



Work Package 7 – Additional Activities
Task 7.3 - Human Capacity Building including RRI,
Training and Mobility exchange

MS38. Mid-term and final evaluation of HCB and training activities performed by co-funded projects (part 2, final reporting BlueBio Joint Call and mid-term reporting 1st Additional Call)

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Executive summary

The main goal of this document is to report on the activities implemented within Task 7.3 (T7.3) of BlueBio ERA-NET Cofund, for monitoring and assessing Training and Mobility (T&M) actions in funded projects, specifically R&I projects selected in the opening BlueBio Joint Call and in the 1st additional Call (Annexes 1-2).

In general, the development of Human Capacity Building (HCB) activities within the funded projects was impacted by the COVID-19 pandemic, which constituted a significant barrier especially for the exchange of personnel and in-person initiatives often substituted by online workshops and courses. Nonetheless, the analysis of HCB activities in the projects evidenced a significant effort in terms of human capital, also induced by the requirement to clearly document and describe T&M actions in the project proposals as well as by the inclusion of HCB amongst the Key Performance Indicators (KPIs) used in the project's evaluation process. This investment in human capital has been documented by the projects both in terms of recruitment of new trainees, and in terms of enhanced T&M activities for their staff (both in temporary and permanent positions).

The general objective of T7.3 was to contribute to improving the professional skills and competences of people working and being trained to work within the context of the blue bioeconomy. But the monitoring of T&M actions also mapped and facilitated the implementation of other actions, like the activity aimed at amplifying the impact of funded projects by further addressing their specific training needs. These activities were based on the feedback from project coordinators and the identification of scientific gaps arising from the analysis of an extensive database of research projects funded at national and EU level in the last 20 years (BlueBio milestones MS20-21 and MS36-37).

From the interaction with project coordinators also emerged suggestions for activities to further boost HCB activities and improve networking among projects. Specifically, extra funds within the project budget were requested for attending and organizing training courses and doing exchanges. This demand was partially met by launching a targeted call, the BlueBio 3rd Additional Call, aimed at amplifying project reach and knowledge impact, and by the BlueBio consortium decision to set up specialized training courses as an additional approach to enhance HCB within the blue bioeconomy field (see document associated to milestone MS26), whose agendas were defined based on the identified main training needs.

As a general recommendation emerging from our work, mandating, monitoring, and supporting the implementation of HCB and T&M activities within projects effectively contributes to increasing professional skills and competences. In addition, including HCB activities as KPI in the evaluation process makes them a focal point for the projects, but there is a need to follow up on the project's activities as they develop and to adjust to their needs. This is facilitated by dialogue with project coordinators, which helps identifying topics and best practices for future initiatives. Finally, the links between Academia and Industry need to be further reinforced and training and mobility is an excellent tool for that.

1. Introduction

Task 7.3 “Human Capacity Building including RRI, Training and Mobility exchange” was embedded in WP7 (“Related activities”) of the BlueBio Cofund ERA-NET to facilitate the implementation of concrete actions related to training and human capacity building (HCB) of BlueBio funded projects. It was designed to address specific training needs relevant to the blue bioeconomy, identified in the strategic documents of the previous COFASP and ERA-MBT ERA-NETs and JPI Oceans.

Specifically, the envisaged activities included in the work plan of task 7.3 were:

1. Developing a mentoring system to address, facilitate and accompany the BlueBio funded projects in implementing concrete actions for training and HCB;
2. Promoting jointly recognised educational modules by investigating ways of providing content to online courses. Using existing platforms, such as MarineTraining.eu, to promote opportunities for specialised training to support the development of the current and next generation of employees working in Blue Bioeconomy;
3. Support to the monitoring and the evaluation system of BlueBio projects (WP4), to monitor and assess training and mobility and HCB activities, using a set of tools including: performance indicators; HCB and training checklists for self-assessment activities; survey forms to understand the effectiveness of activities.

The final goal was to facilitate the transfer of the obtained results to scientific educators, science-policy makers and industry actors, for a further use/implementation in future programs at national or EU level during a break-out session within the final WP4 seminar. In addition, the task aimed at contributing to and mutually benefiting from/to activities of WP5 and, specifically, WP6 in terms of emerged key issues to be tackled in the additional calls.

Concerning the attainment of first objective, the BlueBio initiative included a specific milestone MS23, entitled “Development of guidelines on HCB and training activities”, aimed to provide recommendations to the BlueBio co-funded projects. The accomplishment of this milestone was accompanied by the production of a specific document delivered in July 2019 (M8). This last document paved the way to MS24 (“Identification of common tools for HCB and training activities monitoring and evaluation”), a milestone aimed at integrating deliverable D4.1 (“Report on the methodology and list of KPIs for the monitoring and evaluation of the cofounded projects”) providing additional inputs in support to the monitoring of training and mobility activities, including the development of a specific questionnaire on HCB initiatives to be embedded in the activity reports of co-funded projects.

The present document is related to MS38 and has been compiled to provide a comprehensive overview on the activities implemented within T7.3 in support to the third objective, focused on the monitoring and assessment of training and mobility actions embedded into the work plans of BlueBio co-funded projects. Specifically, it aims to integrate the outcomes reported in deliverable D4.3 (“Mid-term report validated, collected and distributed to the Call Steering Committee”), milestone MS5 (“Mid-term Project Seminar”), milestone MS25 (“Mid-term and final evaluation of HCB and training activities performed by co-funded

projects – part 1”), and the group exercises included in the agendas of the Final Joint Evaluation Event meeting of BlueBio projects held in (Lisbon, 6-7 June 2023) and in the Final BlueBio meeting (Brussels, 19 March 2024) as far as concerns HCB activities embedded in projects co-funded in the opening BlueBio 2018 Joint Call and in the 1st BlueBio Additional Call (see Annex 3 and Annex 4).

The delayed delivery of this document is linked to the postponed starting dates of several co-funded projects, as consequence of the ongoing COVID-19 pandemic, and to the willingness to report the most updated outcomes of the activities carried out within BlueBio, also in support to new initiatives such as the Sustainable Blue Economy Partnership (SBEP).

2. Methodology

The BlueBio 2018 Joint Call and the 1st additional Call were implemented through the activities outlined in WP2, WP3 and WP4, all planned according with the specifications of the ERA-NET Cofund instrument. Whereas WP2 and WP3 focussed on the preparation and launch of the calls and the evaluation of the submitted proposals, WP4 was centred on the ongoing monitoring and assessment of the funded projects spanning from their beginning to the final evaluation. Within WP4, titled “*Follow-up and monitoring of projects resulting from the co-funded call*”, a specific task was assigned to the monitoring procedures including the definition and development of a common set of KPIs. However, the evaluation of HCB performed by co-funded projects fell under the responsibility of task 7.3 within WP7 (“*Related activities*”), as evidenced by MS25 (“*Mid-term and final evaluation of HCB and training activities performed by co-funded projects – part 1*”) and the present MS38 (“*Mid-term and final evaluation of HCB and training activities performed by co-funded projects – part 2*”).

The BlueBio 2018 Joint Call was launched on December 17th, 2018. The submitted project proposals were requested to explore innovative, yet sustainable and climate-friendly utilisation of aquatic biomass at different trophic levels, as well as sustainable harvesting, and novel aquaculture production systems targeting a range of existing or new markets, products (food, feed, chemistry, nutraceuticals, cosmetics, etc.). Eighty-three pre-proposals were received and ended up funding 19 projects.

The BlueBio 1st additional Call was launched on June 8th, 2020. Project proposals were intended to facilitate the transfer (i.e. logistics, preservation and transportation) of bio-resources from harvest (catch or production) to processing. This process aimed to implement aspects such as traceability, quality, sustainability, and the necessary quantity or pre-processing of bio-resources for their conversion into market-ready products. Ten projects were selected for funding out of 17 submitted pre-proposals.

It is worth noting that all BlueBio Calls required the selected co-funded projects to address, *inter alia*, the following issues related to HCB:

- improving the professional skills and competences of those working and being trained to work within the Blue Bioeconomy;
- training and mobility of personnel.

During the Joint Evaluation Event meeting of BlueBio projects (Lisbon, Portugal, 6-7 June 2023) the RD project Coordinators presented the current state of development of their own projects funded in both the opening BlueBio Joint Call (final evaluation) and in the BlueBio 1st additional Call (mid-term evaluation). The meeting represented an important forum for exchanging ideas and getting feedbacks among BlueBio partners and projects, and hosted a specific “Session on Human Capacity Building (HCB) for the projects. Analysis and opportunities”, chaired by Task 7.3 coordinator and dedicated to the projects funded in the 1st additional Call (see the attached agenda of the meeting, Annex 3).

In that context, the job related to achieving milestone MS38 involved analysing the activity reports of the 19 projects co-funded in the BlueBio 2018 Joint Call and of the 10 projects co-funded in the 1st BlueBio additional Call. These reports were provided by WP4 coordination team in advance of the final Evaluation Event meeting. More specifically, this analysis also leveraged the insights obtained by the HCB questionnaires filled out by project Coordinators and embedded in their final (for Joint Call projects) or mid-term reports (for 1st additional Cal projects). The questionnaire was developed as a tool for use by T7.3 to report on the training and mobility activities carried out within the co-funded projects and was initially introduced in the document associated to MS23 (“Development of guidelines on HCB and training activities”). The latest updated version of the HCB questionnaire, included into deliverable D4.1, is provided as Annex 5 to the current document.

Further insights into the needs for training in support to the blue bio-economy were provided by the analysis of workgroup exercises organized in the framework of the HCB sessions that took place during Joint Evaluation Event meeting (Annex 3) and of the BlueBio Final meeting (Annex 4).

3. Output of analysis on HCB activities in funded projects

3.1. BlueBio 2018 Joint Call

This section presents the key findings from the analysis carried out on the final reports of the R&I projects that were funded within the BlueBio 2018 Joint call (see Annex 1, providing information on project names, acronyms and coordinators). Four priority areas (PA) were identified for the call: “1. Exploring new bio-resources”, “2. Exploring improvements in fisheries and aquaculture”, “3. Exploring synergies across sectors” and “4. Exploring Biotechnology and ICT”. Most of the selected project proposals (12 out of 19) were submitted for PA 1, 6 for PA 2 and only 1 for PA 3, while no projects were submitted for PA 4. The starting dates of the projects ranged from March to September 2020.

The pie charts presented in Fig. 1 show the comparison between the initially planned HCB activities at the time of the Kick-off Meeting and the activities actually implemented as reported in the mid-term and final reports. The majority of projects were initially planned to address HCB through a combination of training and mobility (left pie chart). Unfortunately, the COVID-19 pandemic heavily impacted the work programme, particularly affecting the mobility of personnel which was partly shifted toward online training, as indicated by the middle pie chart, representing the mid-term reporting. However, the gradual improvement in the pandemic situation was beneficial for increasing activities combining mobility and training, as illustrated by the right pie chart.

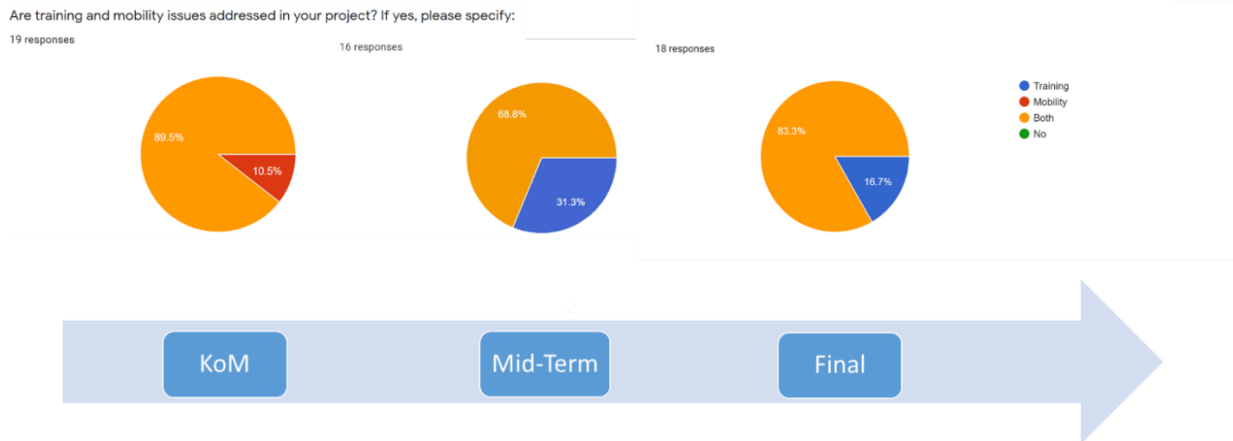


Figure 1. Distribution of HCB activities between training and mobility within the projects funded by the BlueBio 2018 Joint Call. Comparison between the planned HCB activities at the time of the Kick-off Meeting (on the left) and the activities reported in the mid-term reports (in the middle) and in the final reports (on the right).

Fig. 2 deals on the qualification of personnel involved in HCB activities implemented within the cofunded projects. The comparison between the final reporting (on the right) and the project proposals (bar chart on the left) indicates a general reduction in the number of projects ultimately engaging “Researchers”, “Technicians” and PhD candidates in T&M activities. As discussed later, this decrease could be a consequence of lower mobility. However, the number of projects involving graduated people in HCB did not show a significant change, likely due to an increased use of “online” training activities.

Qualification of personnel involved in training and mobility in your project (multiple choice allowed)

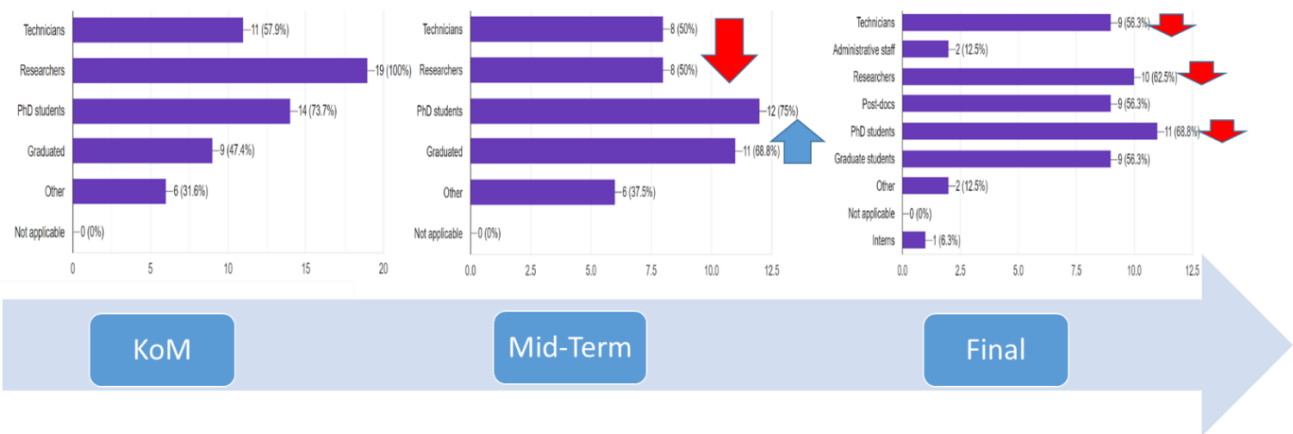


Figure 2. Qualification of personnel involved in T&M within projects funded by the BlueBio 2018 Joint Call. Comparison between the planned HCB activities at the time of the Kick-off Meeting (on the left) and activities reported in the mid-term reports (in the middle) and in the final reports (on the right). Percentages between brackets refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Concerning the typology of HCB activities (Fig. 3), the most important planned category (on the left) was “Short-medium term mobility inside the partnership”, followed by “Organization of training courses and/or webinars”. Both these categories experienced a significant decrease at the time of mid-term reporting, whereas there was a consistent increase in “Participation to (online) training courses” and in “Scholarships granted to Students” (both PhD and graduated students). Specifically, it is noteworthy the high percentage

of projects entailing scholarships to PhD students (almost 70%). This marks a substantial increase compared to approximately 30% at the time of the Kick-off Meeting (KoM), which can be interpreted as a direct effect of the pandemic restrictions, to compensate the decline in mobility. This trend was confirmed in the final reports.

