An Roinn Breisoideachais agus Ardoideachais,
Taighde, Nuálaíochta agus Eolaíochta
Department of Further and Higher Education,
Research, Innovation and Science

Research Classification Ireland

Version 1.0

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Contents

1. Introduction

This document explains how to classify research and development (R&D) using Research Classification Ireland (RCI). A separate report explains how and why RCI was developed[1]. In summary, Dr Claire McKenna, through the *SFI Public Service Fellowship Scheme (2019)*, developed RCI over the period October 2020 to September 2022. This involved extensive consultation with the main national research funders and research performing organisations in Ireland and with experts in specific fields across all academic domains. This included over 60 meetings with stakeholders and an open public consultation in February/March 2022. This consultative approach was designed to ensure consensus and to enable widespread future adoption of RCI for classifying R&D in Ireland.

1.1 Definition of R&D[2]

R&D comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge. R&D activities may be aimed at achieving either specific or general objectives. R&D is always aimed at new findings, based on original concepts (and their interpretation) or hypotheses. It is largely uncertain about its final outcome (or at least about the quantity of time and resources needed to achieve it), it is planned for and budgeted (even when carried out by individuals), and it is aimed at producing results that could be either freely transferred or traded in a marketplace. R&D activity is characterised as having the following traits: It is novel; creative; uncertain; systematic; transferable and/or reproducible. R&D ends when work is no longer investigative.

1.2 Use of RCI

RCI provides a three-way matrix of classification: R&D activity can be classified by the:

- Type of Activity (TOA);
- Fields of Research (FOR); and
- Socio-economic Objective (SEO).

RCI provides a large degree of flexibility to meet the needs of a broad variety of users. The hierarchical structure of the FOR and SEO enables them to be applied to particular purposes at various levels. RCI also helps to classify multi- and inter-disciplinary research, where several disparate areas of the FOR are usually brought together to address one area, or closely related areas of the SEO.

[1] Development of Research Classification Ireland - https://s3-eu-west-1.amazonaws.com/govieassets/263886/09805445-3978-480a-a48a-40104e5fd64c.pdf

[2] Based on the **OECD Frascati Manual** (*OECD (2015), OECD Frascati Manual: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264239012-en)

The complexity of issues addressed by R&D is such that questions of public policy often arise in a manner that cannot be readily seen in advance. The detail available in both the FOR and SEO classifications would be sufficient to facilitate the provision of statistics that can be used in a variety of contexts. For example, areas of key technological significance could generally be assessed using an aggregate of appropriate FOR classes and fields. The use of RCI for R&D surveys minimises the need for separate one-off R&D surveys aimed at narrow areas.

1.3 Updates or revisions to RCI

An important consideration when developing a statistical classification is the need to build in sufficient robustness to allow for long-term usage. This robustness facilitates meaningful time series analysis of data assigned to that classification. However, there is also a need for the classification to remain contemporary to capture changes in the R&D sector and to provide data relevant to users' needs. In order to achieve a balance between these two competing objectives, the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) as custodian of RCI, and its close partner funding agencies, intends to keep RCI under review and issue revisions when necessary.

Correspondence tables

Correspondence tables (or concordances) between newest versions and older versions of RCI will be provided along with the classification after it is revised. As this is the first official version of RCI (namely, version 1.0), no correspondence table is required.

1.4 Implementation of RCI

Although RCI is official once published by DFHERIS, the dates of its implementation depend entirely on the entities, organisations or individuals that decide to use it. However, DFHERIS requires RCI to be used when reporting to it for the annual R&D Budget Survey[3] and the biennial Higher Education R&D Survey[4]. Both of these surveys result in statistics that are communicated to the Central Statistics Office, Eurostat and OECD for international publication, which underlines the importance of accurate reporting.

[3] The R&D Budget Survey is an annual survey that presents the data on the Government R&D Budget and on Ireland's R&D expenditure across all sectors.

[4] The Higher Education R&D Survey is carried out biennially and covers expenditure and human resources devoted to research activity in the Irish higher education sector.

2. The Irish Research Classification

As previously noted, the three classifications in RCI are Type of Activity, Fields of Research and Socio-economic Objective. These three classifications can be used in official statistics to analyse the nature of R&D and in conjunction with industrial sector classifications to produce official statistics that support a variety of user interests.

2.1 Type of Activity (TOA) Classification

The TOA classifies R&D according to the nature of the activity:

- RCT1 - Basic research;
- RCT2 - Applied research; and
- RCT3 - Experimental development.

Classification description of TOA

RCT1 - Basic Research
Basic research refers to experimental and theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view. It includes pure basic research (experimental or theoretical work undertaken to acquire new knowledge without looking for long-term benefits other than the advancement of knowledge) and strategic basic research (experimental or theoretical work undertaken to acquire new knowledge directed into specific broad areas in the expectation of practical discoveries). It provides a broad base of knowledge necessary for the solution of recognised or expected current or future problems.

RCT2 - Applied Research
Applied research refers to original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. It is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving specific and predetermined objectives.

RCT3 - Experimental Development
Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

Classification structure of TOA

There is no hierarchy between the three types, although they can be considered a continuum in the R&D process from basic research to experimental development.

