



MESA REDONDA

**La Investigación con Impacto Social desde  
la gestión del conocimiento:  
Aproximaciones conceptuales y estrategias  
de evaluación**

**Estudios de caso de impacto en la evaluación  
de la actividad científica en el Reino Unido.  
Algunas reflexiones sobre su aplicación al Perú**

<http://hdl.handle.net/11366/2229>



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# Índice de la presentación

- Evaluación nacional de la investigación científica en el Reino Unido: *Research Excellence Framework* (REF)
- Estudio de caso de impacto (*Impact case study*): un análisis
- Política de Acceso Abierto REF2021
- Aplicación al contexto peruano: algunas reflexiones

# Research Excellence Framework (REF)

- Ejercicio de evaluación científica de ámbito nacional llevado a cabo **cada siete años** por las cuatro agencias de financiación de la educación superior en el Reino Unido: *Research England*, el *Scottish Funding Council (SFC)*, el *Higher Education Funding Council for Wales (HEFCW)* y el *Department for the Economy, Northern Ireland (DfE)*
- El objetivo es evaluar la calidad de la investigación científica realizada en las universidades británicas
- La financiación de dichas universidades está ligada a los resultados obtenidos en el REF

## About the REF

The REF is the UK's system for assessing the quality of research in UK higher education institutions. It first took place in 2014. The next exercise will be conducted in 2021.

# Research Excellence Framework (REF)

- El REF es un proceso de revisión por pares llevado a cabo por paneles de expertos en cada una de las 34 Unidades de Evaluación (Units of Assessment, UOAs) basadas en disciplinas científicas concretas bajo la dirección de cuatro paneles principales. Los paneles de expertos se componen de académicos senior, miembros internacionales y usuarios de la investigación
- Tres elementos específicos se evalúan cuantitativa y cualitativamente por cada envío desde las universidades: la **calidad de la producción científica** (por ejemplo publicaciones, *performances* y exhibiciones), su **impacto** más allá de la Academia y el **entorno** ("environment") en el que se desarrolla la investigación

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# Research Excellence Framework (REF)



- Aporte cuantitativo: listados de las mejores publicaciones por departamento y disciplina científica (UoA)
- Aporte cualitativo: estudios de caso de impacto (“*impact case studies*”) describiendo cómo la investigación influye en la economía, la sociedad, etc
- Transparencia: los resultados se hacen públicos para cualquier usuario

Search again:

fishing

Search

## REF impact found 66 Case Studies for: *fishing*

Currently displayed text from case study:

Summary of the impact ▾

Refresh

### [Recovery of cod stocks in the North Sea achieved by a change in EU fisheries policy driven by evidence from mathematical models](#)

#### Summary of the impact

In 2012, cod stocks in the North Sea were assessed as having recovered almost to a level at which their viability is considered to be safe. This recovery followed 3 decades of progressive depletion to only 50% of the safety threshold of abundance. Achieving this recovery required the EU to abandon an earlier 'closed area' policy banning **fishing** in

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#### Submitting Institution

University of Strathclyde

#### Unit of Assessment

Mathematical Sciences

#### Summary Impact Type

Environmental

#### Research Subject Area(s)

**Environmental Sciences:** Environmental Science and Management

**Biological Sciences:** Ecology

#### Filter Impact Case Studies

##### Submitting Institution: ?

All Institutions (66) ▾

Show only Joint Submissions ?

##### Unit of Assessment: ?

All Units of Assessment (66) ▾

##### Summary Impact Type: ?

All Impact Types (66) ▾

##### Research Subject Area: ?

All Subject Areas (66) ▾

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## Summary of the impact

In 2012, cod stocks in the North Sea were assessed as having recovered almost to a level at which their viability is considered to be safe. This recovery followed 3 decades of progressive depletion to only 50% of the safety threshold of abundance. Achieving this recovery required the EU to abandon an earlier 'closed area' policy banning fishing in selected areas of the North Sea, and instead enforce drastic cuts in overall activity on national fishing fleets. The policy change was prompted in part by predictions from mathematical modelling of cod populations by researchers at Strathclyde, showing that the 'closed area' policy was unlikely to be an effective strategy for recovery. The recovery has so far restored £17 million in annual value to the fishery.

## Underpinning research

**Context:** Simulating spatial patterns in the demography of mobile species is particularly challenging and a general problem in mathematical ecology. However, validated models of this type are extremely powerful tools since they provide a means of conducting virtual experiments to diagnose the key factors affecting populations. This includes predicting the consequences of climate change and, for commercially exploitable taxa, changes in spatial patterns of harvesting. The research described here provided a significant advance in capability in this area and was used to support a policy change in fisheries management.

**Key Research Findings:** [Numbers in parentheses refer to research articles listed in Section 3] A numerical technique for modelling spatial populations was developed during two NERC research grants between 2000 and 2006 [1]. The technique was used to simulate the spatial distribution and population dynamics of a marine plankton species (*Galanus finmarchicus*) which is particularly abundant in the North Atlantic Ocean and is an indicator species for impacts of climate change [2]. The life cycle involves spawning, development and dispersal by ocean currents in the surface waters during spring and summer, alternating with a dormant phase at depths of >600 m in the winter. The modelling technique was able to represent these developmental and dispersal processes at a spatial resolution of a few tens of kilometres over the whole North Atlantic, combining data on water currents and temperatures from an ocean circulation model, and on the food of *Galanus* from satellite remote sensing archives [3].

## Summary of the impact

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### Key researchers at the University of Strathclyde:

The research was originally conceived and led by W.S.C Gurney (Professor in Department of Mathematics in 2000; retired 2011, then part-time contract until 2014) and continues under the leadership of Professor M. Heath, who was involved in the project during previous employment at Marine Scotland Science, joining the University of Strathclyde in 2010.

Dr D. Speirs (postdoctoral researcher) worked on the spatial modelling of *Calanus* in the North Atlantic during 2000-2006. Dr J. Bridson nee Andrews (postdoctoral researcher 2001-2006) worked on developing the model to represent cod in the North Sea. E. McKenzie (Professor of Mathematics 2001; retired 2011) and Dr R. Hedger (postdoctoral researcher 1999-2002) contributed the statistical analysis of cod data.

### Key collaborators at other institutions:

*Calanus* modelling — University of St Andrews (S. Woods and E. Clarke)

Cod modelling — Centre for Environment, Fisheries and Aquaculture Science, Lowestoft (C. Darby and C. O'Brien); Marine Scotland Science, Aberdeen (M. Heath, now University of Strathclyde member of staff, and P. Wright)

population dynamics of a marine plankton species (*Calanus finmarchicus*) which is particularly abundant in the North Atlantic Ocean and is an indicator species for impacts of climate change [2]. The life cycle involves spawning, development and dispersal by ocean currents in the surface waters during spring and summer, alternating with a dormant phase at depths of >600 m in the winter. The modelling technique was able to represent these developmental and dispersal processes at a spatial resolution of a few tens of kilometres over the whole North Atlantic, combining data on water currents and temperatures from an ocean circulation model, and on the food of *Calanus* from satellite remote sensing archives [3].



## References to the research

References 1, 2 and 3 best exemplify the quality of the underpinning research

1. Gurney, W.S.C., Speirs, D.C., Wood, S.N., Clarke, E.D. and Heath, M.R. (2001). Simulating spatially and physiologically structured populations. *Journal of Animal Ecology* 70, 881-894.

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2. Speirs, D., Gurney, W.S.C., Heath, M.R., Horbelt, W., Wood, S. and de Cuevas, A. (2006). Ocean-scale modelling of the distribution, abundance, and seasonal dynamics of the copepod *Calanus finmarchicus*. *Marine Ecology Progress Series* 131, 183-192.

Scopus

3. Clarke, E.D., Speirs, D.C., Heath, M.R., Wood, S.N., Gurney, W.S.G., Holmes, S.J. (2006). Calibrating remote sensed chlorophyll a data using penalized regression splines. *Journal of the Royal Statistical Society: Series C (Applied Statistics)* 55(3) 331-353.

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4. Andrews, J.M., Gurney, W.S.C., Heath, M.R., Gallego, A., O'Brien, C.M., Darby C. and Tyldesley, G. (2006). Modelling the spatial demography of cod on the European continental shelf. *Canadian Journal of Fisheries and Aquatic Sciences*, 63, 1027-1048.

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5. Gurney W.S.C., Veitch R. (2007). The dynamics of size at age variability. *Bulletin of Mathematical Biology* 69, 861-885.

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## Details of the impact

### Economic impact:

The peak value of the North Sea cod fishery was more than £450 million per annum in the late 1970's (first sale value, standardised by the Consumer Price Index to year 2000). However, this was not sustainable and resulted in the overfishing which caused the decline in stocks. Current estimates of the long-term sustainable value are around £150 million per year. Between 1978 and 2007 the first sale value of cod landings declined by an average £14 million per year to a minimum of less than £35 million. Since 2008 the quay-side value has increased, and by 2011 the Recovery Plan and its successors had restored the annual value of the North Sea cod landings to £52 million. Hence, the Strathclyde research contributed to a £17 million per annum increase in the value of the cod fishery by 2011 compared to the low-point in 2007. The UK share of this international fishery is around 45%.

[Source H]

### Public awareness of recovery of cod stocks:

The crisis in the fishing industry precipitated by the Closed Area Policy and the Recovery Plan attracted media attention and raised public awareness of the state of the stocks. High profile conservation campaigns encouraged consumers to avoid buying cod. However there is evidence that public opinion now recognises that cod stocks are recovering. Recent media interest, for example via the BBC [Source I], reports that Barrie Deas, the Chief Executive of the National Federation of Fishermen's Organisations, which represents fisherman in England, Wales and Northern Ireland, told Radio 4's Today programme that the recovery of stocks was a *"dramatic turnaround ...I think a major part of it is there are fewer vessels out there. There have been big decommissioning schemes. There's also been a change in the mindset in the industry. We work very closely with the scientists now."* Another recent example of media interest was an item in the Daily Telegraph (10<sup>th</sup> June 2013) quoting Richard Benyon, the Fisheries Minister, as saying: *"We should not be complacent, there is still a long way to go, but this is really good news. People can eat cod without feeling guilty because there are large quantities being caught further north, and our cod stocks in the North Sea are recovering. Much of the credit for this must rest with the fishermen who have introduced a vast number of [sustainable fishing] measures"* [Source J]. This reflects both the impact of the Recovery Plan, and the extent of public awareness of the issue.

**Reach and significance:** The impact extended through the UK government fisheries agencies (Defra and Marine Scotland), to the EU Commission [B,C,D]. Cod is the most important fish species targeted by trawl fisheries in the North Sea [E], and the crisis in the fishing industry associated with its

## Sources to corroborate the impact









































- A. Commission Regulation (EC) No 259/2001 of 7 February 2001 establishing measures for the recovery of the stock of cod in the North Sea (ICES subarea IV) and associated conditions for the control of activities of fishing vessels.  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:039:0007:0010:EN:PDF>
- B. EU Council Regulation (EC) No 423/2004 of 26 February 2004 establishing measures for the recovery of cod stocks  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:070:0008:0011:EN:PDF>
- C. Darby C., Hutton T., Andrews J., Gurney W.S.C., Beveridge D., Hiddinck J.G. (2006) Investigations into closed area management of the North Sea cod. Cefas Contract report, p62-75. (Peer reviewed final report from a research project commissioned by Defra to investigate the effectiveness of closed area policies for conserving cod using the Strathclyde model — Defra Reference: SFCD15, January-May 2005).
- D. [http://www.cefas.co.uk/publications/files/EU\\_Norway\\_expert\\_gp\\_codrecovery-may-2003.pdf](http://www.cefas.co.uk/publications/files/EU_Norway_expert_gp_codrecovery-may-2003.pdf) STECF meeting on cod assessment and technical measures, Brussels, 28 April-7 May 2003 127 pp.
- E. ICES (2012). Advice Book 2012. Section 6.4.2 Cod in Subarea IV (North Sea), Division VIId (Eastern Channel), and IIIa West (Skagerrak)  
<http://www.ices.dk/sites/pub/PublicationReports/ICESAdvice/2012/ICESADVICE2012BOOK6.pdf>
- F. Council Regulation (EC) No 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks and repealing Regulation (EC) No 423/2004  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008R1342:EN:NOT>
- G. Almond, S & Thomas, B. 2011. The UK fishing industry in 2010. Structure and activity. UK Marine Management Organisation, 62pp.  
[http://marinemanagement.org.uk/fisheries/statistics/documents/ukseafish/2010/structure\\_activity.pdf](http://marinemanagement.org.uk/fisheries/statistics/documents/ukseafish/2010/structure_activity.pdf)
- H. Evidence derived from: Almond, S & Thomas, B. 2011. The UK Sea Fisheries Statistics 2010. UK Marine Management Organisation, 158pp.  
<http://www.marinemanagement.org.uk/fisheries/statistics/documents/ukseafish/2010/final.pdf>
- I. <http://www.bbc.co.uk/news/science-environment-22820162> BBC coverage of cod recovery









































# Política de Acceso Abierto del REF2021

- **Todas** las publicaciones (artículos de investigación y ponencias de congresos) *deben estar en acceso abierto* (ruta verde o dorada) para ser elegibles para su envío al REF
- La política de acceso abierto REF – que entró en vigor en *Abril de 2016* – sigue la ruta verde y *no incluye financiación* para gastos de publicación en acceso abierto (APCs)
- Una copia del manuscrito aceptado para su publicación (“postprint”) *debe depositarse en el sistema institucional apropiado* (repositorio o CRIS) *no más de tres meses desde su aceptación*

a. **Outputs accepted for publication from the 1 April 2016 to 31 March 2018.**  
The output must have been deposited as soon after the point of acceptance as possible, and **no later than three months after the date of publication.**

b. **Outputs accepted for publication from the 1 April 2018 to 31 December 2020.**  
The output must have been deposited as soon after the point of acceptance as possible, and **no later than three months after this date.**

	University		P	P(OA)	PP(OA)				
1	London Sch Hyg & Trop Med		9697	9114	94.0%				
2	Bilkent Univ		1908	1789	93.8%				
3	Univ E Anglia		5972	5543	92.8%				
4	Univ Dundee		4050	3749	92.6%				
5	Durham Univ		7860	7261	92.4%				
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7	Sheffield Hallam Univ		1733	1598	92.2%				
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13	City Univ London		2724	2486	91.3%				
14	Univ Strathclyde		6562	5978	91.1%				
15	Univ Southampton		16489	15011	91.0%				
16	Bournemouth Univ		1863	1695	91.0%				
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19	Lancaster Univ		7475	6786	90.8%				
20	Univ Bristol		16792	15199	90.5%				

	University		P	P(OA)	PP(OA)				
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3	Pontificia Univ Católica Chile		7531	4480	59.5%				
4	Univ Estadual Paulista		15434	8993	58.3%				
5	Univ Nal La Plata		4981	2895	58.1%				
6	Univ Chile		8152	4600	56.4%				
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8	Univ Fed Viçosa		4336	2295	52.9%				
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17	Univ Fed Juiz de Fora		2667	1307	49.0%				
18	Univ Fed Rio de Janeiro		12362	6042	48.9%				
19	Univ Fed Bahia		3943	1924	48.8%				
20	Fed Univ Paraíba		3326	1612	48.5%				

# Aplicación al contexto peruano: reflexiones

1. Visibilidad de la información de investigación
2. Procesos técnicos apropiados
3. Transparencia del proceso de evaluación

# Visibilidad de la información de investigación



Welcome to  
#PeruCRIS

Concytec has been carrying out the #PerúCRIS Project, which seeks the articulation and cooperation between SINACYT institutions to operate the National Information Network on Science, Technology and Technological Innovation (CTI)..

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4227



Infrastructure

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# Visibilidad de la información de investigación

EuroCRIS / DRIS

## Directory of Research Information System (DRIS)

DRIS Entries

Acronym	Name	Scope	Organisation
Pure UP	Pure Universidad del Pacífico	Institutional	Universidad del Pacífico (Perú) 
SIC-USIL	Sistema de Información Científica USIL	Institutional	Universidad San Ignacio de Loyola 
CRIS Ulima	Current Research Information System of University of Lima	Institutional	Universidad de Lima 
UC SUR CRIS	CRIS Universidad Científica del Sur	Institutional	Universidad Científica del Sur 
CRIS UC	Plataforma Virtual de Investigación Universidad Continental	Institutional	Universidad Continental 
UNICA CRIS	Portal de Investigación Universidad Nacional San Luis Gonzaga de Ica	Institutional	Universidad Nacional San Luis Gonzaga de Ica 
	Repositorio Institucional CONCYTEC	Funder	Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (CONCYTEC) 
UsatCRIS	UsatCRIS	Institutional	Universidad Católica Santo Toribio de Mongrovejo (USAT) 
	UNSA Research Portal / Portal de	Institutional	Universidad Nacional de San Agustín de Arequipa

Country

Peru 12

Software

Pure 8


DSpace-CRIS 4

Status

Operational 11

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# Procesos técnicos apropiados

 Cursos  News



Implementado por  
**giz** Geoinformationssysteme  
Geotechnik  
Geodäsie

**BGR** Bundesanstalt für  
Geowissenschaften  
und Rohstoffe

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## Programa Minsus

**El sector minero en los países andinos tiene el potencial de contribuir al crecimiento económico y social y al gran impulso ambiental en pos de un desarrollo sustentable y en línea con las grandes exigencias que impone la Agenda 2030 para el Desarrollo Sostenible.**

A los aspectos positivos del sector se contraponen graves daños ambientales, enormes costos económicos e impactos sociales, especialmente en términos de conflictos socioambientales vinculados con la minería. Riesgos de tipo climático y ambiental están impulsando una transición global hacia una producción energética y una movilidad más limpia, lo cual impulsa al alza la extracción de recursos naturales. Para los desarrollos tecnológicos asociados a la descarbonización se continuarán requiriendo grandes cantidades de minerales y metales, muchos de los cuales, como el litio y el cobre, se encuentran ampliamente presentes en los países andinos

## Publicaciones



16 agosto, 2022

Recomendaciones para mejorar la gobernanza local por medio de las certificaciones mineras



15 julio, 2022

PAM de "La Ciénega": Publicaciones técnicas sobre la caracterización de los relaves y pruebas metalúrgicas



08 junio, 2022

Gobernanza de los clústeres mineros: los casos de Australia, Chile y el Perú

# Transparencia del proceso de evaluación

REF 2021 Research Excellence Framework

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Home / Results and submissions

## Results and submissions

### Introduction to the REF results

157 UK higher education institutions (HEIs) made submissions in 34 subject-based [units of assessment](#) (UOAs). The submissions were assessed by [panels of experts](#), who produced an overall quality profile for each submission. Each overall quality profile shows the proportion of research activity judged by the panels to have met each of the four starred quality levels in steps of 1%.

[Learn more about the REF results](#)

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[Impact case study database](#)

[Environment database](#)

Filter results: ? [Select HEI \(None\)](#) [Select UOA \(None\)](#)

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### View REF results

To view results select from

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[Unit of assessment \(UOA\)](#)

Displayed results can be filtered further by UOA or HEI.

### Submitted outputs' details

[Access submitted outputs' details](#)

### Impact case study database

[Access the impact case study database](#)

### Download the results

[Download all REF results \(spreadsheet\)](#)

### Download submissions

[Download submissions \(spreadsheet\)](#)

<https://results2021.ref.ac.uk/>



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¡Gracias!

¿Preguntas?



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