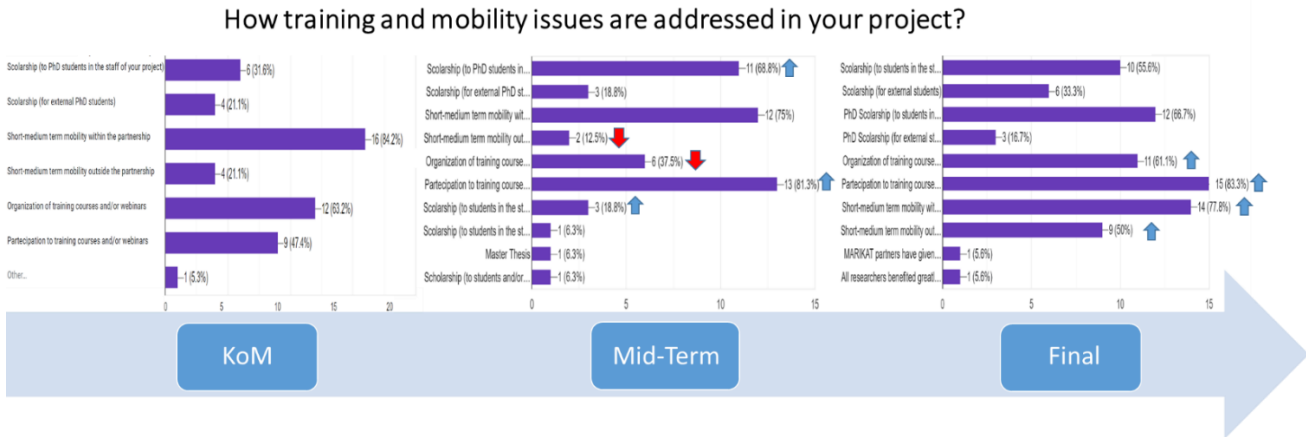


Figure 3. T&M activities in projects funded by the BlueBio 2018 Joint Call. Comparison between the planned activities at the time of the Kick-off Meeting (on the left) and activities reported in the mid-term reports (in the middle), and in the final reports (on the right). Percentages between brackets refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The following figures present the distribution of personnel units involved in HCB activities for both the Public and the Private components of project partnerships.

Specifically, Figure 4 shows the distribution of “Researchers” in the Public sector. Compared to the originally planned involvement, the maximum number of persons by project engaged decreased from 13 to 10. In addition, it is noteworthy that only up to 65% project coordinators have indicated “Researchers” as target of HCB initiatives in their final evaluation reports while the expected involvement rate of this category of personnel was 100% at the time of the KoM.

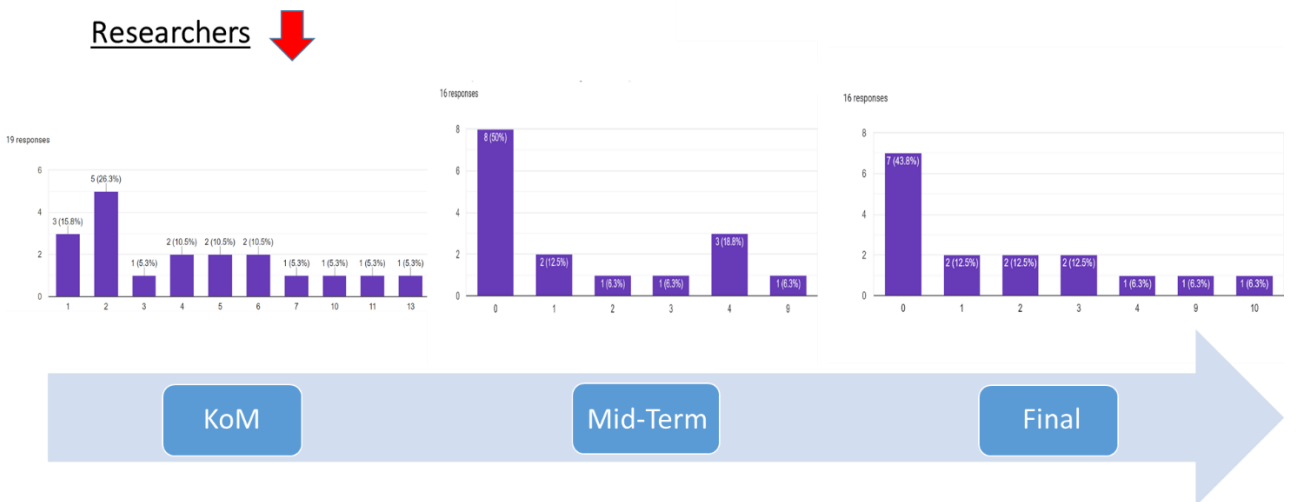


Figure 4. Distribution of the category “Researchers” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis.

Percentages between brackets refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Figure 5 deals on PhD students in the Public sector. There was a general increase in their engagement in T&M activities (from 64% to 73-75% of projects), with a raise in their total number from the initially planned 23 units to 28 units (at the time of final reporting).

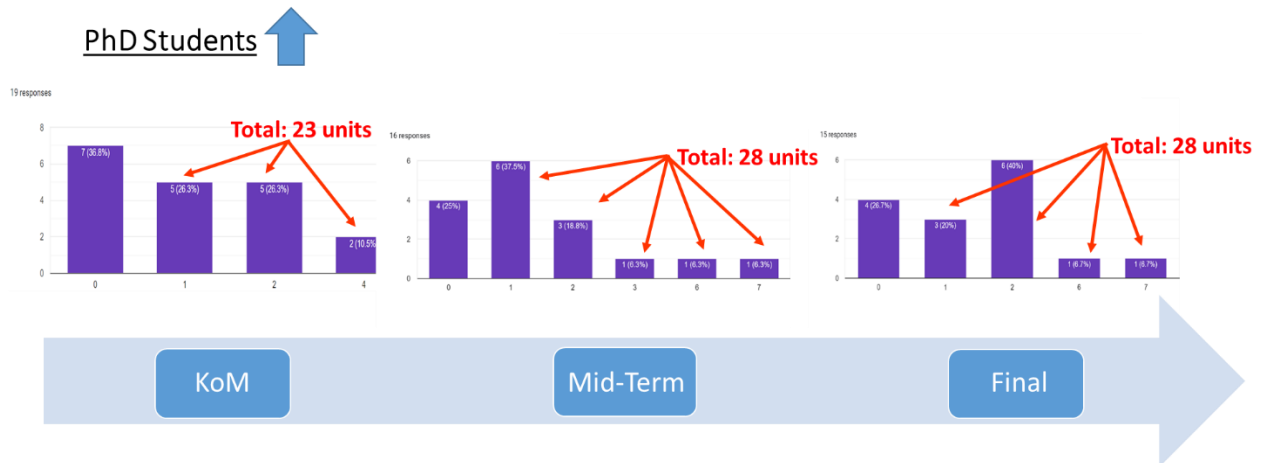


Figure 5. Distribution of the category “PhD students” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The other personnel categories, namely "Technicians" and "Graduated," were generally less important but exhibited an increase (Figs. 6-7) as well. Specifically, the involvement rate of technicians in the Public component of project partnerships increased from 37% (at the Kick-off Meeting) to 47% of projects (final reporting), while it increased from 32% to 50% of projects for graduated individuals.

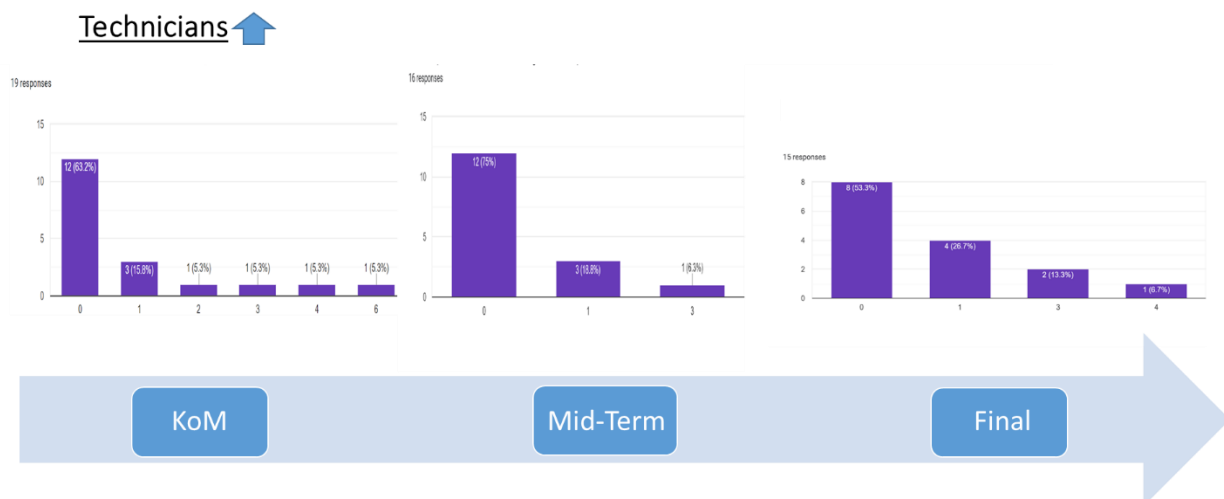


Figure 6. Distribution of the category “Technicians” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.



Figure 7. Distribution of the category “Graduated” involved in HCB by the Public component of project partnerships. Number of projects in the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The category “Researchers” seemed to be negatively affected in the Private sector as well, with researchers reported as target of HCB activities in only 20% of funded projects, whereas this percentage was nearly 60% at the time of the KoM (Fig. 8).

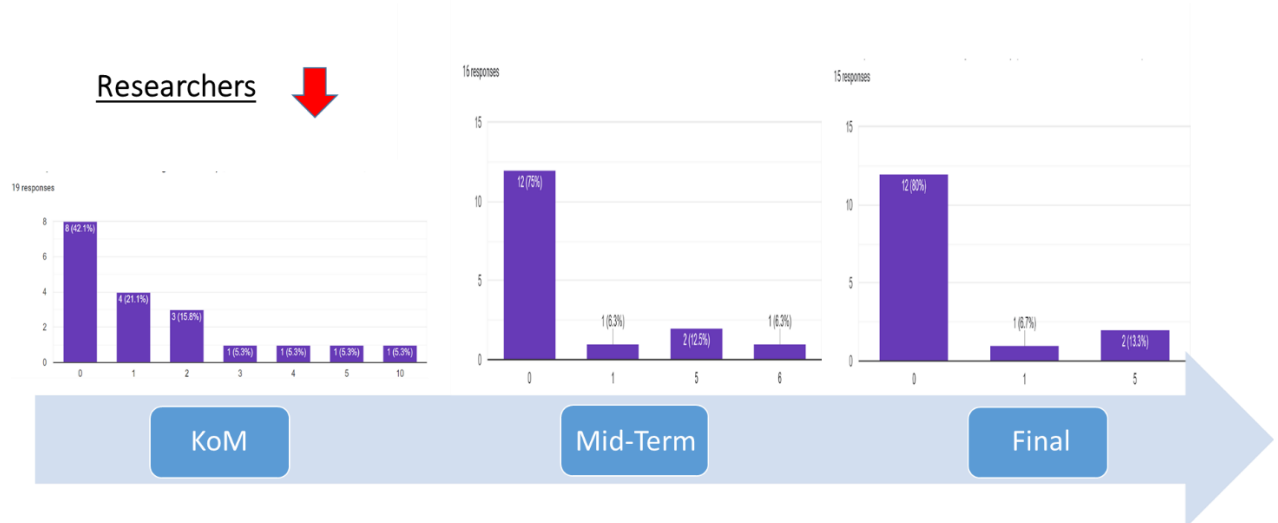


Figure 8. Distribution of the category “Researchers” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Similarly, in the “Private” component of project partnerships the engagement of PhD students in T&M experienced a notable reduction compared to the initial plans at the time of the KoM, declining from 7 units in three projects to just 2 units in one project (Fig. 9).

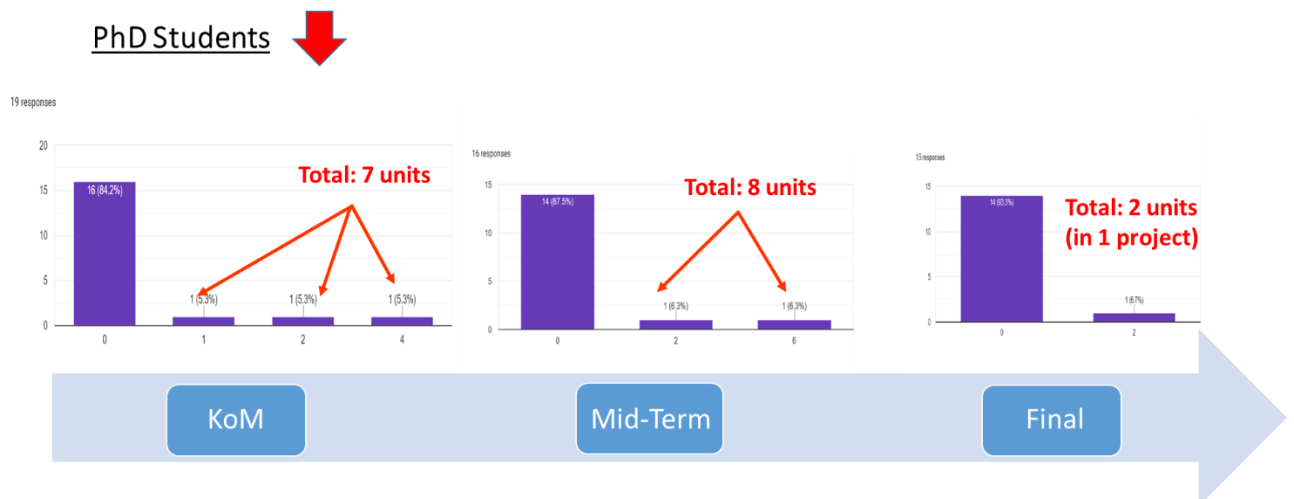


Figure 9. Distribution of category the “PhD students” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The engagement of the category “Technicians” also showed a negative trend (Fig. 10). In total, 7 units of personnel from 4 project partnerships were involved which was almost half than the initially planned number of 15 units from 5 projects at the time of the KoM.