Table 1 RCI Version 1.0 – Type of Activity (TOA)

Level	Level Name	Number of digits	Count
1	Division	1	3

2.2 Fields of Research (FOR) Classification

Classification description of FOR

The FOR allows research to be classified according to the knowledge domain in which it is being undertaken. This includes the objects of interest (the phenomena to be understood or the problems to be solved as part of R&D); the methods, techniques and professional profiles of the R&D performers; and the areas of application.

Classification structure of FOR

The FOR has four hierarchical levels: Divisions, Groups, Classes and Fields. The **Divisions** represent a broad subject area or research discipline and are closely aligned with the six 'Broad classification' levels identified in the OECD Frascati Manual. The 42 **Groups** are closely aligned with the 'Second level classification' listed in the OECD Frascati Manual. Below this, **Classes** and **Fields** were adapted from the Australian and New Zealand Standard Research Classification (ANZSRC)[5] and Canadian Research and Development Classification (CRDC)[6] classifications to represent accurately the breadth of research performed in Ireland.

Divisions, Groups, Classes and Fields are assigned unique 2-digit, 3-digit, 5-digit and 7-digit truncated codes respectively. Full codes for all FOR are alphanumerical starting with RCF. The FOR classification in RCI version 1.0 consists of six Divisions, 42 Groups, 199 Classes and 1,804 Fields.

Table 2 RCI Version 1.0 - Fields of Research (FOR)

Level	Level Name	Number of digits (truncated, full codes start with RCF)	Count
1	Division	2	6
2	Group	3	42
3	Class	5	199
4	Field	7	1804

[5] https://www.arc.gov.au/grants/grant-application/classification-codes-rfcd-seo-and-anzsic-codes
[6] https://www.statcan.gc.ca/eng/subjects/standard/crdc/2020v1/index

Table 3 Example of the hierarchical structure of the FOR

Level	Code	Title
Division	RCF40	Agricultural, veterinary and food sciences
Group	RCF401	Agriculture, horticulture, forestry and fisheries
Class	RCF40104	Forestry sciences
Field	RCF4010401	Agroforestry

FOR Classifications

FOR Classifications

Table 1: RCI - FOR Divisions

Table 2: RCI - FOR Divisions and Groups

Table 3: RCI - FOR Divisions, Groups and Class, definitions and exclusions

Table 4: RCI - FOR Divisions, Groups, Classes and Fields

2.3 RCI Socio-Economic Objective (SEO)

Classification description of SEO

The SEO allows research to be classified according to the primary purpose or outcome of the research, as perceived by the researcher. It consists of discrete economic, social, technological and scientific domains for identifying the primary purpose of the R&D.

Classification structure of SEO

The SEO has three hierarchical levels: Divisions, Groups and Objectives. Each **Division** is based on a broad research objective. **Groups** within each Division are those which are aligned towards the same overarching objective as the Division. Each Group is a collection of related research **Objectives**. Groups are categorised to the Divisions with which they are most closely aligned.

The **Divisions** are closely aligned with the ANZSRC SEO Division classification. Divisions, Groups and Objectives are assigned unique 2-digit, 4-digit and 6-digit truncated codes respectively and all full codes start with RCS. The SEO classification in RCI version 1.0 consists of 19 Divisions, 121 Groups and 940 Objectives.
Table 4 RCI Version 1.0 – Socio-economic Objective (SEO)

Level	Level Name	Number of digits (truncated, full codes start with RCS)	Count
1	Division	2	19
2	Group	4	121
3	Objective	6	940

Table 5 Example of the hierarchical structure of the SEO

Level	Code	Title
Division	RCS24	Manufacturing
Group	RCS2408	Human pharmaceutical products
Objective	RCS240803	Human pharmaceutical treatments

SEO Classifications

SEO Classifications

Table 1: RCI - SEO Divisions

Table 2: RCI - SEO Divisions, Groups, definitions and exclusions

Table 3: RCI - SEO Divisions, Groups and Objectives

3. Guidelines for classifying with RCI

3.1 Scope of R&D

As indicated in the OECD Frascati Manual, there are difficulties in delineating the point which clearly separates the culmination of R&D investigative work and the beginning of the implementation phase of the innovations or recommendations resulting from R&D. Errors at this point are particularly significant because, although R&D programmes require large outlays of resources, the costs of implementing innovations or recommendations resulting from R&D may also be as high, or higher, in many instances.

There is also a wide range of scientific and related activities that are not R&D, but that are closely linked to R&D in terms of organisation, resource allocation, institutional affiliation and the use or flow of information. However, activities conducted solely or primarily for the purposes of R&D support (for example, the preparation of the original report of R&D findings) are included in R&D.

The activities which do not have clear boundaries with R&D are listed below.

(i) Education and training of personnel and students
Postgraduate research, including supervision of the research, is considered R&D. The development of new teaching methods is also regarded as R&D. However, teaching and training students using established methods and subject knowledge is excluded.

