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Article
Rebuilding after Displacement: A Skills Competency Audit of Built Environment Professional Documentation

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Abstract: The displacement of people, caused by disasters, conflicts, and oppression, is a growing global problem, placing significant burdens on both the displaced and their hosts. The built environment is key to providing essential support and a sustainable future for these communities. This paper describes an audit of the competencies identified in built environment professional documentation and its mapping against the competencies determined as being relevant to rebuilding after displacement. Following a step-by-step methodology, an analysis of the built environment sector of four nations enables the identification of the current state of professional competencies through an in-depth review of their published standards. These results are compared with a framework of standards that would maximise the potential of the sector in offering support. It is also identified where there is alignment between existing and ideal competencies, and where there are gaps in provision. Finally, a criticality analysis offers both sector-wide and professional role review. This could help direct the efforts of policy makers, education providers, and the sector itself towards the most effective responses to displacement challenges.

Keywords: displacement; rebuilding; built; environment; competencies; skills; professional; capacities; documentation

1. Introduction

By the end of 2020, there were 82.4 million forcibly displaced people worldwide [1]. These were people fleeing from a range of threats: natural hazards, war, persecution, social unrest, and the recent worldwide COVID-19 pandemic. The rise in the frequency and severity of disasters [2,3] is simultaneous with an increase in hostilities; 2020 witnessed the highest number of conflicts than at any other time since the end of the Second World War. This has led to the number of displaced persons growing over the last decade, with worrying predictions that it will increase further [1]. Millions of these may be internally displaced people, remaining in their own country yet unable to stay in their homes and access their needs, but many more seek refuge in a neighbouring country. Though developed nations are not immune to displacement events of their own (for example, Hurricane Katrina or the current war in Ukraine), many of these incidents occur in the Global South, which means that large numbers of people are relocating to developing countries [4]. Such countries may already be trying to cope with their own problems, and the additional population may add to the pressures on their host’s resources, communities, and ability to develop sustainably, with impacts far beyond their borders.

Most displaced persons resettle in urban settings [5]. More than three quarters (76%) of them remain displaced in excess of five years [6]. There are “massive economic and social costs” [7] (p181) associated with this displacement, and the built environment, by which we mean our human-constructed surroundings, and its management, is at the heart of the response to these. The built environment, the way communities are designed and
constructed, directly impacts physical and mental health [8]. Not only will hosted communities require food, water, heating, housing, and healthcare, but there is a need to provide such necessities while maintaining a cohesive society [9]. This provision is inextricably linked to the presence of a professional built environment sector and the need for well-trained personnel who understand displacement challenges. Previous work has identified the built environment roles that can contribute to disaster risk resilience [10], but there remains the question of what is required from the sector, or effectively how they can meet changing needs, should that resilience be tested and lead to displacement episodes. Other research has identified a requirement to “develop the capacity of those responsible for the built environment” [11] (p11). These dual research requirements are met by initially establishing the existing capacity of the professionals in the sector. This was the authors’ task under the REGARD (REbuildinG AfteR Displacement) project and is the focus and important contribution of this paper.

REGARD was a project developed to answer questions relating to displacement. Co-funded by a European Commission Erasmus+ programme grant, REGARD involved a consortium of five higher education institutions from four countries in Europe and Asia. The project aimed to develop competencies in rebuilding communities following disaster- and conflict-induced mass displacements from the perspective of the built environment. In achieving this aim, the project met various objectives: to identify the needs of communities following disaster- and conflict-induced mass displacements from the perspective of the built environment, to investigate the role of the built environment in enhancing social cohesion between host and displaced communities, and to explore the knowledge, skills, and competencies required by built environment professionals to address the needs of the host and displaced communities.

This paper addresses the latter objective by detailing the process of identifying, analysing, and evaluating existing skill competencies of built environment professional bodies, in relation to the needs of the host and displaced communities. It explains how a previously developed framework of competencies, beneficial to the work of rebuilding after displacement, was mapped against an audit of built environment professional documentation to discover the current state of competencies in the built environment sector. The results of the work highlight where there is alignment, the extent of synergy between the two sets of competencies, and where there are gaps in provision. This provided the REGARD project with a platform to develop, test, and implement an innovative series of training courses in catering to the needs of the host and displaced communities; create associated curricula and resources for teachers and learners; and propose policy recommendations to built environment professional bodies in upgrading the professional competencies to address the needs of the host and displaced communities. By applying these methods, the sector can become more resilient and responsive when faced with large-scale displacement of persons, providing the most sustainable solutions to the associated challenges of an increasing trend.