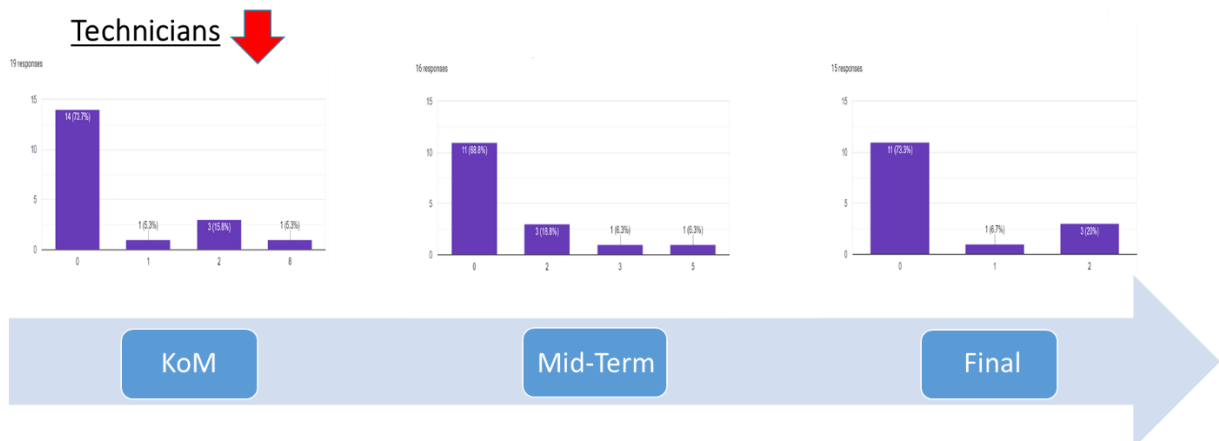


Figure 10. Distribution of the category “Technicians” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

An even more significant decrease occurred in the category “Graduated”, with only 2 units in 1 project compared to the initially planned 17 units in 5 projects at the time of the KoM (Fig. 11).

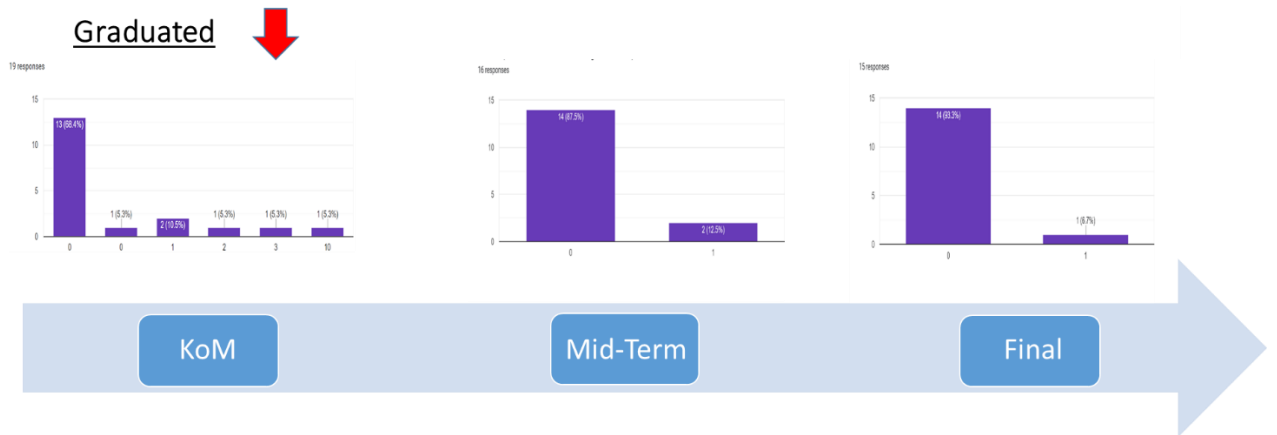


Figure 11. Distribution of category the “Graduated” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis.

Figure 12 shows the relative composition of manpower involved in HCB between Public and Private sectors, measured in terms of units of personnel.

Compared to the planned activities, the Private sector appeared to be more impacted, with the engagement of people in HCB decreasing from 34% to 23%.

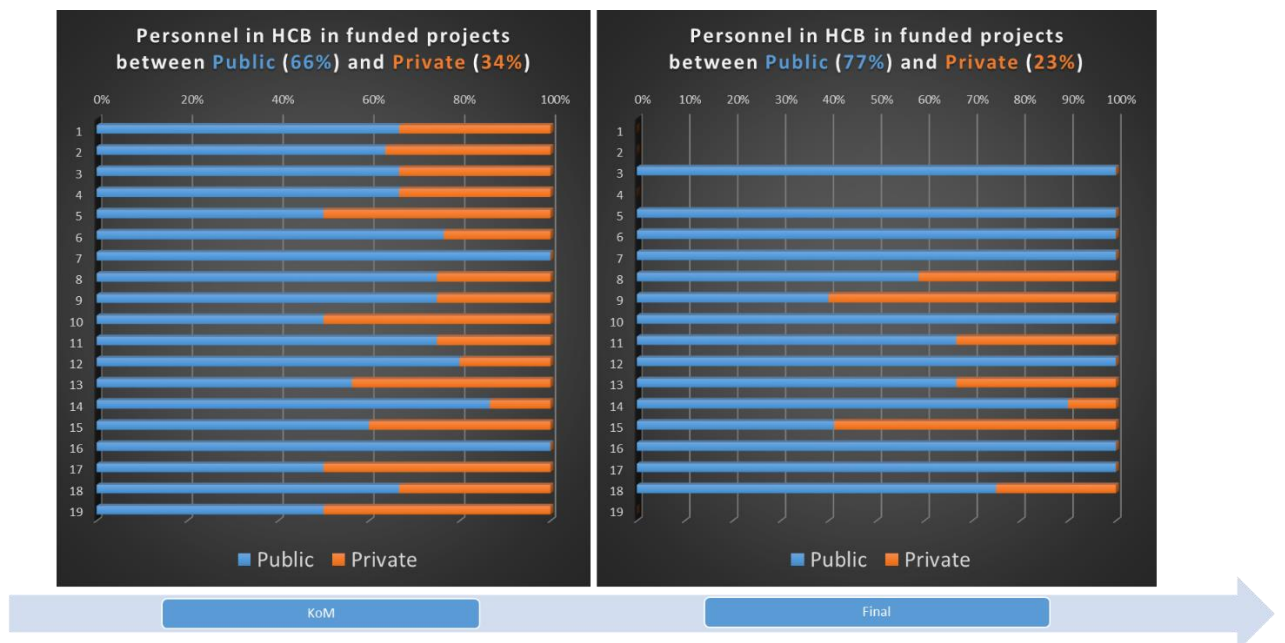


Figure 12. Relative composition of manpower involved in HCB between Public and Private sectors, in terms of units of personnel, within the co-funded projects. KoM (on the left) and Final reporting (on the right).

Figure 13 illustrates the relative importance of each category of personnel in the Public sector, as indicated in the questionnaire filled out by Projects coordinators at the time of the KoM (on the left) and the situation

derived from the final evaluation reports (on the right). The category “Researchers”, which was dominant in the work programme of co-funded projects, was partially substituted by the categories “Graduated” and “PhD students”.

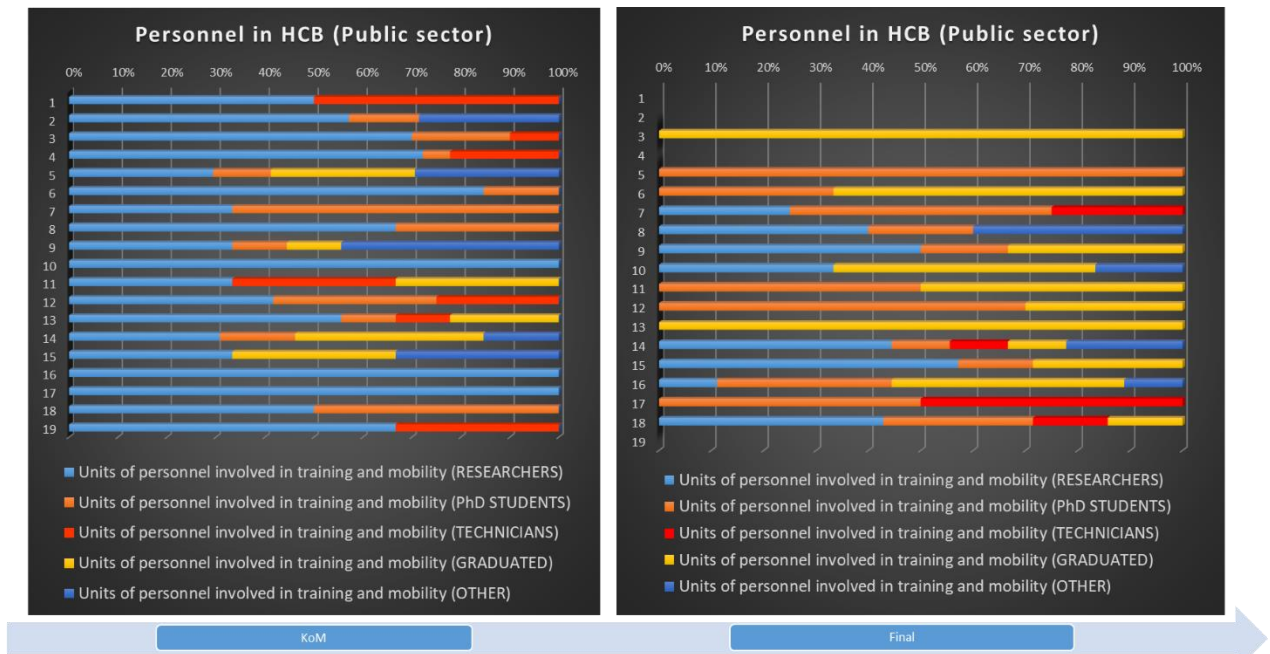


Figure 13. Relative importance of each category of personnel in the Public sector, in terms of units of personnel, within the co-funded projects. KoM (on the left) and Final reporting (on the right).

The Private sector (Fig. 14) seemed much more impacted, with many projects cancelling the planned HCB activities, meaning no personnel was involved in T&M activities. However, in those projects where T&M activities were implemented, there was an increase in the engagement of “Technicians” and “Graduated”.



Figure 14. Relative importance of each category of personnel in the Private sector, in terms of units of personnel, within the co-funded projects. KoM (on the left) and Final reporting (on the right).

Figure 15 regards the certification for trainees. Despite more than 50% of projects (summing up “Yes” and “Maybe” responses) had planned to provide some form of certification to people involved in T&M, only around 26% of the projects co-funded through the 2018 BlueBio Joint Call (5 out of 19) ultimately delivered any certification to trainees, with a negative impact on the professional development of people involved in HCB activities.

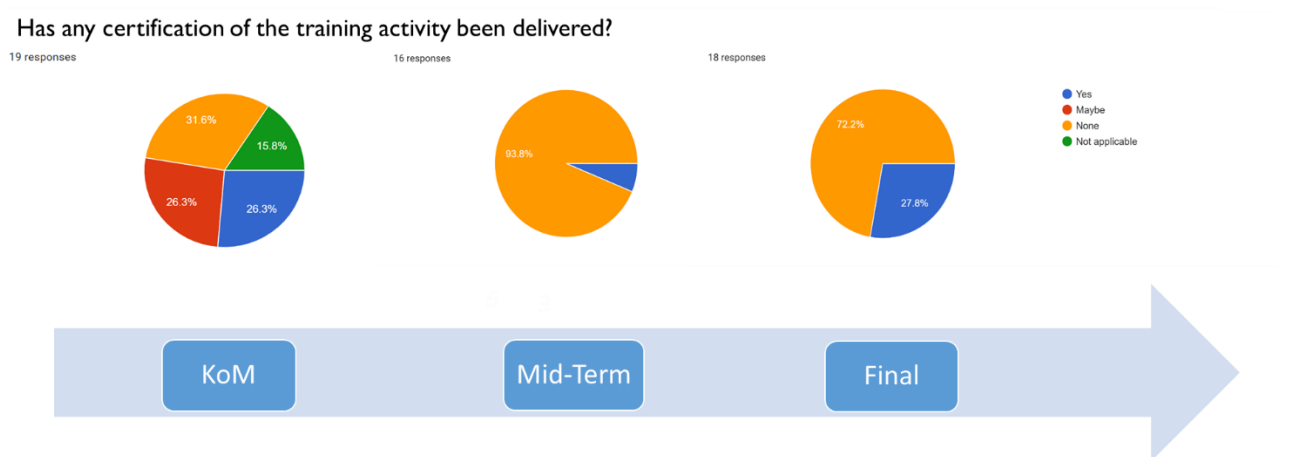


Figure 15. Rate of delivery of certification for trainees involved T&M activities implemented in the co-funded projects.

Similarly, the incorporation of Large-Scale Facilities (LSF) into the work plan was initially considered in approximately 50% of funded research proposals (combining "Yes" and "Maybe" responses; Fig. 16, left pie chart). However, by the time of the Final Evaluation Meeting, more than 80% of co-funded projects had not yet made use of any form of Large-Scale Facilities (Fig. 16, right pie chart).

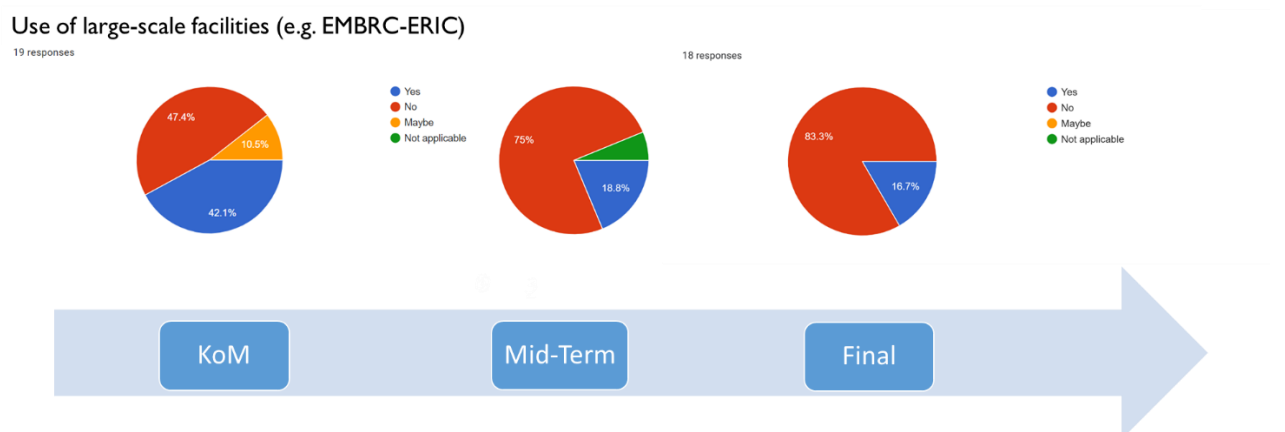


Figure 16. Use of the Large Scale Facilities in co-funded projects. KoM (on the left) and Final reporting (on the right).

