for example Norway be included (without the storage)?

Page 55 1.d. relates to energy suppliers with 250,000 or more customers. If this threshold applies solely to domestic customers, with commercial/ industrial customers the quantity of energy taken will be much higher. Another test of total energy supplied for example MWh could be used to accommodate this.

A potential revised definition could include:
• upstream oil and gas assets
• import of gas via either pipeline or LNG
• power generation
• onshore transmission and distribution of gas and electricity
• supply of gas and electricity
• gas and electricity interconnectors
• gas storage projects (which could be associated with / part of most of any of the above)
• other forms of energy storage

2 To what extent are technical and scientific terms correct and sufficiently clear and commonly understood for the purposes of determining relevant activities?

Please answer here:
Advanced Materials

General comments from IOM3 related to Advanced Materials

i. Following various discussions with Government officials, IOM3 understands the section within the consultation on Advanced Materials is intended to be seen only in the context of national security. However, this is not clear on the face of the consultation, especially since this is not the case for some other sectors in the consultation which are not limited to defence and security (e.g. energy). IOM3 understands the rationale for the approach but notes that this creates problems. For example, what about materials that are essential for energy infrastructure but not defence? IOM3 would therefore strongly suggest that the definition should be extended to include critical national infrastructure as is covered within other sectors.
ii. Use of the term/definition "Advanced". This is problematic, both because there are differing interpretations of the term, and because some important materials for defence and security may not be widely considered "advanced" (for example mild steels, certain polymers, etc). If the current scope is retained, an alternative definition could be "materials critical to strategic defence applications or national security" or, if a wider definition is accepted, "materials critical to strategic defence applications, national security and critical national infrastructure".
iii. If the narrower scope is retained, IOM3 believes that only those materials that directly or indirectly affect national security should be defined within the NSI bill to prevent perceived potential unnecessary administration burden on companies
iv. IOM3 recommends the resource flow, recycling and reuse of the materials should be covered explicitly. This could be done by adding a suitable reference around paragraph 1, page 16. This is because for some materials, recovery from waste, recycling, etc. could be an important source so protecting knowledge of how to do this effectively will be relevant.
v. IOM3 notes that wood-based materials are not included. However, these are commonly used as construction materials within applications related to national security and/or the infrastructure related to defence or national security so it is not clear why they are not covered. IOM3 recommends that this should be considered.
vi. IOM3 recommends including superconducting materials and not only those for sensors. They could be useful in for example, high power density electric machines or weapons such as rail guns.
vii. IOM3 recommends that adhesives should be covered explicitly. Currently, little or no mention is made of adhesives although other joining technologies such as diffusion and friction-based techniques are referenced (page 17, section b, i, 5-6). High performance adhesives – temperature capability or load carrying capability and the design of hybrid / bonded structures could be included.
viii. IOM3 recommends wider surface engineering applications (for example high temperature coatings) should be explicitly covered. These are widely used in aerospace/defence but do not feature to any extent within the sectors/sub-sectors covering Advanced Materials. Coatings only appear under Photonic/Opto-electronic materials, (page 23 sub-sector g, sections i 2-3 refers).
ix. IOM3 recommends that battery materials should to be covered explicitly due to their increasing strategic importance to the UK.
x. Engineering and technical polymers and ceramics, (sub-sector "c" detailed on page 19 of the consultation document) should be separated as distinct sub-sectors as these are very different classes of materials with differing properties and applications. IOM3 also recommends including advanced ceramics, especially for ultra-high temperature uses to distinguish from engineering ceramics.
xi. For the polymers definitions, IOM3 has the following suggestions:
a. "Engineering Polymers" is a large family of materials, so the term "stimuli-responsive polymers" or simply "responsive polymers" (which covers load, electromagnetic, chemical, bio, stimuli, including self-healing polymers) would be a better, more focused definition.
b. Resins and potentially filaments should be grouped under the advanced composites sub-sector as the individual resins again covers a wide range of materials and applications.
c. High performance polymer composite materials seem generally missing as a class. There is also some specific reference to 3d architectures of fibres for example d) iv on page 21, but it is specific to 3d printing not perhaps more relevant 3d weaving or through thickness reinforcement / toughening technologies.
d. Under sub-sector c, iii, 7 "Electroactive polymer systems (EAP)" IOM3 recommends including thermo-active polymers.
xii. IOM3 recommends including the use of graphene for energetic materials (e.g. propellants and explosives) on Page 24, (iii).
xiii. IOM3 recommends that Page 28, line 25 "Nanotechnology… is a type of advanced material" should be replaced with "is an approach to design and production of advanced materials"
xiv. Critical materials, sub-sector j
a. The BGS risk list was produced in 2015 and hence is 5 years old and will be out of date, also:
i. The list is based on an assessment of minerals scarcity not the relative importance to the UK economy and/or national security
ii. It identifies where those reserves are located, and hence whether politically stable in the context of supply to the UK economy
iii. No assessment of future production/needs

iv. Did not include an assessment of the ability of the UK to produce these minerals, i.e. identify, extract and process reserves

b. The EU based list was produced/updated in 2020 and hence is much more current but:

i. The UK will have differing requirements for critical materials to that of the EU.

ii. As with the BGS list the EU list does not take account of future likely needs/trends in usage based on technological developments

xv. IOM3 recommends that data capture and curation appropriate to the production, processing and use/re-use of materials should be explicitly captured, potentially within the sub-sector functions, covered under paragraphs 2a through 2j, under the heading of "Software and Data".

xvi. IOM3 notes that it will be vital to keep these lists of sectors and definitions up to date as the technology and applications change (new materials and processes are being developed all the time). IOM3 recommends that industrial and academic expertise continues to be involved in this updating process and is happy to help define processes to facilitate this updating, including definitions as to what is state of the art for example.