2. Materials and Methods

This research began by adopting a previous output of the REGARD project in which partners developed a competency framework for built environment professionals to address the needs of the host and displaced communities. This framework was based on identifying and categorising relevant professionals, deriving an initial competency framework through literature reviews and interview surveys to identify competencies relevant to those professionals, and refining and validating the competency framework using a Delphi technique with an international panel of 19 experts and three rounds of questioning. This research took a considerable amount of time and reported very high response rates that provided rich data. There are many definitions of what constitutes competence and displaying competency in an activity; this research uses as its reference point a concept of “connected pieces of knowledge, skills and attitudes that can be used to adequately solve a problem” [12] (p115).
The REGARD competency framework, developed based on the aforementioned methods, comprises three tiers (Figure 1 is adapted from the REGARD framework to show the competencies in greater detail). Tier 1 identifies what are defined as ‘Foundational Competencies’, of relevance to all professionals (not just those in the built environment sector) with an interest in mass displacement. In total, it includes 13 competencies, such as ‘Causes, contexts, and dynamics of mass displacement’ and ‘specific challenges of mass displacement’. Tier 2 identifies ‘Built Environment Competencies’, which are applicable to all built environment (only) professionals. This includes 16 competencies, such as ‘Policy, legal and regulatory frameworks relevant to the built environment’ and ‘Infrastructure and associated services’. Tier 3 recognises ‘Occupational Competencies’ and is of relevance to a subset of built environment professionals in specific roles. The tier is divided into two components; the first of these (3a) is ‘Planning and Design’, with a total of 26 competencies, for example, ‘Planning and design considerations for infrastructure and service needs’ and ‘Planning and design of public buildings and spaces (including for inclusivity and flexibility)’; the second is (3b) ‘Construction and Facilities Management’, with a total of 17 competencies, for example, ‘The organisation and management of construction and maintenance in mass displacement contexts’ and ‘Construction and maintenance of public buildings and spaces in mass displacement contexts (including for inclusivity and flexibility)’. It is, therefore, clear that every professional role in the built environment sector, and the work they perform, will potentially match with only some, not all, of the REGARD competencies as the framework is deliberately delineated into vocational and personal interests.

Figure 1. REGARD Competency Framework (adapted [13]).

This framework, as part of the REGARD work, provided a platform to conduct an audit of existing competencies of built environment professionals. To perform this audit and identify and analyse the competencies, four stages of work were adopted (Figure 2). The following sub-sections detail these four stages in depth.
2.1. Stage 1—Built Environment Professional Accreditation Body Document List

Given the importance of their work and desire for high standards in the sector, accreditation is of importance for built environment professionals by relevant built environment bodies. The competencies expected to be demonstrated to achieve accreditation are specified in the professional body documentation. These competencies have regularly been used by education providers to develop learning programmes [14], assess existing training in disaster risk reduction for the built environment sector [15], and discuss educational frameworks that support competence development in built environment conservation [16]. Rather than conducting a questionnaire survey or interviews, which has proved challenging for some authors due to low response rates and difficulties in ensuring representative populations [17], reviewing documentation for each role provided by the relevant professional body was adopted. This would deliver an established, formalised sector response to our inquiry rather than potentially subjective replies from individuals, and it is a method that has been employed by similar studies seeking to map built environment professional competencies [18,19].

A template for extracting data from professional competency documents was created using Microsoft Excel to ensure the consistency of approaches and distributed to REGARD project partners for inputs relating to their countries. The partners were required to list accrediting bodies (in their respective countries) of the built environment professional roles identified earlier in the REGARD competency framework (Construction and Facilities Management, Planners, Chartered Engineers, Architects, and Surveyors). Partners were also asked to check and mention if these bodies have either a European and/or international presence.

The first challenge encountered, herein, was that some countries have more accrediting bodies than others. For example, in the UK alone there are 20 out of the 34 bodies identified globally (Appendix A). This consequently impacts the results in favour of UK-derived competencies. Balancing this consideration is that many of these bodies have a European and/or international profile and are consequently not purely UK-focused. A second consideration was that some professions have fewer professional bodies than others, or perhaps a professional body has less of an impact on the sector than others. We were able to identify more professional bodies within engineering ($n = 8$), compared to only the professional bodies for surveying ($n = 3$). This may in part be due to the professional bodies in surveying providing a highly comprehensive, sector-renowned service, or because engineering is divisible into many more facets, each with its own respective body. Perhaps there are simply more engineers to support the creation of additional bodies; without further research, it is not possible to confirm why we found this. Additionally, not all professional bodies make their competency documents publicly accessible online, which made the identification of competency standards in professional body documentation more challenging. For those that do, partners were asked to retrieve and provide links to the documentation. Where they do not, there was a clear opportunity for more subjective outcomes.
2.2. Stage 2—Built Environment Professional Competencies