Finally, although T&M activities were expected to be promoted through dedicated web portals by most of the co-funded projects (summing up “Yes” and “Maybe” responses, more than 60%; Fig. 17, left pie chart), the use of web portals turned out to be rather limited (Fig. 17, right pie chart).

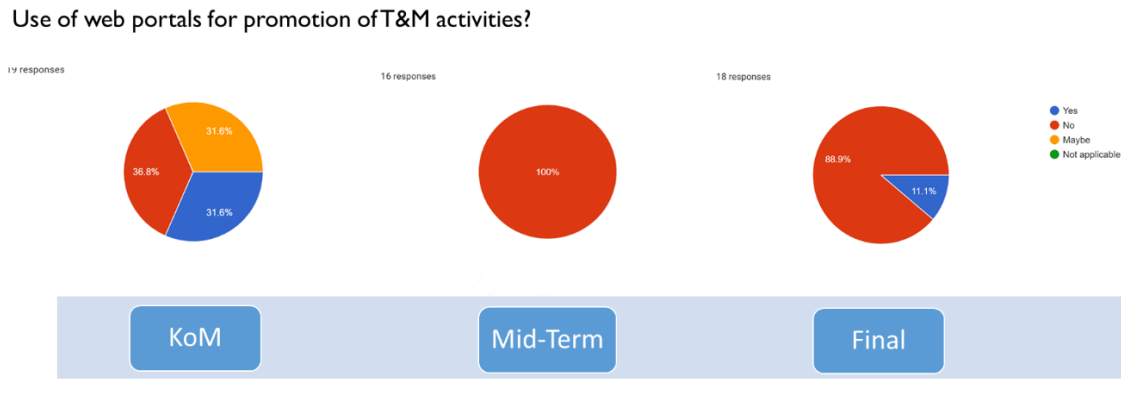


Figure 17. Use of specific web-based platforms for the promotion of T&M initiatives embedded in the co-funded projects. KoM (on the left) and Final reporting (on the right).

In conclusion, the main issue hindering the implementation of HCB activities within co-funded projects seemed to be the occurrence of the COVID-19 pandemic, which significantly affected the mobility of Researchers and Technicians involved in projects, thereby limiting their training opportunities. However, this reduction was partially compensated by an increase in the engagement of students, primarily through online approaches. It is noteworthy that the pandemic had a more pronounced impact on the private companies involved in the partnerships.

3.2. BlueBio 1st additional Call

The main results from the analysis carried out on the mid-term reports of the 10 projects that were selected and funded in the 1st BlueBio additional Call are given herein (see Annex 2, reporting information regarding project names, acronyms and coordinators). The majority of these projects have a duration of 36 months (7 projects), with the remaining ones extended to 24 months (2 projects) and 30 months (1 project).

Figure 18 shows the distribution of manpower involved in HCB activities between the Public and the Private sectors, presented in terms of personnel units. Each bar in the figure corresponds to a single project. The planned public component of partnerships within the funded projects accounted for nearly 2/3 of the total (63%). This proportion is similar to that observed in the projects selected in the Joint Call.

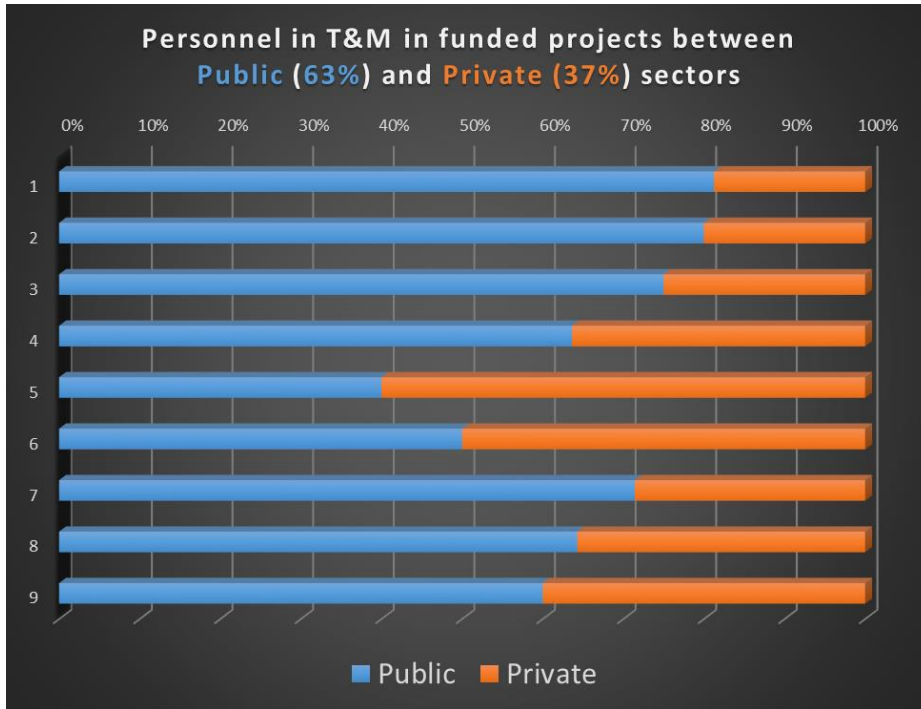


Figure 18. Relative composition of manpower involved in HCB between Public and Private sectors, in terms of units of personnel, within the projects selected in the 1st Additional Call (respondents: 9 out of 10).

Figure 19 shows the relative importance of each category of personnel in funded projects (Public sector on the left, Private sector on the right). “Researchers” and “Post-docs” were dominant in the Public sector. The distribution of personnel by category in the Private sector was less homogeneous across funded projects, with a general prevalence of “Researchers” and “Technicians”.



Figure 19. Relative importance of each category of personnel in the Public sector (on the right) and in the Private sector (on the left), in terms of units of personnel, within the projects selected in the 1st Additional Call (respondents: 9 out of 10).

Figure 20 illustrates the distribution of HCB activities among training and mobility within the selected projects. By comparing the right pie chart, which represents the mid-term reporting, with the left pie chart, showing the planned activities at the KoM time, it is evident that the (positive) evolution of COVID-19 pandemic from early 2023 likely allowed for an enhancement of T&M initiatives, which were instead heavily impacted during the first phase of projects funded in the BlueBio 2018 Joint Call.

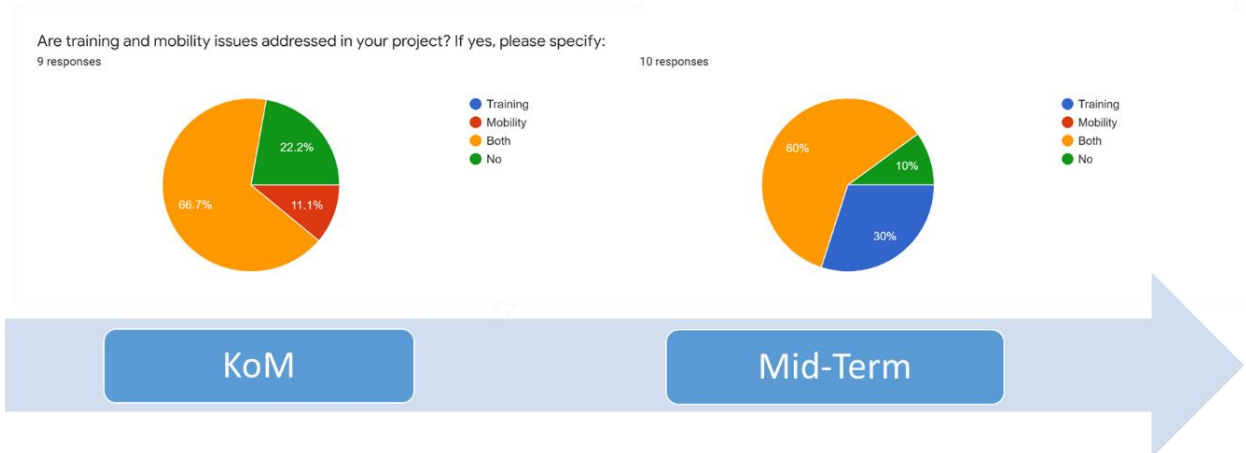


Figure 20. Distribution of HCB activities between training and mobility in projects funded by the 1st Additional Call. Comparison between the planned HCB activities at the time of the Kick-off Meeting (on the left) and activities reported in the mid-term reports (on the right).

The distribution of people involved in HCB activities by personnel category is reported in Figure 21. The comparison between the situation at the mid-term reporting (on the right) and what was initially planned in project proposals (on the left) shows a general reduction in the engagement of “Researchers”, “Post-docs” and “Technicians” and an increase in the number of projects involving “Graduated” students, similarly to what observed for the projects co-funded in the BlueBio 2018 Joint Call.

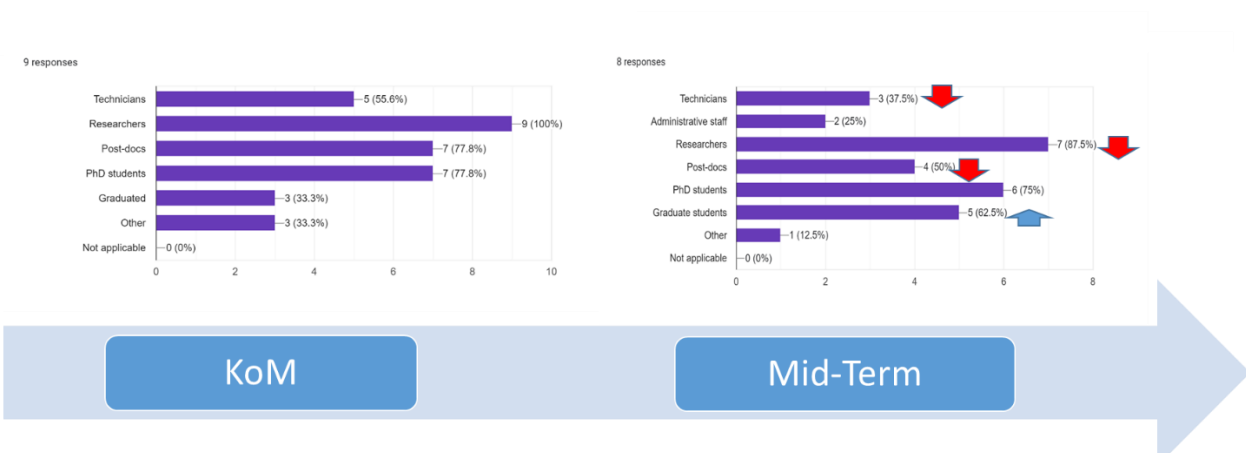


Figure 21. Qualification of personnel involved in T&M activities within projects funded through the 1st Additional Call. Comparison between the planned HCB activities at the time of the Kick-off Meeting (on the left) and activities reported in the mid-term reports (on the right). Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Regarding the approach to T&M activities (Fig. 22), at the time of KoM the most important planned categories (on the left) were “Short-medium term mobility within the partnership“, “Participation to training courses” and “Organization of training courses”.

The first two categories showed a notable increase, while there was a considerable decrease in the number of projects addressing HCB by organizing training courses. Apparently, at the time of KoM this possibility was significantly overestimated.

In addition, there was a noteworthy rise in the percentage of projects that allocated scholarships to PhD students and post-Docs (75% vs. 33%). The use of short-mobility actions also increased, likely due to the gradual removal of mobility restrictions associated with the COVID-19 pandemic.

How training and mobility issues are addressed in your project?

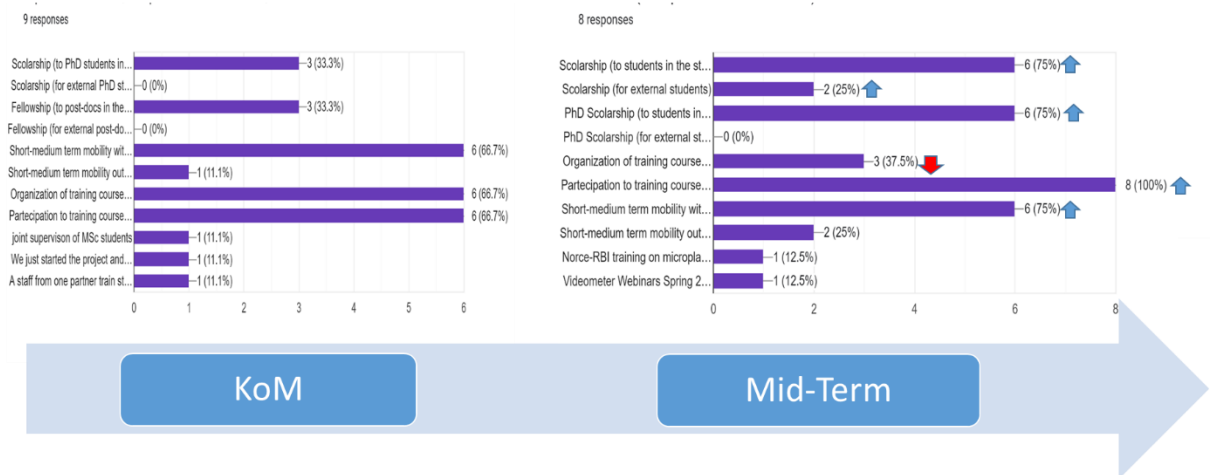


Figure 22. T&M activities within projects funded through the 1st BlueBio Additional Call. Comparison between the planned activities at the time of the Kick-off Meeting (on the left) and activities reported in the mid-term reports (on the right). Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The questionnaire on HCB also provided information about the distribution of personnel units involved in training and mobility for both the Public and the Private components of project partnerships. At the time of mid-term reporting there were 8 respondents out of 10 project coordinators.

Specifically, Figure 23 focuses on the involvement of “Researchers” employed in the Public sectors. The total number of researchers actively engaged in T&M activities closely mirrored the planned involvement (24 vs. 22).

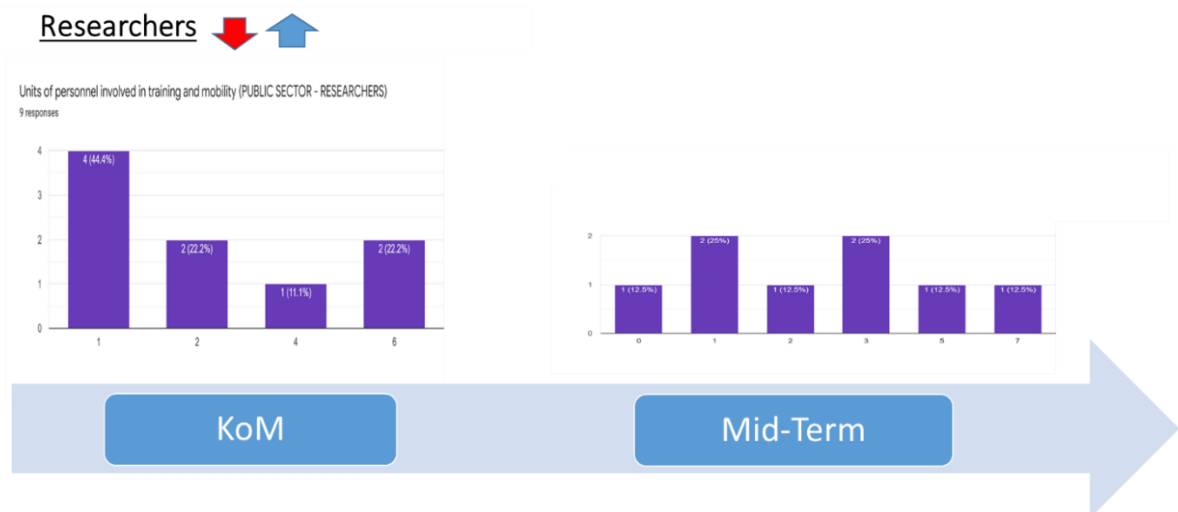


Figure 23. Distribution of the category “Researchers” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Figure 24 shows the units of PhD students involved in T&M by the Public component of project partnerships. Their overall number at the time of Mid-term reporting reflected a slight increase compared to the planned engagement at the time of KoM.

