The case for consumption-based targets

June 2022

Scotland must take responsibility for the global environmental and social impacts of its consumption. The Scottish Government's climate targets do not guarantee a reduction in global emissions because they only cover emissions within Scotland. Imported goods, which make up more than half of Scotland's carbon footprint, are not accounted for. By ignoring this, Scotland's climate policies risk replacing one environmental and social crisis with another.

The Circular Economy Bill, currently being consulted on by the Scottish Government[1], is a timely opportunity to establish consumption-based targets for Scotland. Both material and carbon based consumption measures are suggested in the consultation as options for statutory targets for measuring progress towards a circular economy. Only by accounting for our global impact, can Scotland play its part in a truly sustainable future.

What are consumption-based targets?

There are different approaches to accounting for environmental impact. Environmental accounting is most often applied to greenhouse gases, as part of the global effort to mitigate climate change, however, the method can be applied to any type of environmental impact.

Territorial-based accounting

The United Nations Framework Convention on Climate Change (UNFCCC) requires countries to submit annual reports to assess the greenhouse gas emissions within their geographical borders. These are known as territorial-based emissions. Scotland reports its territorial emissions internationally as part of the UK. Scotland's main climate change goals largely follow a territorial approach as well.

Consumption-based accounting (carbon footprint)

An alternative approach is to allocate emissions to the consumers of products and services. For example, a mobile phone might be designed in the USA, made with materials from China, sold to a consumer in Scotland and recycled in the EU. With consumption-based accounting all the emissions associated with the phone would be attributed to Scotland. This type of accounting illustrates the link between globalisation, economic growth and the resulting environmental impacts more clearly than territorial-based accounting. Consumption-based accounting is used to calculate carbon footprints[2]. In 2022, Sweden became the first country to declare it will set consumption-based targets.

Climate and material footprints

The impacts of climate change are measured through greenhouse gas emissions. However, environmental damage occurs, not only through climate change, but through other types of impact as well, such as biodiversity loss and land-use change. Dumping plastic in the ocean, for example, may not have a big climate impact but it is still environmentally damaging. To

[1] Scottish Government (2022) Circular Economy bill consultation (live until 22nd August 2022)

[2] For more details on the differences between territorial and consumption emission reporting, see Annex 1

become fully sustainable, a broader scope of environmental damage created by our consumption must be considered.

Over-consumption of materials is the cause of many types of environmental damage. Therefore, to become sustainable, Scotland must measure and reduce its material consumption, as well as climate change emissions. Material consumption can be measured using a material footprint, which is similar to a carbon footprint and uses consumption-based accounting. **Friends of the Earth Scotland is calling for a reduction in both carbon and material footprints** to ensure Scotland reduces its climate and broader environmental impacts simultaneously.

Why does Scotland need consumption-based targets?

Scotland's environmental impact is larger than the considerations of our current climate policies

In order to meet the Paris Agreement goal of keeping temperature increases to the critical 1.5ºC threshold greenhouse emissions must come down sharply over the next decade. The Scottish Parliament has passed legislation enshrining targets to reduce its domestic emissions by 75% on 1990 levels by 2030 and to net zero by 2045, however it has no such targets for its overall consumption emissions. Scotland's global greenhouse gas emissions ('consumption emissions' in Figure 1) are higher than its domestic emissions ('territorial emissions' in the figure). Both have fallen over time but the gap between the two is widening. In 1998, consumption emissions were 22% higher than territorial emissions but by 2018 they were 44% higher.

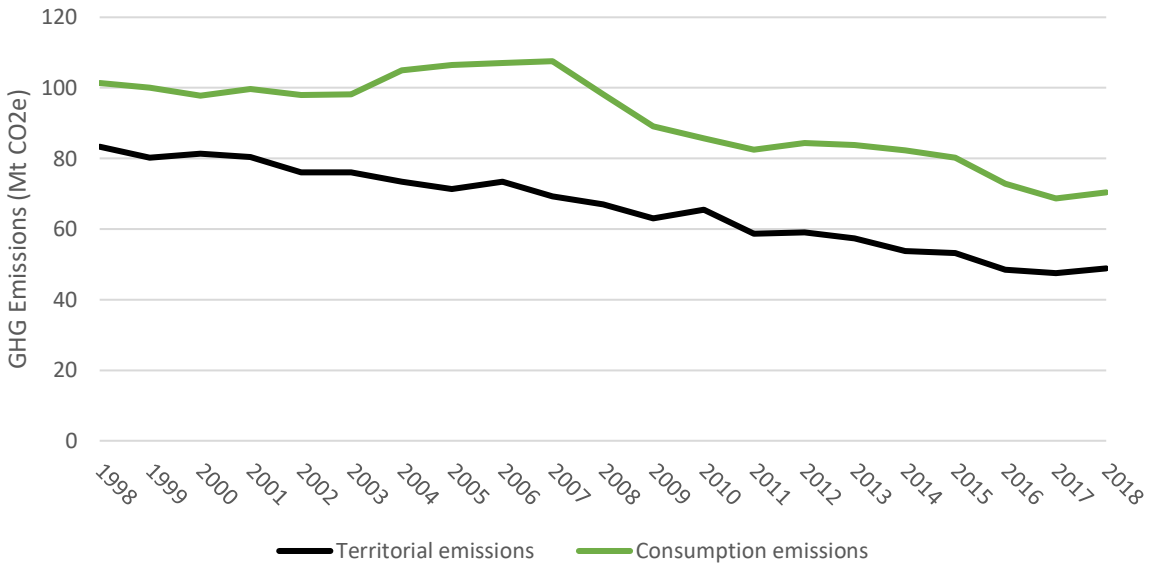

Figure 1. Scotland's territorial[3] and consumption[4] emissions, 1998-2018, Mt CO_2e

The reason the gap between consumption and territorial emissions is increasing is because of a rising trend in emissions from imports. Scotland's carbon footprint can be broken down into emissions from imports, domestic production and emissions from heating and transport. At 52%, emissions from imported products and services make up a larger proportion of

[3] Scottish Government (2021) https://www.gov.scot/publications/scottish-greenhouse-gas-statistics-1990-2019/documents/

[4] Scottish Government (2022) https://www.gov.scot/publications/scotlands-carbon-footprint-1998-2018/

Scotland's carbon footprint than all domestic emissions (Figure 2). Emissions from imports become increasingly significant as domestic emissions continue to fall.

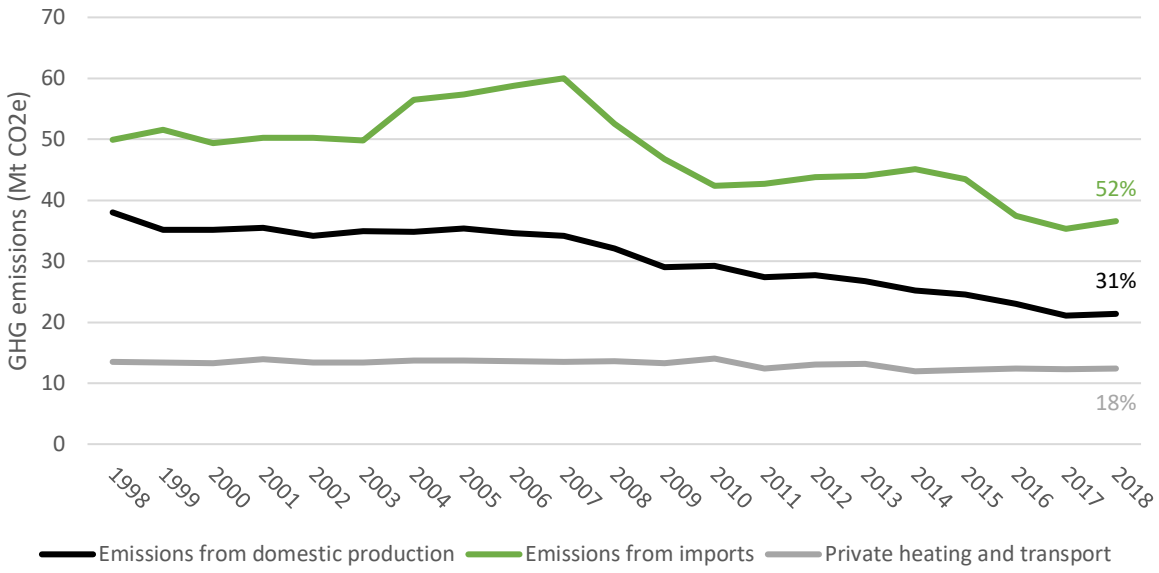

Figure 2. Scotland's consumption emissions shown by domestic production, imports, heating and transport[3]

Whilst these impacts are occurring outside of Scotland's geographic borders, Scottish demand for the goods and services are the driving force behind their creation. The Scottish Government has a responsibility to measure these impacts and set targets for reducing them in line with science-based evidence. Material consumption datasets are not as well established as carbon datasets. Scotland reported its material footprint for the first time last year (for the years 2011-17)[5]. Scotland consumed 99.8 million tonnes of materials in 2017. This figure includes both domestic and imported material consumption.

Scientific consensus suggests that people can live high quality, sustainable lives on about 8 tonnes of materials per year[6]. The Scottish Government should legislate for targets to reduce consumption to this level, and work with stakeholders from all sectors of the economy to plan and transform each sector in line with these targets. Examples of how consuming nations can take responsibility and action to reduce their global impact are considered in the section on challenges and requirements in this paper.

[5] ZWS (2021) Material Flow Accounts for Scotland https://www.zerowastescotland.org.uk/research-evaluation/material-flow-accounts-mfa

[6] For example: Lettenmeier et al. (2014) https://www.mdpi.com/2079-9276/3/3/488/htm and the UNEP-hosted International resource panel (2014) Managing and conserving the natural resource base for sustained economic and social development

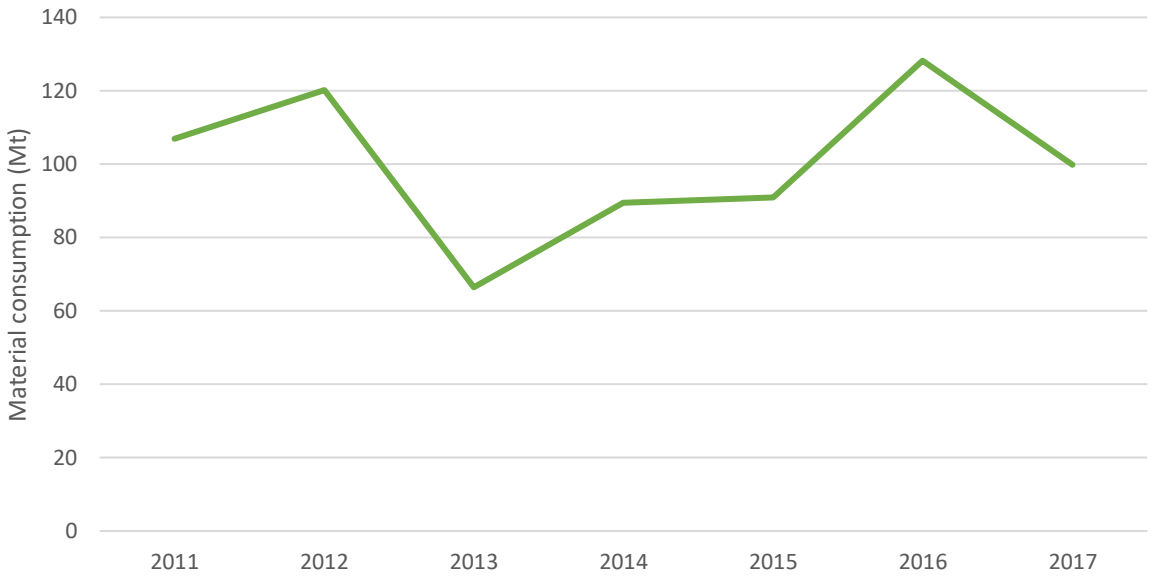

Figure 3. Scotland's material footprint 2011-17[4]

Scotland's carbon and material footprint are higher than UK and EU averages (Figure 4).

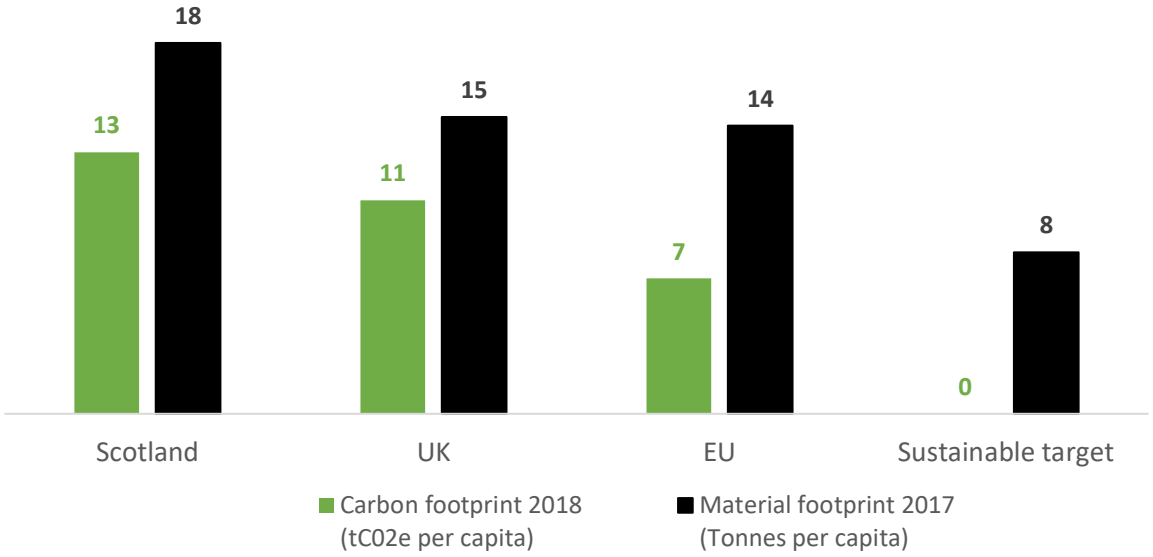

Figure 4. Comparison of Scotland's material and carbon footprint to the UK[7] and EU[8] averages and environmentally sustainable targets

Ignoring emissions from imports can lead to unintended consequences

The steady reduction in territorial emissions is largely due to the successful decarbonisation of the UK electricity grid. However, the focus on territorial emissions reduction can sometimes be counter-productive. For example, there was a significant fall in territorial emissions in 1992 when Scotland's last steelworks mill at Ravenscraig closed. Whilst Scottish territorial emissions from steel-making have fallen to zero, this has not coincided with a drop in Scottish consumption of steel. Instead, millions of tonnes are imported, some of which comes from coal-based economies. Despite steel being responsible for about 8% of

[7] ONS (2021) Material Flow Accounts and consumption emissions reports
[8] Eurostat (2021) Material Flow Accounts and carbon footprint reports

global carbon emissions, and its continued importance to the Scottish economy, the impact of Scotland's steel demand is unknown and there are no policies which aim to make Scottish steel consumption more sustainable.

These unintended consequences are most clearly seen in Scotland's plans for an energy transition from a system based on fossil fuels to one based on renewable energy. As discussed in the following section, this transition is fundamental to the success of Scotland's climate targets but efforts to reduce territorial emissions are causing environmental and social impacts abroad.

By failing to address our global consumption as we decarbonise demands Scotland risks replacing one environmental crisis with another.

Swapping fossil fuels for critical minerals

The transition from fossil fuels to renewables is a vital step in mitigating the climate crisis. These technologies produce energy without emitting greenhouse gases but require huge amounts of minerals to build, such as steel for foundations and rare earth metals such as neodymium for batteries.

These minerals are dangerous and difficult to mine and process. They are concentrated in a handful of countries, most of which have poor human rights records, and half of the world's metal mines are 20 km or less from protected areas[9]. They are also carbon-intensive to extract and purify. However, none of this is not taken into account in Scottish policy making because it happens outside of the boundaries of our climate targets. Renewable technologies may be reducing Scotland's greenhouse gas emissions but the global cost is still high. A globally sustainable and just transition to this new energy system must found. For this to be incorporated into Scotland's environmental and climate policies we must have targets to reduce these impacts.

A great advantage of a mineral based energy system over a fossil fuel based one is that minerals can be recycled. There is already a well-established process for steel, aluminium and copper, but recycling must become a priority for minerals like cobalt, nickel and lithium to limit global demand for extraction. Scotland's Circular Economy bill is an opportunity to establish the foundations needed to transform our economy to accommodate these future needs.

The Climate Change Committee (CCC) is an independent statutory body which advises the UK and Scottish Governments on climate policy. In its sixth carbon budget report for the UK, the CCC recognised the need and capacity for the UK to reduce its import emissions, stating:

"The UK can and should aim to reduce its overseas consumption emissions as part of helping global decarbonisation."[10]

In its latest progress report to the Scottish Parliament, the CCC listed the Circular Economy bill as an opportunity to "drive the efficient use of resources in both production and consumption"[11]. The Circular Economy bill aims to transform Scotland's use of materials to create a sustainable, low-carbon economy. Therefore, material and carbon footprint reduction targets should be included at the heart of this bill.

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[9] Luckeneder et al. (2021) Surge in global metal mining threatens vulnerable ecosystems

[10] CCC (2020) Sixth Carbon Budget

[11] CCC (2019) Progress report to Scottish Parliament

What should Scotland's consumption-based targets be?

Scotland needs material and carbon consumption-based targets to reduce its global environmental impact. The targets should be legally binding and science-based (meaning their ambition matches the required reductions set out by the latest scientific evidence).

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 sets out Scotland's enhanced decarbonisation targets (which are largely territorial but include emissions from international shipping and aviation as well). This includes an interim target to reduce emission by 75% by 2030 compared to 1990 levels and final target of net zero by 2045. Figure 5 below shows Scotland's territorial and consumption based emissions to 2018, Scotland's existing climate targets and proposed consumption targets. This includes a 75% reduction on 1998 consumption levels by 2030 and net zero consumption emissions by 2045[12].

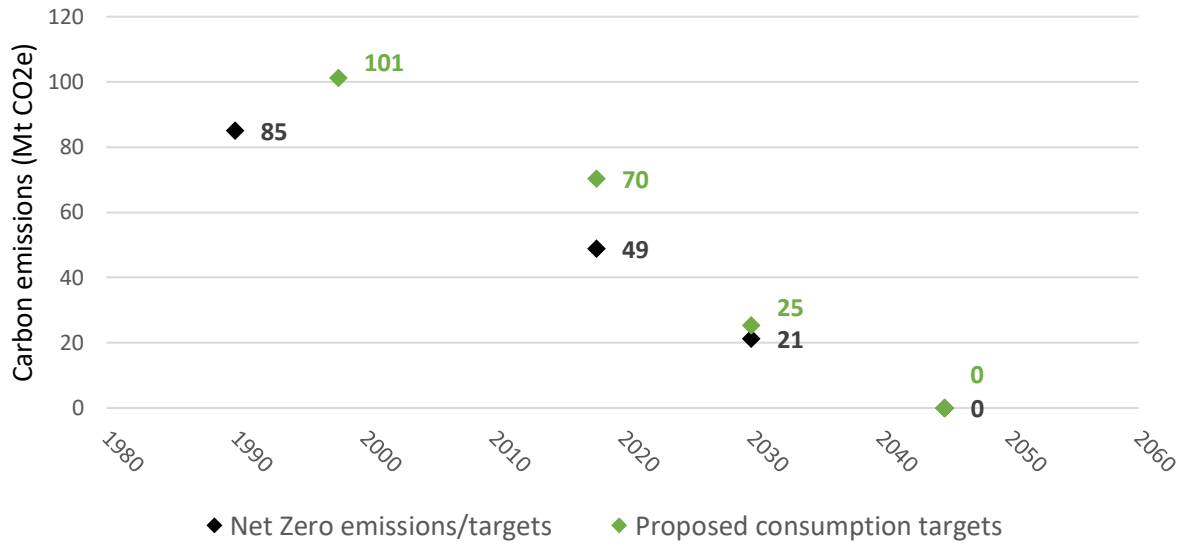

Figure 5. Scottish territorial and consumption reported greenhouse gas emissions (up to 2018) and targets (after 2018)

Challenges and requirements

Uncertainties in the data

There are uncertainties in the data, particularly around production emissions of imported goods and intra-UK trade. However, Scotland has already been reporting consumption emissions for many years so there is good technical knowledge of these issues. The Scottish government should work with its academic partners on consumption modelling from Leeds University and other consumption experts to understand and reduce these uncertainties.

[12] 2045 is proposed as the target date for consumption emissions because it align with existing territorial targets and to ensure Scotland makes a fair, science-based contribution to reducing emissions which aligns with the 1.5°C goal of the Paris Agreement, which reflects its historic contribution to climate change. A baseline of 1998 is proposed as this is when consumption emission reporting began in Scotland.

Even a high level understanding of consumption emissions is enough to begin prioritising and targeting the main emissions sectors. Given the urgency of the climate crisis, a balance between reliable data and action is now required.

There are now several examples of consumption-based goals being adopted into policy making. Sweden has not let data issues hold back their commitment to reducing consumption emissions[13]. Their consumption target will include sector level targets, designed in consultation with each sector, which will measure savings bottom-up. Overall progress will be tracked using a top-down national consumption target. The Netherlands set a material-based target to become waste free by 2050[14]. The European Parliament voted in 2021 to create science-based binding targets for material use and consumption footprinting[15]. Given the urgency of the climate crisis, FoES recommends a pragmatic approach following in the footsteps of these international examples.

Consumer nations have sufficient control over consumption emissions

A concern often cited with targeting consumption emissions is a lack of control over actions occurring in other countries. This fails to recognise the power and responsibility of the consuming nation, as these examples of ways to decrease consumption-based emissions that consuming countries can do demonstrate:

- Buy less carbon intensive goods and services e.g. red meat, air travel.
  Examples of policies: taxes on flights, meat and fuel, developing strategies for sustainable supply of key materials e.g. steel.

- Switch to lower carbon alternative products like buildings made from wood, not concrete.
  Examples of policies: requirements for sustainable materials to be considered in the planning framework.

- Keep products for longer, make them more durable and stimulate repair and reuse.
  Examples of policies: support for reuse organisations and service business models, no VAT on repair services, laws on longer guarantee times.

- Shift consumption patterns to goods and services with lower emissions.
  Examples of policies: requirements for public bodies to adopt circular economy business models for procurement, requirement to state recycled content, carbon labelling on consumer products.

An independent advisory body

An equivalent body to the CCC for consumption targets would be required, given the technical and pioneering nature of these targets. This should include international experts on consumption emissions and material use which would ensure Scotland benefited from the broad understanding and experience available beyond its boundaries.

Recommendations

Friends of the Earth Scotland is calling for the follow in the Circular Economy Bill:

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[13] Global challenge (2022) Towards Net Zero: reducing consumption-based emissions

[14] https://www.government.nl/topics/circular-economy/circular-dutch-economy-by-2050

[15] https://www.europarl.europa.eu/news/en/press-room/20210122IPR96214/meps-call-for-binding-2030-targets-for-materials-use-and-consumption-footprint

1. Set legally binding, science-based targets to reduce Scotland's material consumption to sustainable levels. This should include:
    - **A greenhouse gas emissions based target to reduce Scotland's carbon footprint to zero by 2045**, with an interim target to Scotland's carbon footprint by 75% by 2030 based on 1998 levels.
    - **A materials-based target to reduce Scotland's material footprint by 57% (8 tonnes per person) by 2045**, with an interim target to reduce material consumption by 30% (13 tonnes per person) by 2030 based on 2017 levels[16].

2. **Sector level resource plans**, created in collaboration with stakeholders, that combine to achieve the national overall consumption-based targets should be established.

3. A **new independent circular economy advisory body** should be established, drawing on international expertise to guide Scotland towards its goal.

4. A pragmatic approach to data which accepts its limitations whilst allowing sustainable material strategies to be prioritised.

[16] As noted above, 2045 is proposed as the target date to align with the carbon based targets and requirements of keeping to the 1.5°C goal of the Paris Agreement. The baselines are based on the year reporting began in Scotland for GHG emissions and material flow accounts respectively.

Annex 1. Comparison of Territorial and consumption accounting approaches

Emissions from…	Scottish Territorial	Scottish Net Zero Targets	Scottish Consumption
Industries located in Scotland and RoUK, making products consumed in Scotland			
Industries located in Scotland, making products consumed in RoUK or RoW			
Industries located in RoUK or RoW, making products for RoW			
Industries located in RoW, making products for Scotland			
Bunker aviation and shipping used by Scottish residents			
Scottish citizen activity within Scotland			
RoUK and RoW citizen activity within Scotland			
Scottish citizen activity in RoUK and RoW			
RoUK and RoW citizen activity in RoUK and RoW			