

From: [REDACTED]  
Sent: 03 October 2022 19:32  
To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Sorry [REDACTED],

Checked with [REDACTED] and other than in an FOI response I don't think we have used the 60% thing specifically.

[REDACTED] and [REDACTED] may have a better version for the general ScotWind programme but what about the below as a start?

“Scottish seas are roughly six times the size of our terrestrial area and account for 60% of the total UK marine area. With ample wind resources across this region we have a significant opportunity to maximise our offshore wind potential. This can be seen in the results of the recent ScotWind seabed leasing round with 27.6GW of potential projects identified, in the world's largest floating offshore wind round. Building on that success we now in progress to deliver a new offshore wind leasing round to help decarbonise oil and gas production that is, through the Innovation and Targeted Oil and Gas decarbonisation (INTOG) plan and leasing round” targeting a further 4.5GW of offshore wind generation.”

[REDACTED]

[REDACTED] | [REDACTED] | Marine Scotland  
Scottish Government | 1 A South | Victoria Quay | Edinburgh | EH6 6QQ

Tel: [REDACTED] or [REDACTED]  
Email: [REDACTED]  
[www.marine.gov.scot](http://www.marine.gov.scot)  
[www.gov.scot/marinescotland](http://www.gov.scot/marinescotland)

From: [REDACTED]  
Sent: 03 October 2022 16:31  
To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Thanks [REDACTED] – understood. That line keeps popping up in comms lines so would be good if you all try and put this one out to grass...

One final thing: you said this in your email last week:

It would be better, I think, to point to our significant resources – we have 60% of UK seas and the success of ScotWind being the world's largest floating offshore wind leasing round and setting out a potential for up to 27.6GW.

Are there specific comms lines around this we could use? E.g. from a News Release? We'd have to rewrite your lines above but not sure how to make them understandable to a wide audience.

Any suggestions very welcome!

[REDACTED]

---

[REDACTED]/ [REDACTED] Constitutional Futures Division  
e: [REDACTED] - m: [REDACTED]- [REDACTED]

From: [REDACTED]  
Sent: 03 October 2022 15:31  
To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED] and [REDACTED]

Afraid there's been a bunch of urgent requests today so sorry for the delay in looking at this.

Unless [REDACTED] or [REDACTED] can point to something, I am not aware of any assessment of potential in the same style as the IEA report that would allow you to easily compare figures to get a potential share of resources.

The future offshore wind scenarios work by The Crown Estate and Crown Estate Scotland set out to identify options for development of up to 140GW (from the CCC) of offshore wind in the UK based on a (large) series of scenarios and assumptions. And I think that is where the issue of "potential" gets a bit difficult. Even the 140GW was something like 200 map options.

The IEA report looks at wind speed and assigns values across various regions. It does not appear to account for any existing uses or conflicts/constraints etc. The map at page 80 shows that overview for Europe but without access to the data or re-running it I don't think we could get a subset for Scotland. It also looks like they have excluded anything within 12NM, which automatically removes some of our operational windfarms in Scotland.

In A.3 they have set out the total TWh per year for Europe based on their analysis. If that could be converted back to generation capacity you could compare that to what we currently have in operation, consented and planned (see below) but that would be versus a potential with no timeline in the IEA.

Project Type	Total Consented (MW)	Total Installed Operational Capacity (MW)
Tidal	137.1	7.4
Wave	1.65	0
Wind (fixed)	5532.9	1775.2
Wind (floating)	92	77.5
Grand Total	5763.65	1860.1

Plus 4.1GW planned from round 3 (Berwick Bank) and 27.6GW from ScotWind.

I'm afraid this is probably not the answer you were looking for but it ties into the difficulty that colleagues are having around targets and ambitions for Scotland for the Energy Strategy.

[REDACTED] and I have been asked to look at options for a figure to use in future but I'm afraid we have not had a chance to progress this work.

[REDACTED]

[REDACTED] | [REDACTED] | Marine Scotland  
 Scottish Government | 1 A South | Victoria Quay | Edinburgh | EH6 6QQ

Tel: [REDACTED] or [REDACTED]

Email: [REDACTED]

[www.marine.gov.scot](http://www.marine.gov.scot)

[www.gov.scot/marinescotland](http://www.gov.scot/marinescotland)

From: [REDACTED]

Sent: 30 September 2022 13:46

To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];

[REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];

[REDACTED]

Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED],

Thanks for this. Can I just check, in case there still is a way of giving a feel for the relative scale of Scotland's offshore resource in an EU context, whether you or colleagues know whether we have a comparable Scotland-level figure for offshore

wind technical potential that we could compare with the table below from the [2019 IEA report](#)?

The report details how they've calculated technical potential (and to confirm, EU still includes UK in their figures; Europe includes EU plus Norway, Iceland etc). So if we knew Scotland's offshore wind technical potential we might be able to provide an estimate of what proportion of EU offshore wind potential this constitutes?

Please excuse any ignorance on my part on this, and I appreciate this is maybe what colleagues have already looked at and discounted, or there may be better sources of the data, if not Imperial and IEA.

I'm just looking to confirm whether we're saying it's just not possible to estimate Scotland's offshore wind potential (and/or offshore wind, tidal and wave potential) as a proportion of EU or European potential, or whether there is something we can provide, with an explanatory footnote with the basis for the estimate?

**Table A.3: Offshore wind technical potential (TWh per year)**

	Shallow water		Deep water		Total potential
	Near shore	Far from shore	Near shore	Far from shore	
<b>North America</b>	<b>9 907</b>	<b>13 238</b>	<b>22 819</b>	<b>58 937</b>	<b>104 901</b>
Canada	3 033	1 172	15 952	32 312	52 469
Mexico	542	903	1 021	3 239	5 705
United States*	6 333	11 163	5 846	23 386	46 727
<b>Central and South America</b>	<b>3 847</b>	<b>4 438</b>	<b>6 439</b>	<b>37 144</b>	<b>51 869</b>
Brazil	1 692	1 622	1 011	6 122	10 448
<b>Europe</b>	<b>2 629</b>	<b>2 390</b>	<b>14 817</b>	<b>52 009</b>	<b>71 845</b>
European Union**	2 266	1 077	7 541	25 844	36 728
<b>Africa</b>	<b>1 123</b>	<b>572</b>	<b>7 699</b>	<b>17 107</b>	<b>26 502</b>
<b>Middle East</b>	<b>478</b>	<b>673</b>	<b>600</b>	<b>1 791</b>	<b>3 543</b>
Saudi Arabia	123	114	63	648	948
<b>Eurasia</b>	<b>9 382</b>	<b>17 402</b>	<b>9 943</b>	<b>48 735</b>	<b>85 462</b>
Russia	8 931	17 264	9 429	47 790	83 413
<b>Asia Pacific</b>	<b>8 508</b>	<b>12 451</b>	<b>14 440</b>	<b>41 357</b>	<b>76 757</b>
Australia	4 093	3 317	4 319	4 404	16 132
China	1 822	2 869	142	3 489	8 323
India	683	280	903	4 130	5 996
Japan	30	13	2 223	6 808	9 074
Korea	27	586	366	2 068	3 048
Southeast Asia	1 318	4 351	1 631	7 832	15 133
<b>World</b>	<b>35 875</b>	<b>51 166</b>	<b>76 757</b>	<b>257 081</b>	<b>420 878</b>

\* Potential available including Alaska and Hawaii. \*\* Potential available excluding Greenland.

Source: IEA analysis developed in collaboration with Imperial College London.

Best wishes,

[REDACTED]

From: [REDACTED]  
Sent: 30 September 2022 10:23  
To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi All,

[REDACTED], we discussed on teams but copying to others here too.

The 25% figure has been used freely without much evidence or reference for a long time. SG has received multiple FOIs on the subject and challenging the claim. Colleagues in DECC have previously been able to arrive at the 25% using a few different reports to reach that total but it's not ideal. In completing the FOI requests we found that the references were very circular and none pointing to an actual source. I've copied [REDACTED] and [REDACTED] in as they have been dealing with questions about it too. we provided the paragraph below for another team:

“The claim about 25% of Europe's offshore wind resources is poorly evidenced and has recently been the subject of several FOIs challenging the basis of this claim. Whilst it is clear that Scotland has significant resources, as evidenced by the huge ambitions of the ScotWind winners and the level of interest in the ongoing INTOG round, the 25% claim does not account for changes in technology or use of marine space. As such officials would advise against using this statement and instead, would suggest highlighting the success of ScotWind, the largest floating wind leasing round in the world.”

It would be better, I think, to point to our significant resources – we have 60% of UK seas and the success of ScotWind being the world's largest floating offshore wind leasing round and setting out a potential for up to 27.6GW.

On the tidal side, we have supplied an answer to that figures as part of the FOI response below:

<https://www.gov.scot/publications/foi-202100132049/>

But essentially it is derived from these reports:

Black & Veatch Consulting Ltd. (2005); “Phase II UK tidal stream energy resource assessment. Technical report 107799/D/2200/03, Carbon Trust, London.

The Offshore Valuation Study (Public Interest Research Centre)

<https://www.publicinterest.org.uk/offshore/> (different download options available)

The “Europe” in that context is also not well defined but I would take it to be the EU as including Norway would reduce our share of the seas in question.

Not sure it's relevant here but we have some notes on our seas and coastline at [Facts and figures about Scotland's sea area \(coastline length, sea area in sq kms\) | Marine Scotland Information](#)

Hope that helps

[REDACTED]

[REDACTED] | [REDACTED] | Marine Scotland  
Scottish Government | 1 A South | Victoria Quay | Edinburgh | EH6 6QQ

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Email: [REDACTED]

[www.marine.gov.scot](http://www.marine.gov.scot)

[www.gov.scot/marinescotland](http://www.gov.scot/marinescotland)

From: [REDACTED]

Sent: 30 September 2022 08:08

To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED];  
[REDACTED]; [REDACTED]; [REDACTED]

Subject: RE: OFF SEN Economy prospectus marine energy reference check

Morning,

Can we also clarify what "Europe" means please. Is that the EU (pre-brexite?), or the whole continent, incl for example Norway and European Russia?

Thanks

[REDACTED]

[REDACTED]

First Ministers Policy & Delivery Unit

[REDACTED]

From: [REDACTED]

Sent: 29 September 2022 17:39

To: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]

Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED],

[REDACTED] (copied) might be able to confirm. The Marine Atlas pre-dates my time in the GIS team.

Le deagh dhùrachdan / best wishes,

[REDACTED]

[REDACTED]

[REDACTED] | [REDACTED]

Scottish Government | Marine Scotland  
Riaghaltas na h-Alba | Cùisean Mara na h-Alba

I work flexible hours during Mon-Fri. My pronouns are [He/Him/His](#).

t: [REDACTED] | t: [REDACTED]

w: [gov.scot/marine](http://gov.scot/marine) | [marine.gov.scot](http://marine.gov.scot) | [maps.marine.gov.scot](http://maps.marine.gov.scot)

From: [REDACTED]

Sent: 29 September 2022 17:26

To: [REDACTED]; [REDACTED]

Cc: [REDACTED]; [REDACTED]

Subject: OFF SEN Economy prospectus marine energy reference check

Importance: High

Hi both,

Apologies for any cross-posting if you get this query via another route, but wondering if you can help, or point to colleagues who can help to verify a statement in the economic prospectus please?

The paper says:

Scotland has 25% of Europe's offshore tidal and wind potential and 10% of Europe's wave resources.

The reference is: Scottish Government (2011) [Scotland's Marine Atlas: Information for The National Marine Plan](#)

That reference is obviously quite old and we understand there's a question mark over whether those stats still hold in light of changes in technology or use of marine space since that time.

We'd be really grateful if you could confirm who in SG, if not yourselves, might be able to confirm whether we're ok to use these stats and, if so, if there's a more up to date reference for them. It would also be useful to have confirmation re whether the stats are referring to European resource or EU resource.

I've separately seen [Offshore Wind Outlook 2019: World Energy Outlook Special Report \(windows.net\)](#) but at a glance it doesn't provide a breakdown of the UK resource to calculate from.

If there's any chance of a response tomorrow, or an indication whether someone is likely to be able to respond, that would be really helpful.

Many thanks in advance, and apologies for the tight time frame.

Best wishes,

[REDACTED]

\*\*\*\*\*

[REDACTED]

[REDACTED] | SG Central Analysis Division | Scottish Government | 2W St Andrew's House, Regent Road, Edinburgh, EH1 3DG | Tel: [REDACTED] | [REDACTED]

From: [REDACTED]

Sent: 29 September 2022 17:38

To: [REDACTED]

Cc: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]

Subject: Economy paper - energy content - [REDACTED] amends

Hi [REDACTED],

I attach a revise of the energy content in the economy paper picking up comments from [REDACTED] this afternoon on reinforcing the scale of the renewable energy potential in Scotland (new box), and highlighting the scale of the opportunity in the hydrogen sector (new text). Both are highlighted in yellow for the master version that's currently being amended.

We're double checking one of the stats "Scotland has 25% of Europe's offshore tidal and wind potential and 10% of Europe's wave resources." We'll confirm this asap.

Hope this helps.

[REDACTED]

[REDACTED]

First Ministers Policy & Delivery Unit

[REDACTED]

From: [REDACTED]

Sent: 30 September 2022 13:35

To: [REDACTED]

Cc: [REDACTED]

Subject: RE: OFF SEN Economy prospectus marine energy reference check

[REDACTED],

Yes, I spoke to [REDACTED] earlier, and he said they are working on figures that are potentially better, but it'll take some time to get these. But worth pushing it a bit to see if we can get this, or something else useable more quickly.

[REDACTED]



[REDACTED]  
First Ministers Policy & Delivery Unit

[REDACTED]

From: [REDACTED]  
Sent: [REDACTED]  
Cc: [REDACTED]  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED],

Ok, well should I just send the original email then from below and see if marine colleagues can confirm either way whether they think it's possible to get the figure either in time for the economy paper or for later papers and then we can go from there?

[REDACTED]

From: [REDACTED]  
Sent: 30 September 2022 12:58  
To: [REDACTED]  
Cc: [REDACTED]  
Subject: RE: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED],

[REDACTED]

As for the economy paper, the advice from [REDACTED] and others is sound and [REDACTED].

[REDACTED]

[REDACTED]  
First Ministers Policy & Delivery Unit

[REDACTED]

From: [REDACTED]  
Sent: 30 September 2022 11:29  
To: [REDACTED]  
Cc: [REDACTED]  
Subject: FW: OFF SEN Economy prospectus marine energy reference check

Hi [REDACTED],

Drafted the below to send back to [REDACTED], but having spoken with [REDACTED], he thinks best to leave with you to consider if that's ok?

My thinking was that it would be worth just confirming for certain at this point whether this is something officials are definitely saying it's just not possible to calculate?  
[REDACTED]

Aware this is not my area at all, so apologies for any ignorance!

[REDACTED]

\*\*\*\*\*

Hi [REDACTED],

Thanks for this. Can I just check, in case there still is a way of giving a feel for the relative scale of Scotland's offshore resource in an EU context, whether you or colleagues are aware whether we have a comparable Scotland figure for offshore wind technical potential that we could compare with the table below from the [2019 IEA report](#)?

The report details how they've calculated technical potential (and to confirm, EU still includes UK in their figures; Europe includes EU plus Norway, Iceland etc). So if we knew Scotland's offshore wind technical potential we might be able to provide an estimate of what proportion of EU offshore wind potential this constitutes?

Please excuse any ignorance on my part on this, and I appreciate this is maybe what colleagues have already looked at and discounted. Just looking to confirm whether we're saying it's just not possible to present Scotland's offshore wind potential as a proportion of EU or European potential, or whether there is something we can provide, with an explanatory footnote with the basis for the estimate?

**Table A.3: Offshore wind technical potential (TWh per year)**

	Shallow water		Deep water		Total potential
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<b>Africa</b>	<b>1 123</b>	<b>572</b>	<b>7 699</b>	<b>17 107</b>	<b>26 502</b>
<b>Middle East</b>	<b>478</b>	<b>673</b>	<b>600</b>	<b>1 791</b>	<b>3 543</b>
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<b>Asia Pacific</b>	<b>8 508</b>	<b>12 451</b>	<b>14 440</b>	<b>41 357</b>	<b>76 757</b>
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\* Potential available including Alaska and Hawaii. \*\* Potential available excluding Greenland.

Source: IEA analysis developed in collaboration with Imperial College London.

Best wishes,

[REDACTED]