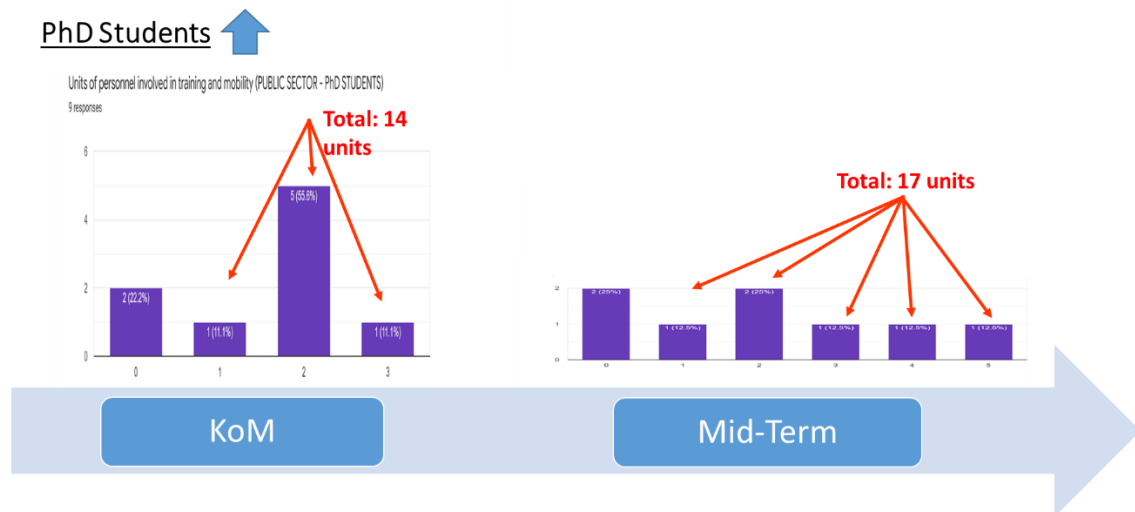


Figure 24. Distribution of the category “PhD students” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The involvement of Post-Docs in T&M activities within the Public sector component of project partnerships exhibited a significant decrease (Figure 25). At the time of mid-term reporting only 50% of projects had effectively included Post-docs in T&M activities, compared to the planned work program (80%), and their numerical participation was also lower.

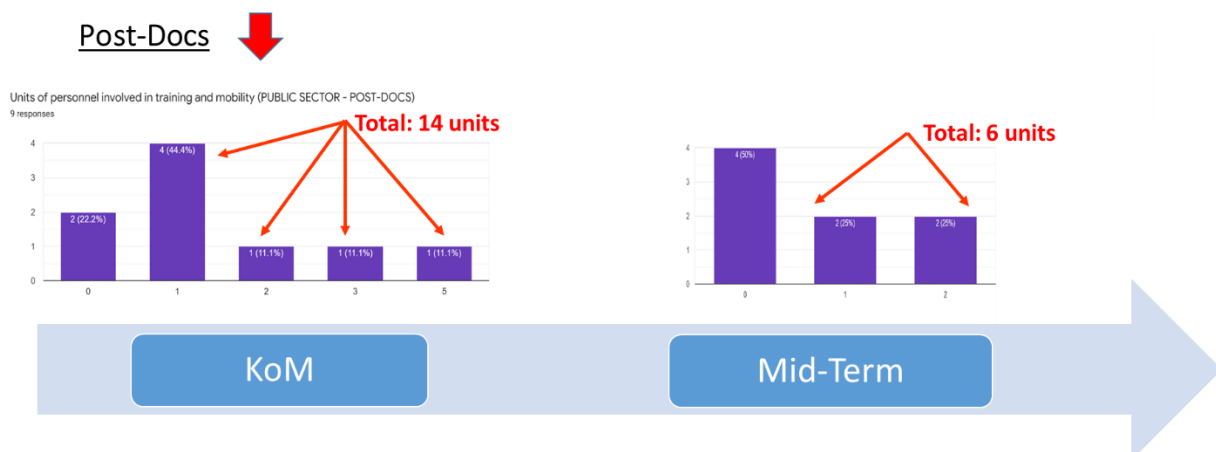


Figure 25. Distribution of the category “Post-Docs” involved in HCB by the Public component of project partnerships.

Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

On the contrary, the category “Graduated” increased, including considering their overall numeric involvement in the funded projects. Only 3 projects did not incorporate this personnel category in T&M activities (Fig. 26).

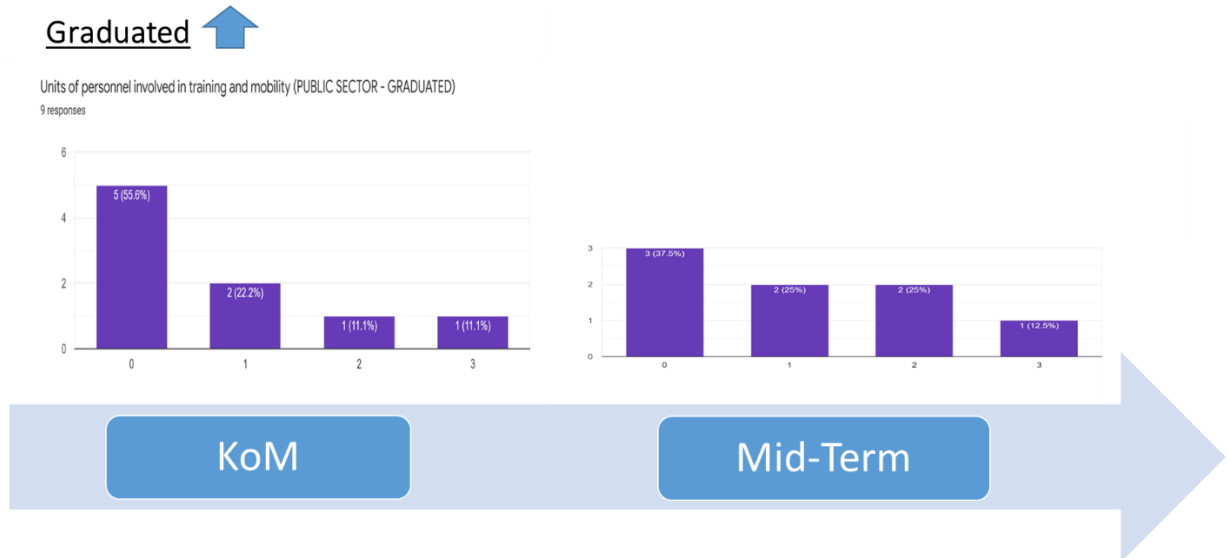


Figure 26. Distribution of the category “Graduated” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

The category “Technicians” was the most impacted (Fig. 27). While their engagement in planned T&M activities within the funded projects was generally lower, the analysis of HCB questionnaires revealed that “Technicians” from the Public sector had not been involved in HCB initiatives at the time of mid-term reporting.

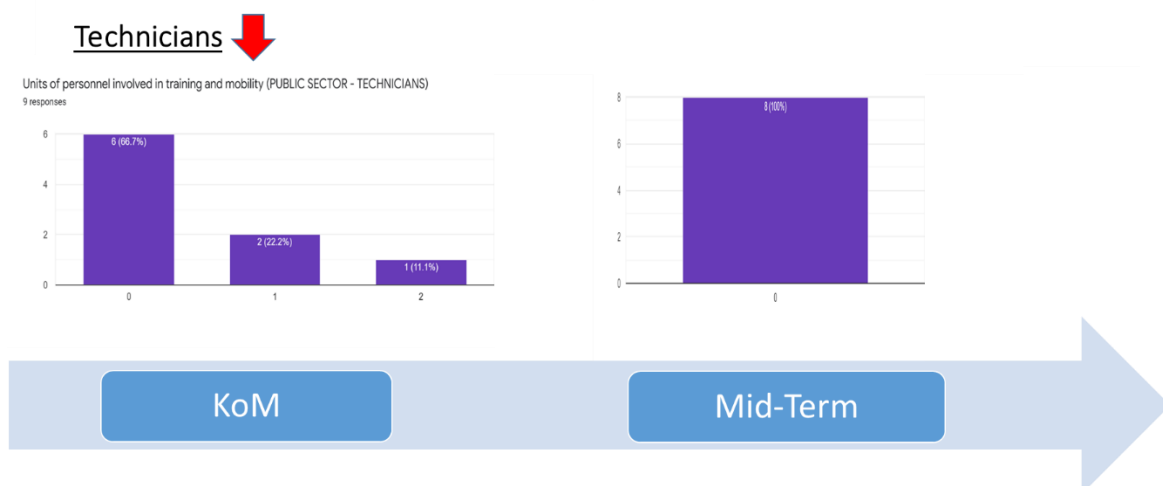


Figure 27. Distribution of the category “Technicians” involved in HCB by the Public component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Similarly to the Public sector, in the Private sector of project partnerships the category “Researchers” showed a noticeable decrease (Fig. 28). Indeed, “Researchers” were the target of HCB activities in only 25% of funded projects, compared with 2/3 at the KoM time.

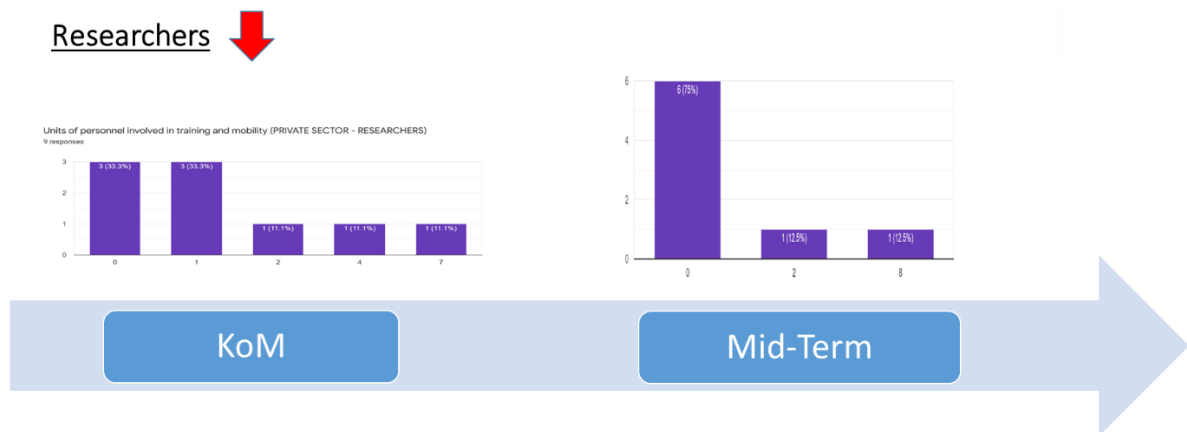


Figure 28. Distribution of the category “Researchers” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

In contrast, within the “Private” component of project partnerships, the engagement of PhD students in T&M activities did not significantly differ from the initial plan, albeit limited to only 2 funded projects with a total of 2 personnel units (Fig. 29). However, it is worth noting that the absolute numbers might be higher, as this information was not provided by 2 projects.

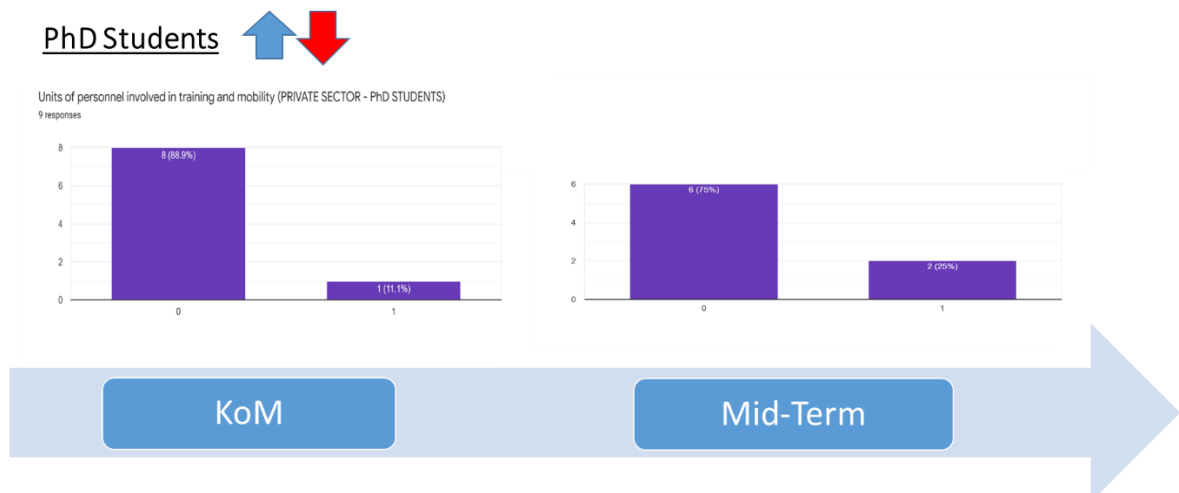


Figure 29. Distribution of the category “PhD students” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Similarly, the engagement of the categories “Post-Docs” (Fig. 30) generally aligned with the initially planned activities.

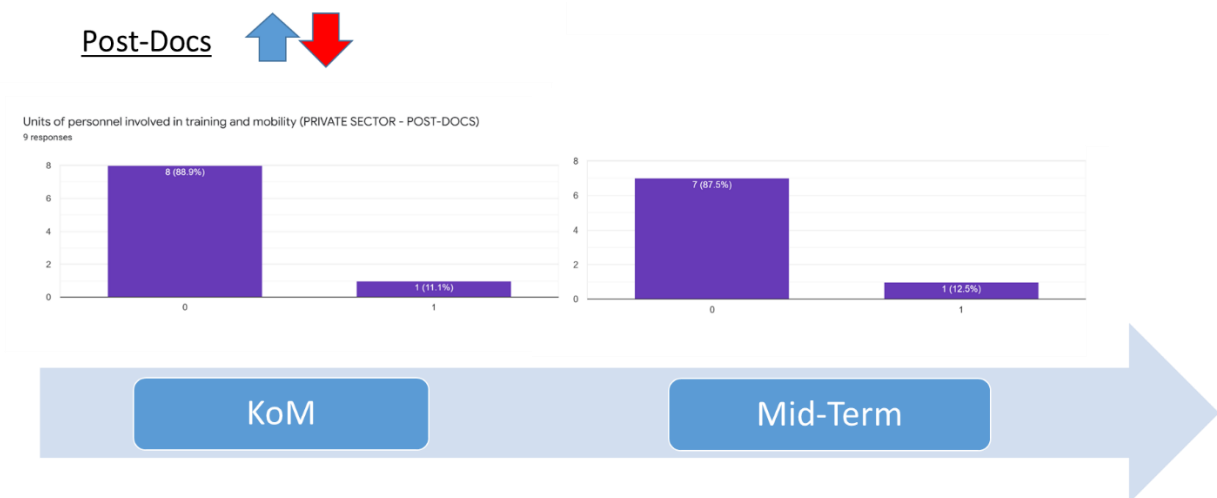


Figure 30. Distribution of the category “Post-Docs” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

On the contrary, there was a decrease in in number of “Technicians” (from 8 to 4 in terms of units and from 5 to 3 projects; see Fig. 31).

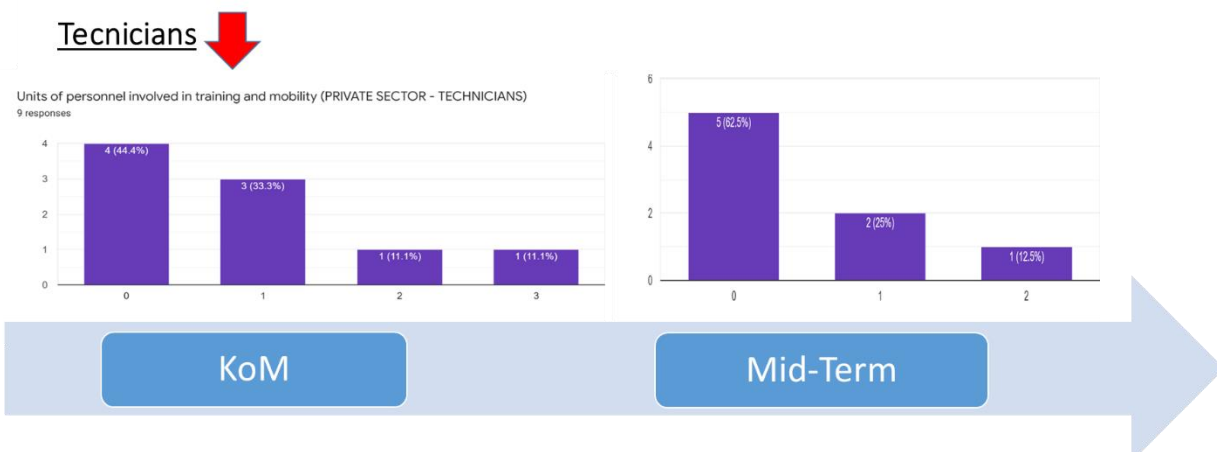


Figure 31. Distribution of the category “Technicians” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

In contrast, the category “Graduated” showed a slight increase in terms of units (Fig. 32).



Figure 32. Distribution of the category “Graduated” involved in HCB by the Private component of project partnerships. Number of projects on the vertical axis, number of units of personnel on the horizontal axis. Percentages refer to the rate between the number of projects involving a particular category of personnel and the total number of respondents among the addressed project coordinators.

Figure 33 represents the distribution of projects based on their choices regarding the delivery of certification of T&M activities to personnel involved in funded projects. We emphasized the significance of certifying training due to its expected positive impact on individual professional curricula of the involved personnel, recommending this practice to all projects coordinators. Regarding this aspect, it is noteworthy that despite over 50% of projects planned to deliver some form of certification, no certification for T&M activities had been delivered to trainees at the time of KoM.



Figure 33. Rate of delivery of certification for trainees involved T&M activities implemented in projects funded by the BlueBio 1st Additional Call.

The utilization of large-scale facilities was notably lower than anticipated, at least as stated in the Mid-term reports (Fig. 34).

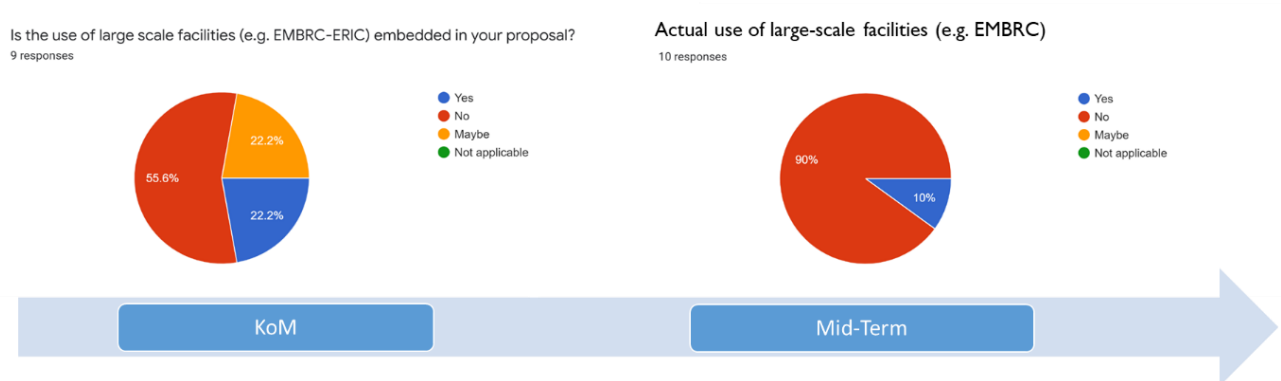


Figure 34. Use of Large Scale Facilities in projects funded through the BlueBio 1st Additional Call. KoM (on the left) and Mid-term reporting (on the right).

Finally, in most cases (80% of funded projects) T&M activities were not promoted in dedicated web portals (Fig. 35).

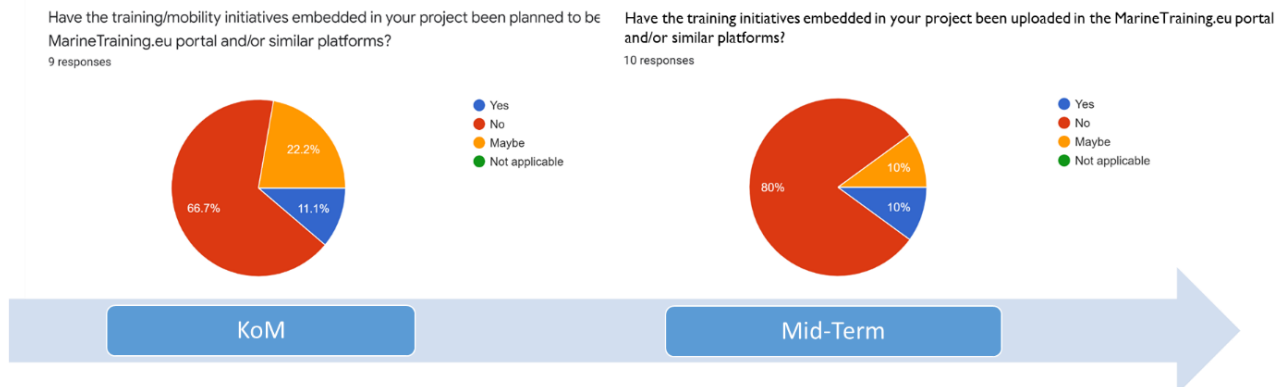


Figure 35. Use of specific web-based platforms for the promotion of T&M initiatives embedded within the projects funded through the BlueBio 1st Additional Call. KoM (on the left) and Mid-term reporting (on the right).

3.3. Session on HCB at the BlueBio Joint Evaluation Event meeting (Lisbon, June 2023)

A specific session on Human Capacity Building (HCB) was organized in the framework of the BlueBio Joint Evaluation Event meeting held in Lisbon (Portugal) on 6-7 June 2023. Specifically, the session was scheduled on 6 June 2023 and was dedicated to the 10 projects selected within the 1st BlueBio Additional Call (see Annex 3).

Representatives from a total of 7 projects attended the session. Hereafter the list of projects (acronyms): TACO ALGAE; MuMiFast; QualiSea; SuMaFood; MARIGREEN; PROFIOUS; Microalgae in IT.

The purpose of the session was to foster discussion among participants regarding the best practices to be implemented by the BlueBio consortium for enhancing HCB in support of their projects and, more broadly, of the Blue Bioeconomy sector. Specifically, all participants were invited to suggest topics for future “short” training courses, which emerged as the most effective tool for improving HCB in this sector from the analysis

of responses to a specific question embedded in the HCB questionnaire submitted to project coordinators a few weeks before the Joint meeting in Lisbon (Fig. 36).

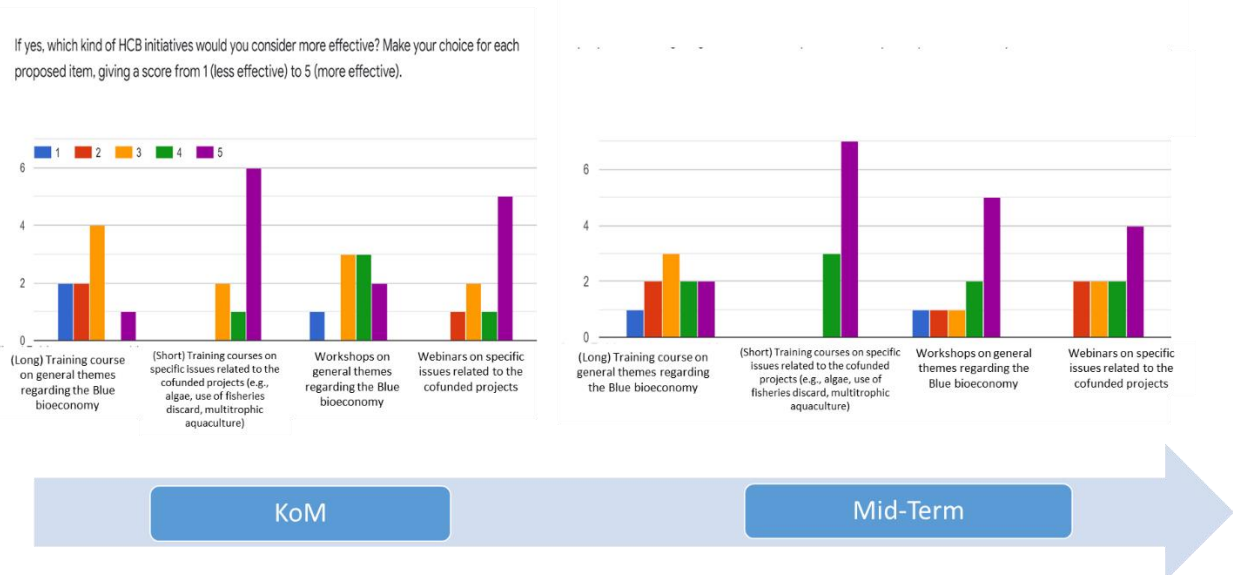


Figure 36. Training tools proposed for enhancing HCB of people involved in blue bioeconomy development. Responses of coordinators of projects funded through the BlueBio 1st Additional Call at the time of KoM (on the left) and at Mid-term reporting (on the right). The vertical axe represents the number of times a specific evaluation (from 0 to 5) was given by a project coordinator (multiple choices allowed).

The same questionnaire facilitated the collection of specific topics addressing the most relevant training needs, which were then assembled into four general themes: Microalgae biotechnology, Market&Policy, Food quality and safety, Fisheries and aquaculture side-streams. In the initial part of the group exercise, participants were divided into two groups, and each group was asked to propose at least one topic for each of the four aforementioned main themes. They utilized a set of post-it notes to affix their suggestions onto four sheets hanged to the walls of the meeting room - one sheet designated for each of the main themes. Each group was asked to dedicate in turn 5 minutes to each main theme. A total of 21 specific topics were suggested: 5 topics for the themes “Microalgae biotechnology”, “Food quality and safety”, and “Fisheries and aquaculture side-streams”, and 6 topics for “Market&Policy”. During the second part of the group exercise, participants were asked to vote for up to three different topics, assigning scores ranging from 1 (less important) to 3 (more important).

The table below shows the results by main theme with the number of votes given to the different topics and the corresponding average scores.

| | |
|---|---|
| <p style="text-align: center;">Theme:</p> <p style="text-align: center;">“Fisheries and aquaculture side-streams”</p> <p style="text-align: center;">Topics</p> <ul style="list-style-type: none"> • How to upgrade from feed to food applications (3 votes, average score: 2) • Workshop on how to utilize sidestreams in a better way (2 votes, average score: 3) • Training course on how to perform LCA/LCC on side-stream valorization (1 vote, average score: 2) • Correlation between aquaculture & fisheries, processing & climate change (assessment of the impact) • Optimizing filtration/wastewater utilization throughout the value chain | <p style="text-align: center;">Theme:</p> <p style="text-align: center;">“Market&Policy”</p> <p style="text-align: center;">Topics</p> <ul style="list-style-type: none"> • Filling gaps between land-based and water-based markets (in a wider perspective) (3 votes, average score: 1.33) • Streamlining new products through regulation (ex. novel food regulation) (2 votes, average score: 2.5) • Communication to/with policy makers (2 votes, average score: 1.5) • Cost-benefit analysis (1 vote, average score: 3) • Market creation for food products • Issues with novel food |
| <p style="text-align: center;">Theme:</p> <p style="text-align: center;">“Food quality and safety”</p> <p style="text-align: center;">Topics</p> <ul style="list-style-type: none"> • Training – Use of new/strange/processed products in different food (5 votes, average score: 2.6) • Policies–Political tools to influence social acceptance&regulations (1 vote, average score: 2) • Methodologies • Regulations • GMP (good manufacturing practice) | <p style="text-align: center;">Theme</p> <p style="text-align: center;">“Microalgae biotechnology”</p> <p style="text-align: center;">Topics</p> <ul style="list-style-type: none"> • (Bio)refining – Extraction/product separation (3 votes, average score: 2) • Harvesting (2 votes, average score: 3) • Functional & sensory properties of microalgae biomass as food ingredients (1 votes, average score: 3) • Biofuels • Waste valorization |

The total of 26 votes were quite broadly distributed among the 21 topics of the four main themes.

The top-ranked topic, “Use of new processed products in different food”(5 votes), received 19% of votes with an average score of 2.6; the second-ranked topics, i.e. “How to upgrade from feed to food applications”, “Filling gaps between land-based and water-based markets”, and “(Bio)refining – Extraction/product separation”, received all together 9 votes (35% of the total votes) and an average score of 1.8; whereas the third-ranked topics mainly related to communication and regulation issues about new products (8 votes in total, 2 votes each one) received 31% of the total votes with an average score of 2.5.

It is worth to note that most of the top-rated topics are quite specific, and mainly deal with the development and the promotion of new food products. However, market and policy issues are also considered highly relevant, likely due to their importance in disseminating good practices to the general public.

3.4. Session on HCB at the BlueBio Final meeting (Brussels, March 2024)

During the session “Thinking outside the box: additional activities” at the BlueBio Final meeting, held on 19 March 2024 in Brussels (see the attached agenda in Annex 4), a specific discussion group exercise was dedicated to HCB, entitled “Human Capacity Building within and between projects”.


The participants were divided into four groups, and each group was asked to spend 15 minutes in front of a wall poster (Fig. 37) summarizing the work done within BlueBio for the development of HCB. The Task 7.3 coordinator explained the content of the poster and facilitate the discussion. The objective was to get feedback from the attendees about how to amplify the impact of HCB within blue bio-economy research projects, collecting their opinions on topics and activities and their advice about the best practices to be adopted in support to ongoing and future initiatives such as the SBEP (Sustainable Blue Economy Partnership). The wall poster on HCB was organized into three sections: 1) Enabling HCB, 2) Steering HCB, and 3) Further boosting HCB.

In **Section 1** the tools adopted in the BlueBio co-funded projects for enabling HCB were presented. The relevance given to HCB in the BlueBio Cofund was evidenced by the text of the BlueBio calls for proposals requesting that “the addressing of T&M activities has to be duly evidenced and described in a specific section of R&I project proposals”. The investment in human capital has been declined by the partnerships of the co-funded projects both in terms of a) recruitment of new trainees, and/or in terms of b) enhanced T&M activities for their staff (both in temporary and/or permanent position).

Section 2 was designed to report the accompanying actions adopted by the BlueBio consortium in support to the HCB initiatives embedded in the BlueBio co-funded projects. These actions included a) the monitoring of HCB activities and b) the addressing of training needs. The monitoring of HCB activities profited of the periodic delivery to project coordinators of an online questionnaire, also embedded in Mid-term and Final Reports of co-funded projects. The addressing of training needs of BlueBio co-funded projects was based on a) the feedback from their project coordinators, who were asked to suggest, by online surveys and e-coffee meetings, the most relevant topics and tools for training activities in support to the blue bio-economy, and b) on the identification of scientific gaps arising from the analysis of an extensive database of research projects developed under Task 7.1 (WP7 “Related activities”). This activity also facilitated the definition of the agendas of the 3 training courses organized at Consortium level within BlueBio.

Lastly, **Section 3** focused on further boosting HCB activities and improving networking among projects. Project coordinators recommended allocating additional funds for attending and organizing training courses, facilitating exchanges, and creating new positions for PhD and MSc students, as well as for Post-docs. Within BlueBio this demand was partially met by launching a targeted call for proposal, the 3rd additional Call, aimed at amplifying project reach and knowledge impact. In addition, three advanced training courses on blue bio-refinery technologies were organized by the BlueBio consortium: the first two were held in Italy (Messina, March 2021 and Foggia, January 2023), the last one was held in October 2023 at Ålesund, Norway.

After this presentation, the attendees were requested to start a short group discussion and then individually use post-its for listing their choices, in decreasing order of importance (max 3 items), specifically by attaching on the wall poster a post-it for each of the two possible actions: a) the recruitment of new trainees and b) the organization of new T&M initiatives. They were also asked to do the same for the two sub-sections of Section 2: a) how to improve the monitoring of HCB activities in co-funded projects and in sub-section b) how to address their training needs. Each group was allocated about 10 minutes for completing the exercise.



Transnational calls

- 2020: The second wave (interim reports) under the Marie Skłodowska Curie-ETN, 18, 23, 24, 25 projects
- 2021: 1st wave (interim reports) under the Marie Skłodowska Curie-ETN, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 projects
- 2022: 2nd wave (interim reports) under the Marie Skłodowska Curie-ETN, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 projects

HCB in BlueBio

- 2020: 1st wave (interim reports) under the Marie Skłodowska Curie-ETN, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 projects
- 2021: 2nd wave (interim reports) under the Marie Skłodowska Curie-ETN, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 projects
- 2022: 3rd wave (interim reports) under the Marie Skłodowska Curie-ETN, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 projects

Session 2 - Thinking outside the box: additional activities

Station 2 - Human Capacity Building within and between projects

1 Enabling HCB in projects

From HCB guidelines (in BlueBio call text documents):
“The addressing of T&M activities has to be duly evidenced and described in a specific section of R&I project proposals”

How to amplify impact?

| | | |
|---|-----|--|
| <p>a) + Trainees: Ex.: PhD students, MSc students, Post-docs positions, tech. apprentices, etc.</p> | Vs. | <p>b) + T&M initiatives: Ex.: mobility programs, training courses, webinars, workshops, etc.</p> |
|---|-----|--|

(list your suggestions, up to 3 items for each section)

2 Steering HCB in BlueBio co-funded projects

| | |
|--|---|
| <p>a) Monitoring actions:</p> <ul style="list-style-type: none"> • Online surveys; • HCB questionnaire in Mid-term and Final reporting. | <p>b) Addressing training needs:</p> <ul style="list-style-type: none"> • Identifying topics and tools (by online surveys and e-coffee meetings); • Identifying gaps from extensive database of research projects. |
|--|---|

What else?
(list your suggestions, up to 3 items for each section)

3 Further boosting HCB activities and networking

Advice from coordinators of BlueBio co-funded projects:

Specific funds in call for proposals for:

- Attending trainings and doing exchanges;
- Organizing training courses: Consortium vs Project level.

What else?
(list your suggestions, up to 3 items)

Figure 36. Wall poster on HCB in BlueBio Cofund presented at BlueBio Final meeting.

The results of the analysis of feedbacks received from the participants to the group exercises are summarized in the table below. They evidenced the importance of continuous education by strengthening the links between Academia and Industry (Industrial PhD), addressing the enhancing of multidisciplinary competencies (M-skills), organizing summer schools in support to science communication, and actions for training the trainers.

| SECTION | 1a | 1b | 2a | 2b | 3 |
|--------------------------------|----|-----------|----|----------|-----------|
| post-it (#) | 4 | 7 | 5 | 2 | 5 |
| input (#) | 7 | 13 | 5 | 2 | 10 |
| Total inputs by section | | 20 | | 7 | 10 |

| 1a | | 1b | | 2a | | 2b | | 3 | |
|---------|--|---------|--|---------|--|---------|---|---------|--|
| post-it | input | post-it | input | post-it | input | post-it | input | post-it | input |
| 1 | - How to measure actual HCB impact in a short-term project? | 1 | - Include results from projects to general lectures for students | 1 | - Monitoring actions 1-2 years after the end of the project | 1 | - Topics and tools | 1 | - Making sure funds are available for HCB |
| 2 | - Promote work placements/secondments for ESR (Early Stage Researchers) at companies | 2 | - Consider science communication in summer school programmes to amplify outreach and facilitate the measurement of impact | 2 | - Keep track of projects in the field & try to get involved BlureBiotech Preneurs EU projects | 2 | - Participatory process to co-create training needs | | - Mobility always in one direction Academia -> Industry |
| 3 | - Industrial PhD - Link to PhD programs | 3 | - Continuous education - M-Skills training (on multidisciplinary competencies) | 3 | - Online surveys + questionnaires | | | 2 | - TRAIN THE TRAINERS |
| 4 | - Workers - Entrepreneurs - Policy makers and regulators | 4 | - Cross-sectoral exchange of knowledge + business opportunities - Training on the job | 4 | - Important to follow up and monitor also the actual impact on the PhD and trainers after the projects ends | | | 3 | - Link up with HCB professional companies/initiatives and look for indicator on how to measure impacts of HCB (Erasmus+?) |
| | | 5 | - Summer schools | 5 | - Programme level monitor & initiative | | | 4 | - Program level: Build synergies to national & EU initiatives - MSCA - TRAIN THE TRAINERS - INDUSTRY PhD |
| | | 6 | - Training courses - Workshops - Engaging students/trainees - Traineeship in companies | | | | | 5 | - Real life exchanges among projects - IMPORTANT TO ENSURE SYNERGIES |
| | | 7 | - HCB also outside projects & partnerships & wider audience - Continuous education in the value chain | | | | | | |

4. Discussion and conclusions

The present document, related to MS38, was prepared to report about the activities implemented within T7.3 in support of the monitoring and the assessment of Training and Mobility (T&M) actions embedded in the work plans of BlueBio funded projects for the enhancement of Human Capacity Building (HCB) in the blue bio-economy sector, specifically addressing research and innovation projects selected in the BlueBio Joint Call and in the 1st BlueBio additional Call (Annexes 1-2). It is intended to integrate the outcomes from D4.3 (“Mid-term report validated, collected and distributed to the Call Steering Committee”), MS5 (“Mid-term Project Seminar”), MS25 (“Mid-term and final evaluation of HCB and training activities performed by co-funded projects – part 1”) and the assessment of T&M initiatives implemented within funded projects at the time of the final Joint Evaluation Event meeting of BlueBio projects (Lisbon, 6-7 June 2023; see Annex 3). In addition, this document also summarizes the results of the group exercises on HCB undertaken during the Lisbon Joint Evaluation Event meeting and the BlueBio Final meeting (Brussels, 19 March 2024; see Annex 4). Specifically, the assessment of T&M activities relied on the examination of final reports from the 19 co-funded projects and of mid-term reports from the 10 projects selected in the 1st BlueBio additional Call, encompassing data provided by the projects’ coordinators in the embedded questionnaires on HCB (see Annex 5).

Concerning the 2018 BlueBio Joint Call, the analysis of final reporting evidenced major negative impacts particularly in the area of mobility, mostly due to the constraints imposed by the COVID-19 pandemic, which severely restricted travel possibilities. This issue, which mainly affected the “Researchers” category, had been already identified in mid-term reports and was confirmed at the time of final reporting. However, the negative impact on HCB due to reduced researcher mobility was partially compensated by the increased use of “online” training activities and the provision of scholarships to PhD students.

It is worth noting the relatively high final number of projects that entailed scholarships for PhD students, corresponding to almost 70% of the total funded projects. This marks a noteworthy increase compared to the initial Kick-off Meeting (KoM) stage, where it stood at approximately 30%, as well as an overall increase in the number of PhD students involved in funded projects. In addition, the involvement of “Technicians” and “Graduated”, as indicated in the final reports, showed an increase following a decline observed during the mid-term reporting phase.

The category “Researchers” was also negatively affected within the Private component of project partnerships. HCB activities targeted Researchers in only 20-25% of the funded projects, a significantly lower percentage than the expected involvement (around 60% at the time of the KoM). Similarly, the categories “Technicians and “Graduated” were negatively affected. Overall, the Private sector was more impacted than the Public sector, with the engagement of total employed personnel in HCB decreasing from the initially planned 34% to 23% in the final reports. In the majority of funded projects the HCB activities planned by the Private component of projects partnerships were cancelled resulting in the absence of personnel involvement in Training and Mobility (T&M) activities.

However, when T&M activities were implemented, there was an increase in the engagement of technicians.

Finally, certifications of HCB initiatives for trainees were lower than expected, encompassing only 5 out of the 19 projects co-funded through the 2018 BlueBio Joint Call. The same applies to the use of Large Scale Facilities (LSF), as in the Final reporting phase only three project coordinators declared applying any LSFs for the development of their activities. Furthermore, there was limited promotion of organized T&M activities on dedicated web portals, with only two projects implementing this action.

Regarding the projects funded by the 1st Additional Call, mid-term reporting reflected the reduced impact of COVID-19 pandemic on human activities, with a higher number of projects addressing T&M compared to what had been initially planned in the project proposals. Concerning specific HCB activities, the primary planned categories were “Short-medium term mobility within the partnership”, “Participation to training courses” and “Organization of training courses”. The first two categories showed a significant increase, while there was a large decrease in “Organization of training courses”. In addition, there was a notable increase in the number of projects that assigned scholarships to PhD students and post-Docs, comprising 75% of the total, a significant rise compared to the initial Kick-off Meeting when it was only 33%.

Lastly, the adoption of short-mobility actions also increased, likely due to the gradual removal of mobility restrictions related to the COVID-19 pandemic. However, within the Public component of project partnerships, the number of people involved in T&M activities was lower than expected for the categories “Post-Docs” and “Technicians”. Conversely, in the Private sector there was a decline in the involvement of “Researchers”, who were target of HCB activities in only 25% of funded projects compared to 2/3 of the total at the time of the KoM.

About the certification of HCB activities for trainees, despite over 50% of projects initially planning to generate this documentation, no certifications of T&M activities had been delivered to trainees at the time of the mid-term reporting. Concerning the use of large scale facilities, it was notably lower than expected, mirroring observations made for the projects funded by the BlueBio Joint Call. Finally, the promotion of T&M activities within projects through dedicated web portals was quite low, involving just two of the funded projects.

Finally, this document presents the outcomes of the “Session on Human Capacity Building (HCB) for the projects - Analysis and opportunities”, specifically focused on projects funded in the 1st Additional Call and conducted during the 2023 Joint Evaluation Event meeting of BlueBio projects (Lisbon, 6-7 June 2023), and of the discussion group on HCB entitled “Human Capacity Building within and between projects” that was promoted during the session “Thinking outside the box: additional activities” of the BlueBio Final meeting (Brussels, 19 March 2024). The first event highlighted a few specific topics, primarily focusing on the development and promotion of new food products, as areas to be prioritized for T&M activities aimed at enhancing HCB in support of blue bioeconomy projects. The second event provided insights on the best practices to be adopted for amplifying the impacts of blue bioeconomy cofunded research projects by investing on HCB actions.

The final recommendation arising from the work carried out in Task 7.3, whose general objective was to contribute amplifying the impact of BlueBio cofunded projects by improving the professional skills and competences of people working and being trained to work within the context of the blue bioeconomy, is that

the needs for skills and capacity building should be addressed at both the project and consortium levels to ensure maximum effectiveness. Furthermore, there must be ongoing communication between projects and the consortium to ensure the best fit on topics and format. The links between Academia and Industry need to be further reinforced.

ANNEX 1. List of co-funded projects in the BlueBio 2018 Joint Call.

| Acronym | Project Name | Coordinator |
|-------------------------------|---|--|
| AquaHeal3D | 3D Printed Biomarine Wound Healing Accelerant | Henrik Lund, Oslo, Norway |
| AquaHealth | Microalgae Microbiomes – A natural source for the prevention and treatment of diseases in aquaculture | Kerstin Kuchta, Germany Hamburg University of Technology, (TUHH), Institute of Environmental , Technology and Energy Economics (IUE), Hamburg, Germany |
| AquaTech4Feed | Novel sustainable aquaculture technologies for the production of innovative feeds for improved fish stocks | Giorgos Markou, Hellenic Agricultural Organization –Demeter Institute of Technology of Agricultural Products, Lycovrisi, Greece |
| BESTBROOD | Identification of broodstock performance indicators and markers to boost the aquaculture of emerging fish species | Jose Beirao, Nord University, Faculty of Biosciences and Aquaculture, Bodø, Norway |
| BIOSHELL | Recycling crustaceans shell wastes for developing biodegradable wastewater cleaning composites | Anita-Laura Radu, The National Institute for Research & Development in Chemistry and Petrochemistry-ICECHIM, Bucharest, Romania |
| BIOZOOSTAIN | Sustainable utilization of zooplankton as by-products | María Gudjónsdóttir, Univerity of Iceland, Faculty of Food Science and Nutrition, Reykjavik, Iceland |
| BlueCC | Commercial exploitation of marine collagen and chitin from marine sources | Runar Gjerp, Solstad Nofima Marine biotechnology, Tromsø, Norway |
| CASEAWA | Advanced materials using biogenic calcium carbonate from seashell wastes | Giuseppe Falini, Alma Mater Studiorum – Università di Bologna, Chemistry “Giacomo Ciamician”, Bologna, Italy |
| DIGIRAS | Optimizing land-based fish production in next generation digital recirculating aquaculture systems | Roman Netzer, SINTEF Ocean Environment and New Resources, Trondheim, Norway |
| ImprovAFish | Improving aquaculture sustainability by modulating the feed-microbiome-host axis in Fish | Phillip Pope, Norwegian University of Life Sciences (NMBU), Department of Animal and Aquacultural Sciences, Aas, Norway |
| InEVal | Increasing Echinoderm Value Chains | Matthew Slater, Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research Aquaculture, Bremerhaven Germany |
| MARIKAT | New catalytic enzymes and enzymatic processes from the marine microbiome for refining marine seaweed biomass | Gudmundur Hreggvidsson, Matís, Reykjavik, Iceland |
| MedSpon | Characterization of new antibiotic principles against WHO priority pathogens of sustainable produced marine sponges for nutraceutical applications | Joachim Henjes, Alfred Wegener, Institute Helmholtz Centre for Polar and Marine Research, Aquaculture Research, Bremerhaven, Germany |
| MINERVA | Marine Innovation using Novel Enzymes for waste Reduction and Valorisation of Algal biomass | Dagmar Stengel, National University of Ireland, Galway Botany and Plant Science, Ireland |
| PlatiSea | Novel enhanced bioplastics from sustainable processing of seaweed | Øystein Arlov, SINTEF AS, Biotechnology and Nanomedicine, Trondheim, Norway |
| RASbiome | Microbial management in RAS for sustainable aquaculture production | Ingrid Bakke, NTNU Norwegian University of Science and Technology, Department of Biotechnology and Food Science, Trondheim Norway |
| SIDESTREAM | Secondary bio-production of low trophic organisms utilizing side streams from the Blue and Green sectors to produce novel feed ingredients for European aquaculture | Arne Malzahn, Norway, Sintef Ocean Environment & New Resources, Trondheim, Norway |
| SNAP | Seaweeds for Novel Applications and Products | Håvard Sletta, SINTEF AS, Biotechnology and Nanomedicine, Trondheim, Norway |
| SuReMetS | Microalgae Microbiomes – A natural source for the prevention and treatment of diseases in aquaculture | Jeanette H. Andersen, UiT-The Arctic University of Norway, Biosciences, Fisheries and economics, Norway |

ANNEX 2. List of co-funded projects in the BlueBio 1st additional Call.

| Acronym | Project Name | Coordinator |
|------------------|---|--|
| SMARTCHAIN | Smart solutions for advancing supply systems in blue bioeconomy value chains | Dr Maitri Thakur, SINTEF Ocean, Seafood Technology |
| TraceMyFish | Traceability and Quality Monitoring throughout the Fish Value Chain | Dr Panagiotis Zervas, SCiO |
| MARIGREEN | Sustainable utilization of MARIne resources to foster GREEN plant production in Europe | Dr Oana Cristina Parvulescu, University “Politehnica” of Bucharest (UPB), Chemical and Biochemical Engineering |
| PROFIUS | Preservation of underutilized fish biomasses for improved quality, stability and utilization | Dr Ann-Dorit Moltke Sørensen, Technical University of Denmark (DTU), National Food Institute |
| SuMaFood | Sustainable preservation of marine biomasses for an enhanced food value chain | Dr Michael Bantle, SINTEF Energy Research, Thermal Energy |
| BlueBioChain | Novel biorefinery supply chains for wastewater valorization and production of high market value bio products using microalgae | Dr Panagiotis Kougias, Hellenic Agricultural Organization – Demeter Soil and Water Resources Institute |
| QualiSea | Enhancing and controlling the quality of cultivated seaweeds for large-scale production and a sustainable supply chain to food and feed markets | Mrs Inga Marie Aasen, SINTEF Industry, Biotechnology and Nanomedicin |
| TACO ALGAE | Total Value Chain Optimization of seaweeds <i>Furcellaria lumbricalis</i> , A bioeconomical ALGAE demonstration | Dr Kjetil Elvevold - Dr Ragnhild Dragoey, Nofima AS, Marine Biotechnology |
| MuMiFast | Mussel Mitigation Feeds and Supply System Technological Development | Prof Jens Kjerulf Petersen, DTU Aqua, Section for Coastal Ecology, Danish Shellfish Centre |
| Microalgae In IT | Microalgae based, safety-tested and optimized fish feed value chain by using Interdisciplinary R&D and IT solutions | Prof Timo Kikas, Estonian University of Life Sciences, Institute of Technology |

ANNEX 3. BlueBio Joint Evaluation Agenda (Lisbon, 6-7 June 2023).



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 817992.

BlueBio final evaluation of co-funded RD projects and mid-term evaluation of funded projects of the BlueBio 1st additional call **Final Agenda**

Venue: Olisippo Oriente Hotel, Lisbon, Portugal (Avenida Dom João II, 32, Lisbon 1990-083)
Date & time: Tuesday 6th June – Wednesday 7th June 2023
Western European Time (WET) !!

REGISTRATION LINK: <https://forms.office.com/e/CGKVS5EFHD>

Meeting characteristics:

- BlueBio co-funded call final meeting ([First Call - Selected Projects - BlueBio Cofund \(bluebioeconomy.eu\)](#)): 19 projects present their final results. Group discussions with the Experts Follow-up Group members and the funding organisations.
- BlueBio 1st additional call mid-term meeting ([First additional Call - Selected Projects - BlueBio Cofund \(bluebioeconomy.eu\)](#)): 10 projects. Group discussions with the Experts Follow-up Group members and the funding organisations. Dedicated session on Human Capacity Building.
- Structured parallel session on projects reporting and some plenary sessions on different aspects related to BlueBio.

Attendees:

Coordinators/partners of all the funded projects (max 2 persons per project), Experts Follow-up Group members (FuG), Funding Partner Organisations (max 1 person per FPO), BlueBio Value Chain Supervisors, European Commission officials and invited speakers.

| Tuesday 6 June 2023 | | |
|-----------------------------------|---|--|
| (Plenary session Pequim A+B room) | | |
| 09:00 – 09:30 | Registration at Foyer | |
| | Welcome remarks from the hosting organisation <i>Joana Pinheiro (FCT, Portugal)</i> | |
| 09:30 – 10:00 | General remarks on the BlueBio ERANET's present and future. Linking BlueBio to opportunities in new Horizon Europe instruments (SBEP) <i>Ingeborg Korme, BlueBio Coord. (RCN, Norway)</i> Next steps on evaluation and reporting until the end of BlueBio ERANET <i>Abraham Trujillo Quintela (AEI, Spain)</i> | |
| 10:00 – 10:30 | Coffee break at Foyer during rooms' set-up | |
| 10:30 – 13:00 | Projects' reporting: two parallel sessions | |
| | Co-funded call projects (Pequim A room) | 1st add call projects (Pequim B room) |
| | Projects presentations (20 min) Discussion with FuG and FPOs (Q&A) (10 min) | Projects presentations (15 min) Discussion with FuG and FPOs (Q&A) (15 min) |
| 10:30 – 11:00 | InEVal | QualiSea |
| 11:00 – 11:30 | AquaHeal3D | SuMaFood |
| 11:30 – 12:00 | Blue CC | MuMiFast |
| 12:00 – 12:30 | CASEAWA | PROFIUS |
| 12:30 – 13:00 | BIOZOOSTAIN | TACO ALGAE |



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 817992.

| | | |
|---------------|---|--|
| 13:00 – 14:00 | Lunch break and networking | |
| 14:00 – 15:30 | Session on Human Capacity Building (HCB) for the projects. Analysis and opportunities. <i>Bernardo Patti (CNR, Italy)</i> Only for all the projects of the 1st Additional Call (Macau A room) | |
| 14:00 – 16:30 | Projects' reporting: two parallel sessions of projects of the co-funded call | |
| | Co-funded call projects (Pequim A room) | Co-funded call projects (Pequim B room) |
| | Projects presentations (20 min) Discussion with FuG and FPOs (Q&A) (10 min) | Projects presentations (20 min) Discussion with FuG and FPOs (Q&A) (10 min) |
| 14:00 – 14:30 | SIDESTREAM | DIGIRAS |
| 14:30 – 15:00 | BESTBROOD | RASbiome |
| 15:00 – 15:30 | ImprovAFish | BIOSHELL |
| 15:30 – 16:00 | AquaHealth | MedSpon |
| 16:00 – 16:30 | - | AquaTech4Feed |
| 16:30 – 17:00 | Coffee break at Foyer | |
| 17:00 | Visit to OCEANÁRIO DE LISBOA (departure from Olisippo's lobby - 10 min. walk) | |
| 20:00 | Social dinner (Restaurant D' Bacalhau - Rua Pimenta 45 Parque Das Nações 1900-254) | |

| | | |
|--|---|--|
| Wednesday 7 June 2023 (Plenary session Pequim A+B room) | | |
| 09:30 – 10:00 | Registration and welcome coffee at Foyer | |
| 10:00 – 10:30 | Plenary discussion on Impact and Valorisation of the BlueBio projects <i>Ingeborg Korme, BlueBio Coord. (RCN, Norway)</i> | |
| 10:30 – 11:30 | Info session on relevant aspects for the BlueBio projects: <ul style="list-style-type: none"> • Ethics <i>Siri Granum Carson (NTNU, Norway)</i> • Communication <i>Sigurdor Bjornsson (RANNIS, Iceland)</i> • Human Capacity Building <i>Gianna Fabi (CNR, Italy)</i> • e-coffee meetings and Foresight Analysis <i>Dennis Lisbjerg (DTU Aqua, Denmark)</i> | |
| 11:30 – 12:30 | Keynote debate on the challenges of the different aspects of the BlueBio Value Chain <i>Helena Vieira (University of Aveiro, Portugal) ERA CHAIR Holder, BlueBio Advisory Board</i> <i>Siri Granum Carson (NTNU, Norway)</i> <i>Portuguese representative of industry in the blue bioeconomy sector (TBC)</i> | |
| 12:30 – 14:00 | Lunch break and networking during rooms' set-up | |
| 14:00 – 16:30 | Projects' reporting: two parallel sessions | |
| | Co-funded call projects (Pequim A room) | 1st add call projects (Pequim B room) |
| | Projects presentations (20 min) Discussion with FuG and FPOs (Q&A) (10 min) | Projects presentations (15 min) Discussion with FuG and FPOs (Q&A) (15 min) |
| 14:00 – 14:30 | MARIKAT | BlueBioChain |
| 14:30 – 15:00 | SNAP | MARIGREEN |
| 15:00 – 15:30 | MINERVA | Microalgae In IT |
| 15:30 – 16:00 | SuReMets | SmartChain |
| 16:00 – 16:30 | PlastiSea | TraceMyFish |
| 16:45 – 17:00 | Wrap-up and next steps before the end of BlueBio (Pequim A and Pequim B rooms) <i>Ingeborg Korme, BlueBio Coord. (RCN, Norway)</i> <i>Abraham Trujillo Quintela (AEI, Spain)</i> | |
| 17:00 | End of the meeting | |

ANNEX 4. BlueBio Final Meeting Agenda (Brussels, 19 March 2024).

Blue Bioeconomy ERA-NET Cofund Final Meeting



Date and time: 19 March 2024, 09:30 - 17:30 CET
Venue: Norway House, Brussels, Belgium

| Agenda | | |
|--|--|---|
| 09:15 – 09:30 | Coffee and registration | |
| 09:30 – 09:45 | Welcome and introduction | Ingeborg KORME, Coordinator Blue Bioeconomy ERA-NET Cofund Eva Falleth, Research Council of Norway |
| <i>The BlueBio story: working strategically with calls</i> | | |
| 09:45 – 10:35 | The value of the value chain approach Integrating industry in R&I projects Amplifying project reach and knowledge impact through additional calls | Panel: Nikos Zampoukas (DG RTD), Mercedes Groba (EIT Food), Samuele Ambrosetti (BIC), Thorsten Kiefer (JPI Oceans) Ingeborg Korme (moderator) |
| Coffee break | | |
| <i>Thinking outside the box: additional activities</i> | | |
| 11:00 – 12:20 | Finding the holy grail: creating synergies between projects Human Capacity Building within and between projects Commercialisation support to R&I projects Policy and regulatory work as an ERA-NET Cofund | Interactive session speakers: Maarten Uyttebroek (Flanders FOOD) Inderjit Singh Marjara (RCN) Bernardo Patti (CNR) Majbritt Bolton-Warberg (Marine Institute) Ingeborg Korme (RCN) |
| Lunch | | |
| <i>The impact of BlueBio</i> | | |
| 13:30 – 14:10 | The impact of our funded projects Maximising impact of an H2020 consortium | Panel: Maris Stulgis (DG RTD), Charlotte Jagot (CINEA), Inga Bruskeland (ERA Learn), Margherita Zoragno (Sustainable Blue Economy Partnership), Ingeborg Korme (moderator) |
| 14:10 – 14:20 | Looking to the future of the blue bioeconomy | Nikos Zampoukas, DG RTD |
| 14:20 – 14:30 | Closing the meeting | Ingeborg Korme (Coordinator BlueBio) |
| 14:30 – 17:30 | Guided tour BIGH – Brussels Aquaponic Farm and Final meeting celebratory reception | |

ANNEX 5. Tool for monitoring and assessing training and mobility and HCB activities (v. 2.0)

Questionnaire to be used as Performance Indicator for training and mobility activities embedded in BlueBio funded projects.

Are training and mobility issues addressed in your project? Yes No

If yes, please specify:

Training , Mobility , both

How training and mobility issues are addressed in your project?

Please specify (if any):

Training activity:

Mobility:

Use of large-scale facilities (e.g. EMBRC)? Yes No

Units of personnel involved (and corresponding man months) by partner type (Public or Private) and by qualification (researchers, technicians, etc.), and exchange between Public and Private partners.

Produce one table for each activity sector involved (e.g., “fisheries”, “aquaculture”, “seafood processing”, “biotech”, etc.)

| Qualification | No. of Units | | | | Man months | | | |
|----------------------|------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|------------------------|------------------------|
| | Private sector (Total) | Public sector (Total) | From Private to Public | From Public to Private | Private sector (Total) | Public sector (Total) | From Private to Public | From Public to Private |
| Technicians | | | | | | | | |
| Administrative staff | | | | | | | | |
| Researchers | | | | | | | | |
| Post-docs | | | | | | | | |
| PhD Students | | | | | | | | |
| Graduate Students | | | | | | | | |
| Others | | | | | | | | |

Is certification of the training activity planned to be delivered?

Yes , No

If yes, specify which kind of certification and duration (if applicable):

Has the training initiative embedded in your project been planned to be uploaded in the MarineTraining.eu portal?

Yes , No

If not, are the training initiatives embedded in your project going to be uploaded in the MarineTraining.eu portal?

Yes , No

Are the project activities aligned with the principles of Responsible Innovation, creating value for society in an ethical and responsible way?

Yes , No

How Is Responsible Innovation embedded in your proposal (in the research and innovation process)?

Please specify:

