

Material Security
Working Group

An Office for Resource Management

Material Security Working Group

The Material Security Working Group (MSWG) was formed in 2012. It was established following survey findings that access to raw materials is a serious EEF concern to UK manufacturers and the publication of EEF's critique of Defra's waste policy review.

The MSWG's members have considerable expertise around manufacture, infrastructure, resource management and the environment, which is drawn on to generate new ideas and policies to advance resource management with an aim to increase resource security and efficiency.

The following members of the MSWG contributed to and support this report:



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Executive summary

The rationale for the establishment of an Office for Resource Management (ORM) is to create a policy unit responsible for driving the shift from waste to resource and towards the circular economy. The ORM would have three main areas of policy interest: **resource security**, **efficiency** and **husbandry**.

Manufacturers' concerns around **resource security** and scarcity are mounting. Surveys of businesses show factors ranging from geopolitical tensions and demographical changes to shifting resource demands and climate change are combining to threaten the access to raw materials essential to the UK's economy and growth¹.

An Office for Resource Management

Given the economic and environmental importance of resources, there is a clear need for policy coherence across Government.

By providing co-ordination, policy advice, modelling and research, **the ORM would entrench the importance of resource security, efficiency and husbandry in Government thinking.**

To underline the shift in perception from waste to resource, and stress the economic importance, **the ORM should be created as a policy unit within BIS but with a remit to work across departments.**

The ORM should operate as a centre of expertise by researching, supporting and guiding departmental activity and **ensure all relevant policies are 'resource proofed' before implementation.**

Government needs a broader view of resources: one that maximises extraction of valuable, reusable materials currently disposed of. There is a need to consider how the materials required to sustain a healthy manufacturing industry flow through the economy.

Resource security can be improved through increasing **resource efficiency**: extracting maximum value from materials or products and minimising waste. The greater the optimisation of resource use, the more efficient the production of materials.

Waste policy is focused on the environmental context, with less attention on economic aspects and supply-side risks. As such, economic opportunities are being overlooked². Government can assist by helping to create new and sustainable markets for recycled/reprocessed materials and products by addressing both value and quality.

There is a growing body of evidence³ highlighting the economic opportunity and benefits to business resilience from enhanced resource productivity. By improving **resource husbandry** and moving to new business models – such as the circular economy – we can incentivise efficient resource use and minimise material inputs.

The circular economy concept argues for a shift from linear consumption (extract-make-use-dispose) to a more efficient resource model; one that seeks to achieve maximum value by reducing the input materials and extending the life, reuse and recyclability of all products.

It makes economic sense not just for individual companies, but also for the country to minimise the amount of waste generated. A concerted effort to alter how waste is viewed is an important first step: instead of seeing it as something to get rid of, we need to treat "waste" materials as a potential resource. Doing so will require co-ordination and leadership that only Government can bring.

At present, at least nine departments have resource-related policy, regulation or funding roles. Progress is stymied by limited coherence: a lack of overarching vision results in an inadequate accountability, direction and effectiveness. To coordinate improving resilience against resource risk, there is the need for a single Government focal point: an Office for Resource Management.

¹ EEF (2013) 'Executive Survey 2013' and EEF (2012) 'Executive Survey 2012'

² See, for example, Material Security Special Interest Group (2014) 'Innovation Opportunities and Material Security'

³ For example, Lavery/Pennell, 2 degrees; Institute for Manufacturing (2013) 'The Next Manufacturing Revolution' and Government Office for Science (2013) 'The Future of Manufacturing: A new era of opportunity and challenge for the UK'

1. Why create an Office for Resource Management?

The concept of an Office for Resource Management (ORM) has been developing since 2007 when the Institution of Civil Engineers⁴ argued for the creation of an “agent” which could work with Government at all levels and the private sector to deliver a resource management agenda. In 2011 and 2014 this was further developed into the concept of an ORM, a policy unit with a role centred on “leadership, communication, data management, strategic direction, planning and capacity building”⁵ to ensure the importance of resource management is entrenched across Government and to lead the setting of national innovation priorities⁶.

In 2012 the MSWG published an Action Plan calling for an ORM to co-ordinate Whitehall activity on the threat to the economy presented by resource insecurity.

EEF, the manufacturers’ organisation, published a detailed report warning of the economic risks posed by insecurity in supply of materials in 2014⁷. It recommended the creation of an ORM, located in the Department of Innovation Business and Skills (BIS) to ‘resource proof’ policy across Whitehall.

2014 also saw the House of Lords Science and Technology Committee report on the establishment of a ‘bioeconomy’. A key recommendation was that there should be more policy co-ordination within Government, which could be achieved through a Ministerial ‘waste champion’⁸. In addition, the Chartered Institute for Water and Environmental Management, recommended an ORM could be set up to monitor the impact of policies on resource use⁹. The IPPR with the Resource Association¹⁰ also called for an ORM to be tasked with increasing understanding of how resources to facilitate a cultural change in their use and re-use, as did the Aldersgate Group who also highlighted an ORM’s potential to develop a resource efficiency action plan¹¹.

1.1 Current policy

The approach to resource management by Government results in limited accountability, direction and effectiveness. Responsibility is divided between departments (see Figure 1, below) with little strategic co-ordination or oversight¹².

This inefficient, fragmented approach runs the risk of failing to build long-term resilience: there is a need to establish mechanisms to ensure departments work together to develop coherent policies that span lifecycles from raw material inputs, to reprocessed secondary products, to maximising recovery and minimising disposal.

As outlined in Defra’s Waste Management Plan for England¹³, in managing waste to support the economy and protect the environment, much has been done but much remains. Population increase,

⁴ Institution of Civil Engineers (2007) ‘The Case for a Resource Management Strategy’

⁵ ICE (2011) ‘State of the Nation: Waste and Resource Management’

⁶ ICE (2014) ‘The State of the Nation: Infrastructure 2014’

⁷ EEF (2014) ‘Materials for Manufacturing: Safeguarding Supply’

⁸ House of Lords Science and Technology Committee (2014) ‘3rd Report of Session 2013–14: Waste or resource? Stimulating a bioeconomy’. This role has now altered to a ‘bioeconomy champion’ and is shared between Ministers DEFRA and BIS, however, at present it is unclear what the exact terms of reference are.

⁹ CIWEM (2014) ‘Less is More: A Lifecycle Approach to Waste Prevention and Resource Optimisation’

¹⁰ IPPR (2014) ‘The Wasteline: Redefining Waste and Improving Resource Management Policy’

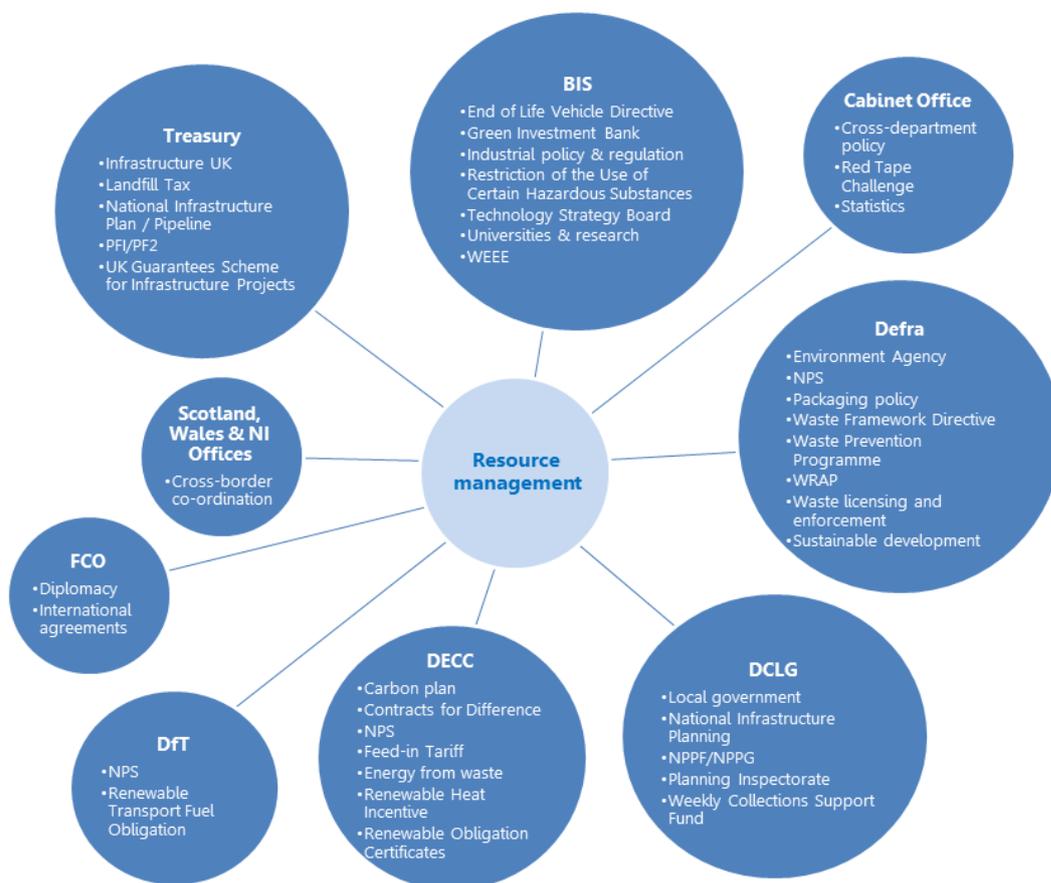
¹¹ Aldersgate Group (2014: 11) ‘Priorities for the Next Parliament’

¹² Through programmes such as Innovate UK (and formerly through WRAP), Government is developing an evidence base around resource efficiency and the circular economy. Nevertheless, they do not have a specific cross-departmental policy remit in these areas and it is debatable whether they have the full breadth of expertise to consider resource security issues in the round.

¹³ Defra (2013: 3) ‘Waste Management Plan for England’

rising consumption, climate change and raw material supply risks are combining to increase pressure on resources resulting in rising - but volatile - prices and supply risks.

Figure 1 Government departments and selected resource management responsibilities



To correct this fractured responsibility, an ORM should be established. It should have oversight around three tiers of resource planning and management:

- > **Resource security** - enabling the supply of materials to feed the UK economy
- > **Resource efficiency** - ensuring resources are used as productively as economically feasible
- > **Resource husbandry** - supporting the development of framework to provide strategic direction.

1.2 Resource security

Enabling the supply of materials to feed the UK economy

Security of material supply is an increasing concern for import-dependent manufacturers based in the UK¹⁴. Despite recent fluctuations, the overall trend in material prices is projected to escalate¹⁵: as three billion people join the global middle classes¹⁶ further pressure will be placed on already fragile and depleted ecosystems.

¹⁴ EEF (2013) 'Executive Survey 2013' and EEF (2012) 'Executive Survey 2012'

¹⁵ Chatham House (2012) 'Resources Futures'

¹⁶ Kharas, H (2010) 'OECD Development Centre: Working Paper No. 285. The Emerging Middle Class in Developing Countries'

The EU recently concluded that 20 materials, including rare earth elements, magnesium and natural graphite, have significant supply risks due to main deposits being located in areas of political instability¹⁷. In future, a greater number of materials – from wood, plastic and rubber to the metals in everyday electronics and low-carbon technologies – are likely to come under supply pressures. Indeed, the World Economic Forum¹⁸ has judged mineral resource supply vulnerability to be one of the highest impact risks on technology development and deployment in the next decade.

The Government's Resource Security Action Plan¹⁹ was a welcome first attempt to position resource management in the context of long-term material security. However, more can be done to help improve business resilience against the impacts of rising global demand for materials.

While the UK is fortunate to have mineral resources that provide some of our raw material and energy requirements, the security of essential inputs into the manufacturing processes from imports is vital in sustaining the economy in the longer-term.

Policies and actions designed to address resource security issues should not only consider insecure supplies, volatility and long-term price rises, but also material trade-offs and needs, particularly in terms of mineral extraction, energy policy and industrial strategy.

A range of market failures, including around information, combined with non-competitive and unstable markets, are leading many nations to develop their own raw materials strategies to help secure supplies of economically-important minerals and metals.

Increasingly, governments are working with industry to put in place systems to improve resilience to resource shocks: Germany, the Netherlands, Austria, France and Finland are among those that have established national strategies to complement EU-wide activity driven by the European Commission's Raw Material Initiative. Elsewhere, in order to facilitate a market response, China, Japan, South Korea and the USA have put in place comprehensive strategies designed to increase supply of raw materials, reduce dependency on materials whose supply is insecure and address information inadequacies.

It is clear the UK needs to develop similar policies – not only to improve resource security but also to support the Government's aim of rebalancing the economy. This would be assisted by a 'Stern-for-Resources', similar to the 2006 report for the Treasury by Lord Stern on the costs of climate change²⁰. Such a review should not only look at the security of materials themselves but also how much land and water are used and carbon produced in their extraction. As with the Stern Review itself, this could guide decision-makers in developing the policies and governance required to ensure economic resilience while safe-guarding the environment. The review could also provide an evidence base for policy-makers to develop an effective national resource strategy.

The information gathered from the Stern for Resources would help drive the key role of innovation. From substitution to the development of novel materials, it can help to reduce dependency on scarce or insecure materials. Government can also accelerate innovation by investing in research and development in the academic and industrial sectors, including through research councils, Innovate UK and around the adoption of new business models.

The security of raw materials is essential for manufacturing to help to sustain the UK economy

¹⁷ European Commission (2014) 'The European Critical Raw Materials review'

¹⁸ World Economic Forum (2013) 'Global Risks 2013 Eighth Edition'

¹⁹ BIS/Defra (2012) 'Resource Security Action Plan: Making the most of valuable materials'

²⁰ The Stern Review examined the relative costs of climate change and found to review the economics of climate change, including mitigation and adaptation. It found action is of more value than business as usual, which became the basis of UK climate policy over the last decade. See FoE (2014) 'Why the UK needs a 'Stern-for-Resources'

At present, Government support for innovative manufacturers is under-resourced, piecemeal and lacking the overarching strategy required encouraging businesses to invest in sustainable management of resources. A stable and clear prioritisation framework with the aim of driving and sustaining long-term economic growth is required.

1.3 Resource efficiency

Ensuring resources are used as productively as economically feasible

The most efficient way of dealing with waste, both economically and environmentally, is to avoid creating it in the first place. Indeed, analysts, such as McKinsey, have estimated that 30% of future material demand can be met by using materials more efficiently²¹. prevention is at the top of the 'waste hierarchy' set out in EU and national waste legislation²². The efficient use of resources not only saves money but also minimises impact on the environment.

Figure 2 The four design models for circular resource use²³



²¹ McKinsey Global Institute (2011) 'Resource Revolution: Meeting the world's energy, materials, food, and water needs'

²² European Commission (2008) 'Waste Framework Directive' and HM Government (2011) 'The Waste (England and Wales) Regulations 2011'

²³ Source: RSA (2013) 'Investigating the role of design in the circular economy'

Waste reduction is about increasing the efficiency in the way products and their components are designed, manufactured, consumed and disposed of. In general, the greater the value that can be extracted at each stage, the less waste is produced. There remains scope to increase efficiency and reduce waste through each phase of a product's lifecycle – during material mining, manufacture, and transportation, throughout its use, and once it has been discarded. If properly incentivised and supported, this can be achieved through improvements in processes and systems and supply-chain collaboration.

Efficiency can be further enhanced through circular resource use. At present, the economy is based on a linear model of extract-make-use-dispose. A circular model requires products to be designed with recovery – be it reuse, remanufacture or recycling – in mind. For example, as shown in Figure 2 (above), the RSA identified four schemes: designs for:

- > **Longevity:** long lifespan easily extended through upgrade and repair
- > **Leasing/service:** as an alternative to buying and owning
- > **Reuse:** products or components taken back to be rebuilt for resale and material recovery
- > **Recycling:** where products can no longer be reused they - or their components - should be easily recyclable.

Recent evidence²⁴ points to significant economic opportunities and enhanced business resilience for those adopting a circular approach. However, there remain significant barriers. While some companies are adopting circular business approaches, acceleration and growth of this economic model would require structural change, new business models and co-ordination from policy-makers.

Crucially, as any attempts to move to a circular economy would also need to be accepted by the public, Government would have an important role. Here, an ORM would be ideally placed, for example in exploring enabling policies, direction and long-term planning combined with public engagement and communication, similar to the RecycleNow campaign, which was arguably instrumental in developing a recycling culture in the UK.

1.4 Resource husbandry

Supporting the development of a framework to provide strategic direction

A healthy recovery and recycling sector can provide material feedstock to help meet future needs. The market failures here are well recognised by Government, which until recently was involved in policy development in this space. However, poor coordination and data is leading to a lack of effectiveness. Overall, the country is not yet thinking how we best handle materials for the good of both our economy and the environment.

The availability of accurate information is crucial for sound public policy and the effective operation of markets. Material flows are largely unmonitored compared to the financial flows they accompany. This results in sub-optimal decisions about materials management at every economic stage. Without good data it is impossible to determine the right facilities to invest in and their optimum location – or indeed, if in one type of technology is seeing over-investment.

Government disengagement is reflected in the Waste Management Plan for England²⁵, which is predominately driven by the need to comply with European legislation rather than being an end in itself.

²⁴ The Ellen MacArthur Foundation estimates that the circular economy represents a net material cost saving opportunity of US\$340 to \$380 billion p.a (Ellen MacArthur Foundation (2013) 'Towards a Circular Economy').

²⁵ Defra (2013) 'Waste Management Plan for England December 2013'

Additionally, Defra has “stepped back” from policy work around recovery and disposal of commercial and industrial (C&I) waste unless there is no clear market failure²⁶. However, it is widely accepted because of outdated and often inaccurate waste management data such evidence would be very difficult to prove²⁷.

The availability of accurate data is crucial for sound public policy and to determine optimum investment

It follows that Government’s role in shaping the ‘information infrastructure’ needs explicit attention. Until we have high quality data and statistical information, it will be very difficult for policymakers to understand the UK’s resource needs and vulnerabilities, let alone how materials contribute to the economy or remain in productive service for longer.

A role for the ORM would be to address the information gap through working with businesses and policy makers facilitating the development of tools enabling measurement of resource consumption so they can devise ways of reducing it; for example through identifying resource flows, inefficiencies and ‘hotspots’ in their supply chains.

²⁶ Rogerson (2013) ‘Stakeholder Letter 6 November 2013’

²⁷ See, for example, Ricardo-AEA/CIWM (2013) ‘CIWM Report 2013 Commercial and Industrial Waste in the UK and Republic of Ireland’

2. What would an Office for Resource Management do?

The MSWG notes Government has progressed long-term material security, most notably through the Resource Security Action Plan²⁸. Nevertheless, the recent decision by Defra to limit its involvement in resource management policy development²⁹ and other examples such as the inactivity of the Green Economy Council³⁰ shows more can be done to help improve business resilience against the impacts of rising global demand for materials. Only Government can set policy frameworks, act as a facilitator for action (both at home and through the EU) and provide support for innovation where market conditions - both on the supply and the on demand side - are difficult.³¹

Successful outcomes depend on designing policy with clear objectives, realistic timetables and professional project planning. Government departments need access to credible evidence and data to inform their decision making: policy that is difficult to implement drains time and money³². To address this, departments are increasingly establishing policy units, both to enable more effective interaction and to tackle long term and cross-cutting issues³³. It is envisaged the ORM would have this type of role.

2.1 The ORM's remit and role

Many of the policies affecting resource use and security, including trade and energy are UK-wide; however, others such as waste disposal/recovery and planning are devolved. Therefore, the ORM's remit would be for England only but, where required, it would co-ordinate with the devolved administrations and be the lead body representing the UK, European and international negotiations. Such an approach would also ensure UK views are represented to influence developments for the benefit of UK industry.

Cultivation of the right knowledge base is key to ensuring the complexity of resource management is properly handled and does not lead to trade-offs and contradictions in policy objectives. Here, it is important to remember resource management and the circular economy applies to all stages of a product and its components life from the security of input materials, the product design and markets for reuse and remanufacture, and ensuring vibrant markets for secondary materials.

The ORM would forecast, model and research to improve the economy's resilience to resource shocks

The ORM would act as a co-ordinator, convenor and information centre, tasked with forecasting, modelling and research. It would also present policy recommendations to enhance resource management and security, improving the economy's resilience to resource shocks and risks.

The ORM would effectively act as a resource management and resilience champion across Government. Nonetheless, it is for departments to manage their policies, for example Defra with environmental regulation and DCLG leading on planning.

Rather than producing produce policies where another department has responsibility, the ORM would lead on setting overall direction and provide guidance and support to policy officials. In addition,

²⁸ Defra/BIS (2001: 101) 'Resource Security Action Plan: Making the most of valuable materials'

²⁹ Defra (2013) 'Waste Management Activities for 2014 to 2015: Defra letter from Dan Rogerson'

³⁰ MRW (2015) 'Rogerson probed over Green Economy Council inaction'

³¹ Defra/BIS (2001: 101) 'Resource Security Action Plan: Making the most of valuable materials'

³² GDS (2013) 'Implementing policy and sharpening accountability'

³³ Institute for Government (2012) 'Policy Making in the Real World'

it would operate by drawing up guidelines and providing relevant data and evidence for departments to 'resource proof' their policies.

The ORM's particular functions should include:

- > Ensuring resource management and the circular economy is embedded in Government thinking and policy development
- > Working with Government and the devolved administrations to further develop the Resource Security Action Plan (RSAP) in the context of long-term material security
- > Undertaking a review of current competencies and vulnerabilities including modelling scenarios to inform policy making and direction across Government
- > Working with Government departments to manage resource proofing to be mainstreamed into policy-making
- > Collaborating with stakeholders and agencies to develop policy and identify national innovation priorities, strategy and funding for resource security, efficiency and recovery/recovery/industry
- > Leading the setting of national priorities in the sector and support the development of future National Waste planning policy, and updates to National Waste Management Plan and National Infrastructure Plans
- > Constructing detailed material flow accounts, monitor resource prices and develop consumption-based accounting, as cost effectively as possible
- > Working with the devolved administrations, represent the UK in European and international negotiations on resource security and waste disposal/recovery, including the update to the Waste Framework Directive
- > Supporting the sustainable use of primary mineral resources in the UK and engagement with international organisations around the development of guidance on extraction.

3. How would an Office for Resource Management operate?

Whitehall has a virtual monopoly on policy development, which by its own admission means policy is often drawn up on the basis of too narrow a range of inputs and is not subject to rigorous external challenge prior to announcement³⁴.

Using the Rural Communities Policy Unit (RCPU) (see section 3.2, below) as an example, the ORM would not be expected to have a legislative footing - it would be a team within a Government department given a formal name and allocated staff including departmental and industry secondees. The ORM's policy remit would be cross-departmental and be run by people from a wide range of backgrounds. Much as the RCPU produces rural proofing guidance, the ORM should operate by drawing up guidelines and provide relevant data and evidence for departments to 'resource proof' their policies.

An ORM would ensure policies are considered in terms of their impact on resource management. Therefore, it should lead by example and work collaboratively within Government, its agencies and the Civil Service and outside with, for example, the manufacturing and waste sectors.

3.1 The ORM's location

As the ORM would be a policy unit rather than an agency or NDPB, its establishment would not affect departmental responsibilities, nor require legislation to establish.

A unit's location will help to define it – partly by the expertise of those working around it but also through ethos. BIS is the department charged with creating the conditions for business success and promoting enterprise and science. It is home to the Green Investment Bank, the Green Economy Council, Innovate UK and the Government Office of Science, all of which are involved in advancing the green economy and resource efficiency.

The ORM's responsibilities are similarly about ensuring economic growth through innovation, resource security and efficiency. Therefore, consideration should be given to locating the ORM as a unit within BIS.

The ORM would work with and complement - rather than replace - existing bodies such as Innovate UK. It would be expected to take a co-operative approach to drawing up policy, including collaborating with agencies and stakeholders.

Communication and co-operation will be central to its success: while the ORM would be a departmental body staffed mainly by civil servants, it is essential that it is as inclusive as possible, involving stakeholders and secondees where appropriate and developing robust strategies for engaging with businesses, explaining the benefits of a circular economy and providing support where needed.

The ORM should have a role and function analogous to the Rural Communities Policy Unit (RCPU). Responsible for rural policy within and across Government, the RCPU operates as a centre of expertise, supporting and co-ordinating activity across all departments and, in particular, ensures all relevant policies being developed are 'rural proofed' before being implemented (see section 3.2, below).

Through ethos and expertise, a policy unit's location will help to define it; the ORM should be within BIS

³⁴ GDS (2013) 'Improving policy making capability'

In a similar vein, while the onus would be on individual departments to develop policies the ORM would provide policy coordination; facilitation and examination working with departments to ensure policies are 'resource proofed'.

3.2 The Rural Communities Policy Unit: a potential model

The Rural Communities Policy Unit (RCPU) could provide a model for the ORM. Established in 2011, it sits within Defra and is the lead rural policy function within Government working closely with all departments whose policies impact on rural communities. A RCPU priority is to build capacity across Government through helping departments to deliver their rural roofing responsibilities and mainstreaming rural issues.

A key function of the RCPU is to 'rural proof' policies: assessing options and advising on the likelihood and possible scale of rural impacts and suggesting actions that could be taken to mitigate these. Rural proofing is applied at all stages of policy development including assessing the evidence of rural need and circumstance at the start of designing a policy and where appropriate, adjusting policies or delivery.

The RCPU has around 35 staff, including statisticians and policy experts working in areas such as transport, housing and rural services – in line with ministers' stated rural priorities. In addition, it commissions external evidence from academics and runs stakeholder engagement programmes: it has made engaging with representatives of rural communities and businesses central to its way of working.

It has actively assisted Government departments with over sixty different policy areas to ensure rural dimensions are being appropriately and proportionately considered. This has included holding workshops with all departments and reviewing their rural proofing analysis in the impact assessments carried out on all new policies.

Conclusion

The idea of creating an ORM is not a particularly new one; the concept of creating a body charged with drawing together the responsibilities for resources currently spread across agencies, departments and administrations has been around for at least a decade.

While it may not be a novel concept, it is one whose time has come. There is a growing realisation that resource security, efficiency and husbandry - as embodied in the circular economy - are essential to ensuring economic and environmental resilience. As a result, institutions, trade associations, environmental groups, think tanks and Parliamentary committees have all called for the establishment of a unit to enable material resources to be prioritised.

Government is starting to listen. In response to the Lord's Science and Technology Committee's report on Stimulating a Bioeconomy³⁵ a ministerial 'waste champion' was appointed³⁶. This has since been changed to a 'bioeconomy champion' a role shared between Ministers at BIS and DEFRA. While further details are awaited, it appears this could be a first step in creating a cross-government role around resource management.

The establishment of an ORM as a policy unit with cross-departmental reach would embed the circular economy in Government, for example by ensuring all relevant output is 'resource proofed'. The MSWG urges all parties, politicians and policy-makers to act on the current momentum by providing strategic leadership not only for the benefit the environment and economy but also to increase Government effectiveness.

³⁵ House of Lords Science and Technology Committee (2014) '3rd Report of Session 2013–14: Waste or resource? Stimulating a bioeconomy'

³⁶ HM Government (2014) 'Government Response to the House of Lords Science and Technology Committee Report: 'Waste or Resource? Stimulating a bioeconomy''



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