(ii) Specialised scientific and technical information services
Specialised scientific and technical information services that are undertaken solely in support of R&D are regarded as R&D. Examples of these are scientific data collection, coding, recording, classification, dissemination, translation, analysis and bibliographic services. These specialised services are excluded if they are undertaken independently and not solely in support of R&D.

(iii) General purpose or routine data collection
Collecting data in support of R&D work is included in R&D. However, data collection of a general nature is excluded. This is normally carried out by government bodies to record natural, biological, economic or social phenomena of general public or government interest. Examples are national population censuses, surveys of unemployment, topographical mapping and routine geographical or environmental surveys.

(iv) Maintenance of national and international standards
Routine testing and analysis of materials, components, products, processes, soils, atmospheres, etc. for standard compliance is excluded from R&D.

(v) Feasibility studies
Feasibility studies undertaken in support of R&D are included. However, a feasibility study that involves gathering information about existing conditions, for use in deciding whether or not to implement a project, is excluded (for example, a study to determine the viability of a petrochemical complex in a particular location).

(vi) Specialised medical care
R&D includes the development of new treatments and procedures, including such developments in conjunction with advanced medical care and examinations usually carried out by university hospitals. However, routine investigations or normal application of specialised medical knowledge, techniques or equipment are excluded from R&D. Examples of these are pathology, forensic and post-mortem procedures.

(vii) Clinical trials
Phase 1, 2 and 3 clinical trials are included in R&D. Phase 4 clinical trials are excluded from R&D, unless they bring about further scientific or technological advance.

(viii) Patent and licence work
Patent work connected directly with R&D projects is included in R&D. However, commercial, administrative and legal work associated with patenting, copywriting and licensing, is excluded.

(ix) Policy or programme related studies
The boundary between certain policy-related studies as described in the OECD Frascati Manual and R&D is complex. In the OECD Frascati Manual, "Policy-related studies cover a range of activities, such as the analysis and assessment of the existing programmes, policies and operations of government departments and other institutions; the work of units concerned with the continuing analysis and monitoring of external phenomena (e.g. defence and security analysis); and the work of legislative commissions of inquiry concerned with general government or departmental policy or operations". Rigour is required to separate policy related studies that are not R&D from true R&D policy work. Studies to determine the effects of a specific national policy or programme to a particular economic or social condition or social group may have elements of R&D. Routine management studies or efficiency studies are excluded.

(x) Routine software development
Software development is an integral part of many projects that in themselves may have no element of R&D. The software development component of such projects, however, may be classified as R&D if it leads to an advance in the area of computer software. For a software development to be considered as R&D, its completion must be dependent on a scientific or technological advance, and the aim of the project must be the systematic resolution of a scientific and/or technological uncertainty.
The following are examples of software development that are considered R&D:

- Development of internet technology.
- Research into methods of designing, developing, deploying or maintaining software.
- R&D on software tools or technologies in specialised areas of computing (for example, image processing, artificial intelligence, character recognition).
- R&D producing new theorems and algorithms in the field of theoretical computer science.

The following are examples of software development that are not considered to be R&D:

- Routine computer and software maintenance.
- Business application software and information system development using known methods and existing software.
- Adding user functionality to application languages.
- Adaptation of or support for existing software.

(xi) Marketing and market studies
Market research and opinion polls are excluded from R&D.

(xii) Mineral exploration
The development of new or vastly improved methods of data acquisition, processing and interpretation of data is included as R&D. Surveying undertaken as an integral part of an R&D project to observe geological phenomena is also regarded as R&D. However, the search for minerals using existing methods is excluded from R&D.

(xiii) Prototypes and pilot plants
The design, construction and testing of prototypes generally falls within the scope of R&D. However, trial production and copying of prototypes are excluded from R&D. The construction and operation of pilot plants is part of R&D provided that these are used to obtain experience or new data for evaluating hypotheses. Pilot plants are excluded from R&D as soon as the experimental phase is over or as soon as they are used as normal commercial production units, even if they continue to be described as 'pilot plants'. If a pilot plant is used for combined operations, the component used for R&D is to be estimated.

(xiv) Other activities
All other activities that are ancillary or consequential to R&D are excluded. Examples of these are interpretative commentary using existing data, forecasting, operations research as contributing to decision making and the use of standard techniques in applied psychology to classify or diagnose human characteristics.

3.2 R&D unit or object to be classified

There are some inherent difficulties in formulating a definition of what constitutes a unit of R&D, due to the lack of uniformity in organisational structures and considerable variation in the way that organisations allocate resources to R&D activities. From a statistical viewpoint, it is desirable that R&D expenditure be reported in the smallest cluster that can be classified to a single TOA and FOR, which for the purposes of this classification is defined to be an **R&D unit**. The extent to which it is not practicable to provide this detail will reduce the validity and usefulness of the classification and the resulting R&D statistics.

The most common real world references to R&D activities are 'Research Programme' and 'Research Project'. These focal units seldom approximate the idealised R&D unit as outlined above, although they could be regarded as an aggregation of these units. The OECD Frascati Manual provides more details about the best way to identify R&D units.

3.3 Classifying by Type of Activity (TOA)

Where possible, a research project or programme should be assigned to a single TOA. If the project or programme is large and involves multiple types of activity, then each relevant activity category should be attributed a portion of resources relative to the project or programmes total R&D expenditure.

3.4 Classifying by Field of Research (FOR)

The research should first be considered in its broadest sense and in terms of the discipline to which the research relates. The research should be allocated to a FOR in a hierarchical manner. This is achieved by determining the most relevant:

1. Division in which the largest component of the R&D is being performed; then
2. Group; then
3. Class; and then
4. Field.

Many R&D projects will be a homogenous body of work in the particular field, which will be relatively straightforward to categorise. For multi- or interdisciplinary research, multiple classes or fields can be used to classify a project, thereby ensuring that the cross-disciplinary nature of the project is captured. It is at the discretion of the funding/reporting body through which the funding is administered to determine how many fields can be assigned to a given project and the hierarchical level at which information must be reported.

To adequately treat multidisciplinary research and avoid double counting of funding, it is suggested that the methodology employed by the UK Health Research Classification System[7] (HRCS) be used to apportion multiple classes/fields to projects. HRCS uses multiple codes and percentage allocations as follows[8]:

Multiple codes should be equally apportioned across the assigned codes. For example, two codes should be apportioned 50% each. This means apportioning equal percentages should be limited to the following options:

- Two codes = 50%, 50%;
- Three codes = 33.33%, 33.33%, 33.33%;
- Four codes = 25%, 25%, 25%, 25%;
- Five codes = 20%, 20%, 20%, 20%, 20%.

Exceptions to this rule can only be made in circumstances where different emphases of research aims are specifically stated in the research objectives, and then only in the following combinations:

- 75%, 25%;
- 66.66%, 33.33%;
- 50%, 25%, 25%.

For RCI, other splits may be implemented if deemed necessary by the funding provider (e.g. 25%, 75%). It is noted that different grant management systems handle one-third percentage allocations in different ways (e.g. 33, 33.3, 33.33, even 34/33/33). For analyses, a minimum of two decimal places is recommended.

If disaggregation is difficult, consideration of relative importance may indicate a primary objective only. When a defined field cannot be identified within a class, the ‘not elsewhere classified’ category at the field level can be used.

[7] https://hrcsonline.net/
[8] https://hrcsonline.net/getting-started/general-approach-to-coding/

3.5 Classifying by Socio-economic Objective (SEO)

The research should first be considered in its broadest sense in terms of the dominant beneficiary of the research output. The research should be allocated to an SEO in a hierarchical manner. This is achieved by determining the most relevant:

1. Division in which the largest component of the R&D is being performed and the socio-economic objective which covers that R&D; then
2. Group; then
3. Objective.

The appropriate SEO should reflect the industry, process, product, health, education or other social or environmental aspect that R&D activity aims to impact, improve or measure. The appropriate SEO may reflect the aspirations of the researchers and it may help to understand the goals of the research.

Many R&D projects will be a homogenous body of work directed towards a specific objective, which will be relatively straightforward to categorise. For multi- or interdisciplinary research, multiple groups or objectives can be used to classify a project, thereby ensuring that the cross-disciplinary nature of the project is captured. It is at the discretion of the funding/reporting body through which the funding is administered to determine how many groups/objectives can be assigned to a given project and the hierarchical level at which information must be reported.

Projects can be apportioned according to the splits described under the FOR section above. If disaggregation is difficult, consideration of relative importance may indicate a primary objective only. When a defined objective cannot be identified within a group, the ‘not elsewhere classified’ category at the objective level can be used.

The ‘Expanding Knowledge’ categories should only be used for research that does not have an identifiable SEO in any of the other categories. This should only be used in exceptional circumstances for basic research projects. By definition, applied research and experimental development have a defined objective and should not be classified under the ‘Expanding Knowledge’ categories.

4. Comparison of RCI and Other Classifications

4.1 Relationship with relevant international standard classifications

RCI aligns with international standards to collect and report on R&D, namely the OECD Frascati Manual incorporating the Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (NABS) 2007, and was modelled on ANZSRC and CRDC.

The following comparisons are provided:

- Comparison of OECD Frascati Manual – Broad Classification (FOR) and RCI Version 1.0 – Division levels (FOR)
- Comparison of OECD Frascati Manual – Second level classification (FOR) and RCI Version 1.0 – Group levels (FOR)
- Comparison of the NABS 2007 and RCI Version 1.0 – Division levels (SEO).
- Comparison of All Science Journal Classification codes (ASJC) and RCI Version 1.0 – Group levels (FOR) (Refer to excel file ASJC to RCI)

Comparison of OECD Frascati Manual – Broad Classification (FOR) and RCI Version 1.0 –Division levels (FOR)

OECD Frascati Manual – Broad Classification (FOR) - Code	OECD Frascati Manual – Broad Classification (FOR) - Title	RCI Version 1.0 – Division levels (FOR) - Code	RCI Version 1.0- Division Level FOR - Title	Explanatory Notes
1	Natural sciences	RCF10	Natural sciences	
2	Engineering and technology	RCF20	Engineering and technology	
3	Medical and health sciences	RCF30	Medical, health and life sciences	Difference in the title with the addition of ‘and life sciences; in RCI
4	Agricultural and veterinary sciences	RCF40	Agricultural, veterinary and food sciences	Difference in the title with the addition of ‘and food sciences; in RCI
5	Social sciences	RCF50	Social sciences	
6	Humanities and the arts	RCF60	Humanities and the arts	

Comparison of OECD Frascati Manual –Second level classification (FOR) and RCI Version 1.0 – Group levels (FOR)

OECD Frascati Manual – Second Level Classification (FOR) - Code	OECD Frascati Manual – Second level Classification (FOR) - Title	RCI Version 1.0 – Group levels (FOR) - Code	RCI Version 1.0- Group Level FOR - Title	Explanatory Notes
1.1	Mathematics	RCF101	Mathematical Sciences	
1.2	Computer and information sciences	RCF102	Computer and information sciences	
1.3	Physical sciences	RCF103	Physical Sciences	
1.4	Chemical sciences	RCF104	Chemical Sciences	
1.5	Earth and related environmental sciences	RCF105	Earth and related environmental sciences	
1.6	Biological sciences	RCF106	Biological Sciences	
1.7	Other natural sciences	RCF107	Other natural sciences	
2.1	Civil engineering	RCF201	Civil Engineering	
2.2	Electrical engineering, electronic engineering, information engineering	RCF202	Electrical engineering, electronic engineering, information engineering	
2.3	Mechanical engineering	RCF203	Mechanical Engineering	
2.4	Chemical engineering	RCF204	Chemical engineering	
2.5	Materials engineering	RCF205	Materials and resources engineering	Difference in the title with the addition of ‘and resources engineering’
2.6	Medical engineering	RCF206	Medical and biomedical engineering	Difference in the title with the addition of ‘and biomedical engineering;
2.7	Environmental engineering	RCF207	Environmental and related engineering	Difference in the title with the addition of ‘and related engineering’
2.8	Environmental biotechnology	RCF208	Environmental Biotechnology	
2.9	Industrial biotechnology	RCF209	Industrial biotechnology	

OECD Frascati Manual – Second Level Classification (FOR) - Code	OECD Frascati Manual – Second level Classification (FOR) - Title	RCI Version 1.0 – Group levels (FOR) - Code	RCI Version 1.0- Group Level FOR - Title	Explanatory Notes
2.10	Nanotechnology	RCF210	Nanotechnology	
2.11	Other engineering and technologies	RCF211	Other engineering and technologies	
3.1	Basic medicine	RCF301	Basic Medicine and Life Sciences	Difference in the title with the addition of 'and Life sciences'
3.2	Clinical medicine	RCF302	Clinical Medicine	
3.3	Health sciences	RCF303	Health Sciences	
3.4	Medical biotechnology	RCF304	Medical Biotechnology	
3.5	Other medical science	RCF305	Other medical science	
4.1	Agriculture, forestry, and fisheries	RCF401	Agriculture, horticulture, forestry and fisheries	Difference in the title with the addition of 'horticulture'
4.2	Animal and dairy science	RCF402	Animal and dairy sciences	
4.3	Veterinary science	RCF403	Veterinary sciences	
4.4	Agricultural biotechnology	RCF404	Agricultural biotechnology and food sciences	Difference in the title with the addition of 'and food sciences'
4.5	Other agricultural sciences	RCF405	Other agricultural, veterinary and food sciences	Difference in the title with the addition of 'veterinary and food sciences'
5.1	Psychology and cognitive sciences	RCF501	Psychology and cognitive sciences	
5.2	Economics and business	RCF502	Economics and Business Administration	Difference in the title with the addition of 'administration'
5.3	Education	RCF503	Education	
5.4	Sociology	RCF504	Sociology and related studies	Difference in the title with the addition of 'and related studies'
5.5	Law	RCF505	Law and legal studies	Difference in the title with the addition of 'and legal studies'

OECD Frascati Manual – Second Level Classification (FOR) - Code	OECD Frascati Manual – Second level Classification (FOR) - Title	RCI Version 1.0 – Group levels (FOR) - Code	RCI Version 1.0- Group Level FOR - Title	Explanatory Notes
5.6	Political science	RCF506	Politics and policy administration	Difference in the title. Category renamed as 'Politics and policy administration
5.7	Social and economic geography	RCF507	Social and economic geography	
5.8	Media and communications	RCF508	Media and Communications	
5.9	Other social sciences	RCF509	Other social sciences	
6.1	History and archaeology	RCF601	History, Heritage and Archaeology	Difference in the title with the addition of 'Heritage and Archaeology'
6.2	Languages and literature	RCF602	Languages and literature	
6.3	Philosophy, ethics and religion	RCF603	Philosophy, Ethics and Religion	
6.4	Arts (arts, history of arts, performing arts, music)	RCF604	Arts (arts, history of arts, performing arts, music), architecture and design	Difference in the title with the addition of 'architecture and design'
6.5	Other humanities	RCF605	Other Humanities	

Comparison of NABS 2007 Chapters (SEO) and RCI Version 1.0 – Division levels (SEO)

(p) refers to a partial correspondence

Bold indicates the group location when using a 4-digit level correspondence

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
01 Exploration and Exploitation of the Earth				
	17 Energy (p)	1705 Fossil Fuels: Oil, Gas and Coal (p)	180103 Atmospheric processes and dynamics (excl. air pollutant emissions, transport, transformation and removal)	180107 Air Quality modelling, forecasting and nowcast systems
	18 Environment management (p)	1707 Renewable Energy Sources (p)		180406 Long lived pollutants including POPs and plastics
	19 Environmental policy, climate change and natural hazards (p)	1801 Air quality, atmosphere and weather (p)		
	24 Mineral Resources (excl. Energy Resources) (p)	1804 Understanding Ocean environments (p)		
		1901 Adaptation to climate change and achieving climate resilience		
		1903 Mitigation of climate change and achieving climate neutrality		
		1905 Understanding climate change		
		2403 Mineral exploration		
02 Environment				
	10 Animal production and animal primary products (p)	1001 Environmentally sustainable animal production	180107 Air Quality modelling, forecasting and nowcast systems	110502 Waste recycling services

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
	11 Commercial services and tourism (p)	1101 Environmentally sustainable commercial services and tourism	180406 Long lived pollutants including POPs and plastics	110504 Water services and utilities
	12 Construction (p)	1105 Water and waste services (p)		
	17 Energy (p)	1206 Environmentally sustainable construction		
	18 Environment management (p)	1701 Energy Efficiency in Industry		
	19 Environmental policy, climate change and natural hazards (p)	1702 Energy efficient residential and commercial buildings, appliances and equipment		
	21 Information and communication services (p)	1703 Energy Efficiency in Transport		
	23 Manufacturing (p)	1704 Other Energy Efficiency		
	24 Mineral resources (excl. energy) (p)	1801 Air quality, atmosphere and weather (p)		
	25 Plant production and plant primary products (p)	1802 Coastal and estuarine systems and management		
	26 Transport (p)	1803 Fresh, ground and surface water systems and management		
		1804 Understanding Ocean environments		
		1805 Marine systems and management		
		1806 Terrestrial systems and management		

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
		1899 Other environmental management		
		1904 Natural hazards		
		1999 Other environmental policy, climate change and natural hazards		
		2102 Environmentally sustainable information and communication services		
		2306 Environmentally sustainable manufacturing activities		
		2401 Environmentally sustainable mineral resource activities		
		2501 Environmentally sustainable plant production		
		2602 Environmentally sustainable transport activities		
03 Exploration and Exploitation of Space				
	27 Exploration and Exploitation of Space	2601 Aerospace Transport (p)	260106 Space transport	
	26 Transport (p)			
04 Transport, Telecommunication and Other Infrastructures				
	11 Commercial services and tourism (p)	1105 Water and waste services (p)	110504 Water services and utilities	270106 Space transport
	12 Construction (p)	1201 Building management and services	190207 Land use policy and management for sustainability (including biodiversity)	

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
	19 Environmental policy, climate change and natural hazards (p)	1202 Construction design	190211 Water policy (incl. water allocation)	
	21 Information and Communication Services (p)	1203 Construction materials performance and processes		
	26 Transport (p)	1204 Construction planning		
		1205 Construction processes		
		1299 Other construction		
		1902 Environmental policy, legislation and standards (p)		
		2101 Communication technologies, systems and services		
		2701 Aerospace Transport (p)		
		2703 Ground transport		
		2704 Water transport		
		2799 Other transport		
05 Energy				
	17 Energy (p)	1706 Mining and extraction of energy resources		
		1707 Processing of energy sources		
		1708 Renewable energy		
		1709 Hydrogen and Fuel Cells		
		1710 Other Power and Storage Technologies		
		1711 Other Cross-Cutting Energy Research		
		1799 Other energy		

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
06 Industrial Production and Technology				
	11 Commercial Services and Tourism (p)	1105 Water and waste services (p)	110502 Waste recycling services	150205 Fiscal policy
	15 Economic Framework (p)	1501 International trade policy		150208 Monetary policy
	21 Information and Communication Services (p)	1502 Macroeconomics (p)		150505 Industry policy
	23 Manufacturing (p)	1503 Management and Productivity		
	24 Mineral Resources (excl. Energy Resources) (p)	1504 Measurement standards and calibration services		
		1505 Microeconomics (p)		
		1599 Other economic framework		
		2104 Information systems, technologies and services		
		2199 Other information and communication services		
		2301 Agricultural chemicals		
		2302 Basic metal products		
		2303 Ceramics, glass and industrial mineral products		
		2304 Computer, electronic and communication equipment		
		2305 Dairy products		
		2307 Fabricated metal products		
		2308 Human pharmaceutical products		

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
		2309 Industrial chemicals and related products		
		2310 Instrumentation		
		2311 Leather products, fibre processing and textiles		
		2312 Machinery and equipment		
		2313 Processed food products and beverages (excl. dairy products)		
		2314 Processed non-food agricultural products (excl. wood, paper and fibre)		
		2315 Transport equipment		
		2316 Veterinary pharmaceutical products		
		2317 Wood, wood products and paper		
		2399 Other manufacturing		
		2402 First stage treatm		
		2404 Primary mining and extraction of minerals		
		2499 Other mineral resources (excl. energy resources)		
07 Health				
	20 Health	2001 Clinical health		
		2002 Evaluation of health and support services		
		2003 Provision of health and support services		
		2004 Public health (excl. specific population health)		

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
		2005 Specific population health		
		2006 Environment and Health		
		2007 One Health		
		2099 Other health		
08 Agriculture				
	10 Animal Production and Animal Primary Products (p)	1002 Fisheries - aquaculture		
	25 Plant Production and Plant Primary Products (p)	1003 Fisheries - wild caught		
		1004 Livestock raising		
		1005 Pasture, browse and fodder crops		
		1006 Primary products from animals		
		1099 Other animal production and animal primary products		
		2502 Forestry		
		2503 Grains and seeds		
		2504 Harvesting and packaging of plant products		
		2505 Horticultural crops		
		2506 Industrial crops		
		2599 Other plant production and plant primary products		
09 Education				
	16 Education and Training	1601 Learner and learning		
		1602 Schools and learning environments		
		1603 Teaching and curriculum		

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
		1699 Other education and training		
10 Culture, Recreation, Religion and Mass Media				
	11 Commercial services and tourism (p)	1199 Other commercial services and tourism		
	13 Culture and society	1301 Arts		
	21 Information and communication services (p)	1302 Communication and media		
		1303 Ethics		
		1304 Heritage		
		1305 Religion		
		1306 Sport, exercise and recreation		
		1307 Understanding past societies		
		1399 Other culture and society		
		2103 Information services		
		2105 Media services		
11 Political and Social Systems, Structures and Processes				
	11 Commercial Services and Tourism (p)	1102 Financial services	150205 Fiscal policy	190207 Land use policy and management for sustainability (including biodiversity)
	15 Economic Framework (p)	1103 Property, business support services and trade	150208 Monetary policy	190211 Water policy (incl. water allocation)
	19 Environmental policy, climate change and natural hazards (p)	1104 Tourism services	150505 Industry policy	

NABS 2007 Chapters	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)	Included SEO Objectives (6-digit level)	Excluded SEO Objectives (6-digit level)
	23 Law, Politics and Community Services	1502 Macroeconomics (p)		
		1505 Microeconomics (p)		
		1902 Environmental policy, legislation and standards (p)		
		2201 Community services		
		2202 Government and Politics		
		2203 International Relations		
		2204 Justice and the Law		
		2205 Work and labour market		
		2299 Other law, politics and community services		
12 & 13 General Advancement of Knowledge				
	28 Expanding Knowledge	2801 Expanding Knowledge		
14 Defence				
	14 Defence	1401 Defence		

Comparison of All Science Journal Classification codes (ASJC) and RCI Version 1.0 – Group levels (FOR)

All Science Journal Classification codes (ASJC) and RCI Version

4.2 Relationship with National Research Prioritisation

RCI is the first Irish research classification designed to be dedicated to R&D and inclusive of all current sectors of research in Ireland. While contributing to a greater alignment with international standards, it is comprehensive enough to support a wide range of needs within the Irish R&D ecosystem.

National Research Prioritisation Exercise 2018 to 2023

A national Research Prioritisation (RP) exercise was undertaken by Government in 2012, which aligned the majority of competitively awarded public investment in research with 14 priority areas under six themes. RP was revised in 2018 to reflect changing circumstances over that period.

The 14 priority areas were developed to align with global market sectors, which have some correlation with RCI's SEO classification, but do not directly align. The 14 priority areas are not mutually exclusive, so SEO Groups or Objectives may contribute to multiple priorities. It is not possible to provide an exhaustive list of all of the 6-digit SEO codes that may contribute to a particular priority. In general, it is recommended to use the mapping below at the SEO Division or Group level.

Comparison of RP 2018 to 2023 and RCI Version 1.0

(p) refers to a partial correspondence

RP Theme	RP Priority Area	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)
ICT	Future Networks, Communications and Internet of Things	RCS21 Information and Communication Services (p)	RCS2101 Communication technologies, systems and services (p)
		RCS23 Manufacturing (p)	RCS2304 Computer, electronic and communication equipment
	Data Analytics, Management, Security, Privacy, Robotics and Artificial Intelligence (including Machine Learning)	RCS21 Information and Communication Services (p)	RCS2104 Information systems, technologies and services
		RCS23 Manufacturing (p)	RCS2304 Computer, electronic and communication equipment
	Digital Platforms, Content and Applications, and Augmented Reality and Virtual Reality	RCS21 Information and Communication Services (p)	RSC2103 Information Services
		RCS23 Manufacturing (p)	RCS2104 Information systems, technologies and services
			RCS2105 Media Services

RP Theme	RP Priority Area	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)
			RCS2304 Computer, electronic and communication equipment
Health and Wellbeing	Connected Health and Independent Living	RCS20 Health (p)	RCS2002 Evaluation of health and support services (p)
		RCS21 Information and Communication Services (p)	RCS2005 Specific population health (p)
			RCS2003 Provision of health and support services (p)
			RCS2101 Communication technologies, systems and services (p)
			RCS2104 Information systems, technologies and services (p)
	Medical Devices	RCS20 Health (p)	RCS2001 Clinical Health (p)
		RCS23 Manufacturing (p)	RCS2308 Human pharmaceutical products and medical devices (p)
	Diagnostics	RCS20 Health (p)	RCS2001 Clinical Health (p)
		RCS23 Manufacturing (p)	RCS2308 Human pharmaceutical products and medical devices (p)
	Therapeutics	RCS20 Health (p)	RCS2001 Clinical Health (p)
		RCS23 Manufacturing (p)	RCS2308 Human pharmaceutical products and medical devices (p)
Food	Food for Health	RCS23 Manufacturing (p)	RCS2313 Processed food products and beverages (excl. dairy products) (p)
		RCS20 Health (p)	RCS2004 Public health (excl. specific population health) (p)
	Smart and Sustainable Food Production and Processing	RCS23 Manufacturing (p)	RCS2301 Agricultural chemicals
		RCS10 Animal production and animal primary products	RCS2305 Dairy products
		RCS17 Energy (p)	RCS2312 Machinery and equipment (p)

RP Theme	RP Priority Area	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)
		RCS18 Environmental Management (p)	RCS2313 Processed food products and beverages (excl. dairy products) (p)
		RCS19 Environmental policy, climate change and natural hazards (p)	RCS2399 Other manufacturing (p)
		RCS25 Plant Production and Plant Primary Products (p)	RCS1707 Renewable Energy Sources (p)
			RCS1802 Coastal and estuarine systems and management (p)
			RCS1803 Fresh, ground and surface water systems and management (p)
			RCS1804 Understanding Ocean environments (p)
			RCS1805 Marine systems and management (p)
			RCS1806 Terrestrial systems and management (p)
			RCS1902 Environmental policy, legislation and standards (p)
Energy, Climate Action and Sustainability	Decarbonising the Energy System	RCS11 Commercial Services and Tourism (p)	RCS1105 Water and waste services
		RCS12 Construction (p)	RSC1206 Environmentally sustainable construction activities
		RCS17 Energy (p)	RCS1701 Energy Efficiency in Industry
			RCS1702 Energy efficient residential and commercial buildings, appliances and equipment
			RCS1703 Energy Efficiency in Transport
			RCS1704 Other Energy Efficiency
			RCS1706 Carbon Capture and Storage
			RCS1707 Renewable Energy Sources

RP Theme	RP Priority Area	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)
			RCS1709 Hydrogen and Fuel Cells
			RCS1710 Other Power and Storage Technologies
			RCS1711 Other Cross-Cutting Energy Research
	Sustainable Living	RCS11 Commercial Services and Tourism (p)	RCS1101 Environmentally sustainable commercial services and tourism
		RCS12 Construction (p)	RCS1204 Construction Planning (p)
		RCS17 Energy (p)	RCS1206 Environmentally sustainable construction activities
		RCS19 Environmental policy, climate change and natural hazards (p)	RCS1702 Energy efficient residential and commercial buildings, appliances and equipment (p)
		RCS21 Information and Communication Services (p)	RCS1703 Energy Efficiency in Transport
		RCS23 Manufacturing (p)	RCS1704 Other Energy Efficiency
		RCS26 Transport (p)	RCS1709 Hydrogen and Fuel Cells
			RCS1710 Other Power and Storage Technologies
			RCS1711 Other Cross-Cutting Energy Research
			RCS1902 Environmental policy, legislation and standards (p)
			RCS2102 Environmentally sustainable information and communication services
			RCS2306 Environmentally sustainable manufacturing activities
			RCS2602 Environmentally sustainable transport activities

RP Theme	RP Priority Area	Matching SEO Divisions (2-digit level)	Matching SEO Groups (4-digit level)
Manufacturing and Materials	Advanced and Smart Manufacturing	RCS23 Manufacturing (p)	RCS2303 Ceramics, glass and industrial mineral products
			RCS2304 Computer, electronic and communication equipment
			RCS2307 Fabricated metal products
			RCS2312 Machinery and equipment
			RCS2399 Other manufacturing
	Manufacturing and Novel Materials	RCS23 Manufacturing (p)	RCS2303 Ceramics, glass and industrial mineral products
			RCS2304 Computer, electronic and communication equipment
			RCS2307 Fabricated metal products
			RCS2309 Industrial chemicals and related products
			RCS2311 Leather products, fibre processing and textiles
			RCS2317 Wood, wood products and paper
			RCS2399 Other manufacturing
Services and Business Processes	Innovation in Services and Business Processes	RCS11 Commercial Services and Tourism (p)	RCS1102 Financial services
		RCS15 Economic Framework (p)	RCS1103 Property, business support services and trade
		RCS21 Information and Communication Services (p)	RCS1104 Tourism services
			RCS1503 Management and productivity
			RCS1505 Microeconomics
			RCS2101 Communication technologies, systems and services
			RCS2104 Information systems, technologies and services (p)