Energy

The technical and scientific terms within the sector definitions are correct and sufficiently clear.

3 To what extent do these definitions include the areas of the economy where foreign investment has the greatest potential to cause national security risks?

Please answer here.:
Energy

Non-hydrocarbon- based energy sources as described in answer 1 should be included as they could have national security risks just as hydrocarbon-based energy sources and related transportation, and infrastructure do. This is less so with renewable energy which is not so dependent on a limited number of large investors. However, continuity of supply chains needs to be considered where some products such as crystalline silicon PV solar modules are mostly produced in China. Rare Earth elements are mostly mined in China also and these elements, such as Neodymium are needed for magnets used in wind turbines and in electric motors for electric vehicles.

4 How else, aside from mandatory notification under the NSI regime, can the Government ensure relevant transactions receive appropriate screening while minimising the impact on business?

Please answer here.:

5 Do these definitions strike the right balance between safeguarding national security and minimising the burdens placed on businesses and investors? Is it possible to narrow the scope of the definitions without compromising national security?

Please answer here.:

Questions applying to specific sectors

6 - Advanced Robotics Do you agree that the ability to use artificial intelligence for complex tasks (as defined) is the principal driver of national security capabilities (and threats) in advanced robotics? If not, what other capabilities would you propose be brought into scope and why?

Please answer here.:

7 - Advanced Robotics Are there opportunities to refine this definition to avoid capturing low risk advanced robotics, such as those that are less sophisticated or found in domestic applications?

Please answer here.:

8 - Artificial Intelligence We have used a two-stage approach to define AI, referring to both cognitive functions and complex tasks. Does this approach work? Is this definition accurate in encompassing the breadth of AI technologies and summarising the complex tasks AI can be used to perform?

Please answer here.:

9 - Artificial Intelligence This definition is intended to include companies that develop AI technologies but do not purchase AI products. Is that accurately reflected?

Please answer here.:

10 - Communications Is the definition sufficient to capture all our interests to enable us to respond to potential and exceptional national security concerns in particular equipment and services suppliers and digital infrastructure?

Please answer here.:

11 - Communications Is the definition clear that the Communications sector definition includes entities that provide public and private electronics communications networks, and their associated facilities?

Please answer here.:

12 - Communications How can the definition be narrowed to exclude private communications networks that do not pose a risk to national security?

Please answer here.:

13 - Computing Hardware The definition covers computer processing units: we interpret this to cover central processing units, field programmable gate array devices, a microcontroller for general purpose application and a System on Chip. Is this clear?

Please answer here.:

14 - Computing Hardware We consider that integrated circuits with the principal purpose of providing memory should be covered here. Is it clear what products this would cover?

Please answer here.:

15 - Critical Suppliers to Government Is the definition provided sufficient to capture suppliers of critical goods and services, both nationally and locally procured, that are necessary to the delivery of core Government functions?

Please answer here.:

16 - Critical Suppliers to Government Are there alternative ways to ensure notification of relevant transactions, for example through contracts?

Please answer here.:

17 - Critical Suppliers to the Emergency Services Is the broad definition provided sufficient to capture all the goods and services, both nationally and locally procured, that are necessary to the delivery of the core emergency service functions?

Please answer here.:

18 - Critical Suppliers to the Emergency Services Are there aspects of the broader supply chain to direct suppliers that should also be captured within this regime?

Please answer here.:

19 - Data Infrastructure Does the data infrastructure definition capture all entities whose operations give it potential access to relevant data or relevant data infrastructure, and exclude those without such access?

Please answer here.:

20 - Data Infrastructure If you are a data infrastructure owner or operator, we are interested in more details about your current ways of working. How do you manage technical services within your facility? To what extent are these provided by in-house staff or outsourced and how is security of data ensured?

Please answer here.:

21 - Data Infrastructure How many businesses provide the following services to relevant data centres, and what proportion of their overall business is the sector likely to constitute: security services; installation/maintenance/repair services; and virtualised services?

Please answer here.:

22 - Data Infrastructure We would like to understand existing approaches to managing the national security risks to relevant data and relevant data infrastructure. In particular, how are the following risks are currently managed: a landlord/site owner's access to a data infrastructure facility that is owned or operated by a different entity; a third party service provider (such as security, installation, maintenance) having access to data infrastructure facilities and sensitive data; a third party virtualised service provider having access to data infrastructure or sensitive data?

Please answer here.: