



Engineering Biology Leadership Council – Meeting 01
Tuesday, July 28th 2020
2h Online meeting

Attendees:

Prof Lionel Clarke, Nadhim Zahawi MP, Prof Joyce Tait, Aman Kundra, Dr Tim Brears, Dr Jason Vincent, Dr Dieuwertje van der Does, Prof Dale Sanders, Prof Richard Kitney (RK), Prof Petra Oyston, Ceri Lyn-Adams, Dr Dana Heldt, Prof Tim Dafforn, Dr Gordon Ford, Dr Martin Cannell, Dr David Tew

Invited Guests: Dr Dieuwertje van Esse, Steve Bagshaw, Andrew Lawrence

1. Welcome and Internal Business

- Chair Lionel Clarke welcomed everyone and changes in the EBLC memberships were noted:
 - Yvonne Armitage and Tim Fell have stepped down from the EBLC
 - Mike Hill has replaced Jonathan Hoare and joined the EBLC
- Minutes from the last meeting were approved.
- Joyce Tait gave a brief update on governance. Most sub-group activities have been on hold. All carried out work should be aligned with the Regulatory Horizon Council and the focus needs to be defined. Joyce suggested a workshop involving relevant stakeholders.
Action: Joyce to liaise with BEIS, BBSRC to organise the workshop.
- The minutes and actions from the last meeting were approved

2. Ministerial session - Discussion with Nadhim Zahawi MP

The session with Minister Nadhim Zahawi MP, Parliamentary Under-Secretary (Department for Business, Energy and Industrial Strategy) was structured to cover 4 topics:

(1) Ministerial updates and views, (2) Update from the EBLC working groups (3) UKRI Engineering Biology Initiative (4) Business Plan: Linking the IBLF, the UK Bioeconomy and National Net Zero targets.

- (1) Minister Zahawi started the session with thanking the EBLC for its input and support in the development and delivery of the bioeconomy strategy. He also highlighted the sector's contributions to the public health response relating to COVID19. He asked to hear how the EBLC can help to leverage Engineering

Biology to deliver solutions for the recovery post COVID19. Government officials are meeting with industry leaders and work is underway to discuss priorities for the next 6 to 12 months. The findings will outline how the future actions of the bioeconomy strategy can help to support industry fulfilling its potential. He asked to hear the EBLC views on the economic argument for growing the sector and how this aligns with government goals for the recovery and climate change.

The last meeting saw several discussion topics and Minister Zahawi asked to follow up on those and hear about clear action plans and deliverables/asks on those, which the government can deliver on.

- How will the EBLC work more closely with industry to achieve commercial translation?
- How will EBLC address the importance of language and engagement with the wider public to communicate the benefits of engineering biology? How can the bioeconomy strategy support this?
- Creating the business environment (including standards and regulations) for EngBio and IB to thrive in and which enables innovation. What does the EBLC need from the government to achieve this.

Minister Zahawi highlighted the importance of science and technology in strengthen the economy (levelling up) and in delivering a green, sustainable economy. He talked about the commitment to increase public R&D investment to 22 billion by 2024/2025 and the interest in working with Industry, Innovate UK and UKRI to establish the best approach for improving growth of the sector.

He opened up the discussion to the EBLC to hear thoughts on key milestones, what is success, updates since the last meeting, concerns or challenges hindering progress and how government can better support the sector to deliver on the promise

Lionel Clarke followed on from Minister Zahawi and introduced the next sub-session which addressed some of the topics raised.

(2) Update EBLC working groups

In the past the driver behind EngBio was technology push. Now we start to see increasing market pull, asking for solutions addressing climate change, sustainability, healthy living. Three EBLC working groups have engaged with relevant stakeholders and gathered information on the opportunities and impact of EngBio and subsequent needs in the application categories of

- i) AgriFood (lead by Dieuwertje van der Does and Jason Vincent)
- ii) Materials, Chemicals, Manufacturing (led by Richard Kitney)
- iii) Health (lead by Tim Dafforn)

A 2-page summary, a detailed report from each working group and a summary power point presentation was provided as pre-reading material (papers 2-4). The Leader for each working group provided the summary of

their findings in this sub-session. For details please see the power point presentation (paper 4).

These working group activities identified common issues for EngBio across all three working groups as well as specific ones for each application category. Lionel Clarke proposed to follow up with the minister and BEIS to provide particular examples and what should be focused on as first steps.

Minister Zahawi thanked everyone for their presentation and the outline of the asks and needs, which now need to be translated into workstreams, especially the requirements around regulations and funding landscape for SMEs. His next challenge is setting some targets, action points and timelines for achieving this.

Action: follow up with Minister Zahawi and outline specific targets and actions (LJC)

Two other points were raised. The first one on “soft power”. Lionel asked for the EBLC to be connected Lord Grimstone for discussion on international trade and reconnecting with DIT. The second point was on manufacturing. Addressing net zero will see replacement of fossil based carbon with bio based and supply chains are significant. Follow-up with Minister Pow in DEFRA would be appropriate.

Action: Ministerial office and Lionel Clarke to establish the relevant contacts

(3) UKRI Engineering Biology Initiative

Ceri Lyn-Adams gave an update on the development of a national engineering biology programme. Exact details can be found in the presentation (paper 5), which was shared as pre reading material. This work has been carried out over the past months by UKRI and DSTL. A number of ‘town hall meetings’ have been held to gather information from over 125 relevant stakeholders and further activities are taking place to dive more deeply into those outcomes. 140 unique challenges for engineering biology within the UK were identified and clustered by the community into different science challenge areas. Combing all the gathered information the outline of the programme was established. The multi-year co-ordinated and integrated programme will build on UK’s existing capabilities and accelerate them to the next level, addressing specific themes and challenges (application and discovery inspired), cross cutting research and technologies, and underpinning enablers. Meetings are being held to consult on those outlines and to obtain feedback. The themes will be finalised in response to the feedback.

Ceri mentioned the alignment with the finding and asks from the EBLC working groups. Those will be taken into account for the national programme and inform the outline for the required funding needs and mechanisms. It is

crucial to make sure that the proposed funding mechanisms are fit for purpose and help to deliver against the identified challenges.

The discussion was opened up and the issue of scale-up was highlighted with the need to ensure it happens within the UK. Ceri mentioned a report on scale up and commercialisation will be commissioned which will provide information on how to design funding mechanisms enabling this. Minister Zahawi outlined the opportunity to learn from other countries such as the US, who have their own investment vehicles. Petra Oyston made the point from a DSTL perspective that scaleup for materials is a bottleneck. They are working with the US and this area needs greater focused within the UK.

(4) Business Plan: Linking the IBLF, the UK Bioeconomy and National Net Zero targets

Lionel presented a slide (paper 7) summarising the notes from the joint IBLF and EBLC meeting in March, highlighting the common focus (eg scale up and access) and challenges. The notes from this meeting had been shared as pre-reading material (paper 6). Lionel invited Steve Bagshaw, Chair of the IBLF, to share the IBLF view. Steve outlined that the Industrial Biotech and SynBio/EngBio divide is starting to disappear and a joint up supply chain is emerging. IBLF is ready to work closely with the EB Leadership Council. The issues raised today are in TRL 6-8, which the IBLF has been focusing on. Steve addressed Minister Zahawi's earlier request on the economic piece, referencing the Bioeconomy strategy and the annual growth from harnessing biologics, industrial biotechnology and EngBio. IBLF is very supportive of the work carried out by the EBLC, to have one story and joined-up approach facilitating commercialisation. He also emphasised the need for inward investment and the use of existing infrastructure.

Lionel opened up the discussion. Andrew Lawrence re-emphasised that the national engineering biology programme will help to develop the ecosystem, linking the strong foundations across UK's research innovation with the commercial output and industry and also other related cross governmental strategies.

Joyce Tait mentioned the BSI standard for responsible innovation has been available since April, enabling companies to demonstrate that they are behaving responsibly. Considerable interest in this standard has already been shown from industries.

3. Update from the Science and Technology (S&T) subgroup

The update was provided by Richard Kitney. The minutes of the last S&T group meeting was shared as pre-reading material (paper 8). Richard focused on 2 points in his update

Addressing the transformation of the bioeconomy:

- A number of the SBRC directors are supporting the use of engineering biology language rather than synbio. While basic research remains important the key message is to focus on translating the basic research and developed infrastructure into industrial processes and products.
- Lots of discussion has been had regarding the need for big ideas to get the message across to government. Strong view expressed in the S&T group that the community has not done enough to engage with public and promote news stories, besides COVID19.
- There is a large gap between academics, industry and markets which needs to be addressed
- Access to Infrastructures and the availability of these were raised. Strong feelings exist within the ST Group to promote more of those facilities and have more of them spread across the country and more accessible/affordable.
- BBRSC are working on the report on commercialisation and engaging the EBLC and the subgroups to obtain the whole view of the community.
 - Ceri Lyn-Adams responded that the activity is led by Lee Beniston and his team and has involved Lionel Clarke from the beginning. Once the report is commissioned this work will involve engagement with relevant key stakeholders.
- View of the leading practitioners is to build on successful infrastructure.

SynbiTech2020

- Due to be held on 26th and 27th of October (postponed from July due to COVID19). Assessment still under way how to deliver the event and in which format, eg face to face with limited access to the venue combined with a virtual conference, or entirely virtual.

4. Roundtable reflection of sessions 1-3

The discussions in this session focused on the short terms vision and key activities which can be realised within the next 6-12 months. Several opportunities were discussed, which are summarised below

- Addressing NetZero and Climate Change: for example the use of C1 gases as feedstock for the production of biofuels, chemicals and materials. Quantifying the potential and summarising progress to date will have a great impact showing the contributions EngBio/IB are making. The role of hydrogen as a feedstock/vector was also mentioned.
- AgriFood: increasing market pull and public acceptance relating to issues including Healthy Nutrition, gene editing, cell editing, Novel Foods (cf 'Impossible Burgers'). Regulatory Hurdles need to be addressed, and resources increased for effective communication and engagement.
- Materials, Bio-design and Bio-inspired : as an example, consider the advantages of 'SpiderSilk' (stronger than steel, but lightweight). A strong research base in biological based material science exists in the UK but it is missing commensurate levels of commercial exploitation. This is an area

which needs to be developed, with specific targets pursued as ‘trailblazers’, such as may be derived from the ‘spider silk’ opportunity.

- Importance of building on existing capabilities and infrastructure was raised, linking IB and EngBio.
- A point was made on the lack of information about which sectors and applications can grow fastest, generate jobs, can achieve the greatest climate benefit etc. This would assist prioritisation of next steps.
- Mike Hill noted the ongoing refreshment of the Bioeconomy strategy and upcoming spending review. Evidence is crucial to progress.
- The availability of the detailed information gathered by the working groups were emphasised again and it was pointed out the importance of ensuring Minister Zahawi and his office are aware of those.

Considering the importance of this exercise more time is needed to get the story right. Discussions will continue after the meeting. Ceri Lyn-Adams noted interest in being involved in ongoing ideas development to ensure an aligned approach.

Actions:

- working groups leaders, BEIS, UKRI to scope out the 2-3 key activities
- ensuring the document summarising the information gathered by the working group is re-shared with the minister (Lionel Clarke, Dana Heldt, Aman Kundra)
- EBLC members to provide any further comments after the meeting
- in view of limited opportunity within this meeting to discuss issues in particular relating to next-step initiatives in the short-term, explore options for an extraordinary ‘follow-up’ meeting of the EBLC to be held in September.

5. EBLC ToR, stakeholders & membership and online engagement options

- A finalised version of the ToRs was shared as pre reading material (paper 9).
- It was suggested that the stakeholder mapping should reflect against current members, helping to identify missing expertise and also members duration on the council.
- Due to limited time for a discussion in this session no conclusion was reached and it was suggested to continue this topic in different/separate meeting

Action: Update Member expertise and appointment date/year in the ToRs

6. AOB

No other business was raised

Actions

The actions from EBLC_1 are summarised in the table below

Actions	Description	Responsibility	Due date	Progress /outcome
1 – 1	Workshop to discuss regulation with significant stakeholders	Joyce Tait	As and when required	Support sought from UKRI/KTN/BEIS
1 – 2	Connect with Lord Grimstone and reconnect with DIT	Lionel Clarke, Rohan Kemp, Mike Hill	As and when required	Contact made, awaiting response
1 – 3	Scope out short-term focus points (“trailblazers”)	Lionel Clarke, Working group leads, BEIS, UKRI-BBSRC	September	see position paper
1 – 4	Ensure Ministerial office has access to detailed working group reports	Dana Heldt, Aman Kundra	August	done
1 – 5	Explore extraordinary meeting in September	Lionel Clarke, Dana Heldt	September	No meeting scheduled
1 – 6	Update Member expertise and appointment date/year in the ToRs	Lionel Clarke, Dana Heldt	September	done
1 – 7	Discuss ongoing EBLC/IBLF interfaces	Lionel Clarke and Steve Bagshaw	November	Regular meetings taking place
n/a	Success stories	all	ongoing	No update