From the accessible professional body documents, a list of competencies expected to be displayed for accreditation within the professions was identified (summarised in Table 1; full summary in Appendix B). In some cases, this was a relatively straightforward task. For example, the RICS lists eleven competencies on three levels it considers ‘mandatory’ for surveyors [20], and we could include these verbatim in our mapping. Similarly, the RIBA includes three sets of mandatory competencies in its Education and Professional Development Framework [21] that must be met by architects to be competent to practice and to provide public assurance. This proved a more difficult task for some of the other professions, particularly outside of the UK, where documents were subjected to an in-depth analysis for expected professional competencies. Guidance on how to perform this successfully is provided by [22]. A similar pathway of reviewing each professional document was adopted in identifying and listing the competency expected, verifying that it did represent a professional competency, and finally grouping it with conceptually other, similar competencies to avoid duplication.

Table 1. Summary of Professional Competencies Included in Professional Accrediting Bodies’ Documentation (see Appendix B for detail).

| Professional Category                                      | Competencies Highlighted in Professional Body Documents |
|-----------------------------------------------------------|---------------------------------------------------------|
| Construction and FM                                      | Theme                                                   |
| Planners                                                 | Competencies                                            |
| Chartered Engineers                                      |                                                         |
| Architects (RIBA Mandatory Competencies)                  |                                                         |
| Surveyors (RICS Mandatory Competencies)                  |                                                         |

2.3. Stage 3—Mapping Exercise: BE Professional Competencies and REGARD Competencies

The third stage was to conduct an audit against competencies identified in the professional body documentation (Appendix B) vs. the previously identified REGARD competency framework (Figure 1). This audit was carried out as a mapping exercise to examine which REGARD professional competencies are currently covered (or not) in professional documentation, and the extent of that provision if covered (Figure 3). Therefore, mapping identified whether each individual REGARD framework competency was (Figure 3):
- A key competency in any of the built environment professional competencies and fully covered by professional documentation (K);
- Key but only partially covered (P) in the professional documentation;
- A relevant key competency, but not covered by the documentation (NC);
- Neither key nor relevant to the accreditation of that professional competency (NR).
Figure 3. Mapping Competencies in Professional Body Documentation with REGARD Competencies.

There are 72 individual competencies in the REGARD competency framework, and the review of professional documentation recognised 69 competencies. The audit, therefore, had to consider 4968 (72 × 69) individual points of comparison. These points were mapped using Microsoft Excel to create a cross-tabulation of the results.

2.4. Stage 4—Analysis of Mapping Results

Once the two sets of competencies had been mapped and cross-tabulated, the results showed how many of each of the four possible outcomes each REGARD competency received. It was decided that if a REGARD competency was identified as ‘Key and Covered’ (K) within at least one professional competency, this was sufficient to say that it is a key competency within the documentation for that particular professional role and has already been covered well in the context of rebuilding after displacement (i.e., REGARD context). For example, for the REGARD framework competency on ‘Causes, contexts, and dynamics of mass displacement’, we identified in the Construction and Facilities Management professional documentation that it was a competency covered in the documentation for “Planning and Organising Work” (the first of the 12 competencies identified for Construction and FM professionals). Therefore, we considered this REGARD competency a key area for that professional role that has already been covered in the documentation. This was regardless of the remaining 11 points of mapping in that competency as it would not be beholden on a professional body to repeat the competency multiple times; however, they may do so if the competency was relevant to different aspects of accreditation. Where we identified that the REGARD competency had no ‘Key and Covered’ results for that professional role documentation, we identified the number of results that were ‘Key and Partially Covered’ (P) and ‘Key but Not Covered’ (NC). A REGARD competency was only considered ‘Not Key/Not Relevant’ (NR) if it was not covered and not considered relevant to every part of the documentation covering expected professional competencies (100% ‘NR’ throughout that professional role’s documentation).

It is important to emphasise that this was a comparison of professional body documentation competencies that were mapped against REGARD competencies, and not an assessment of the competency of a population of built environment professionals. We are directly addressing the competencies that the built environment industry bodies specify for members in relation to what we know to be the needs of rebuilding after displacement.
Additionally, the results that are derived from the mapping exercise should not be interpreted as any one profession displaying greater competency in either general terms, or specifically to the rebuilding after displacement setting. It is simply that in relation to the REGARD competency framework, there are different levels of relevance to varying built environment professional roles and different provisions provided by their documentation.

3. Results and Discussion

Overall, the position for the built environment sector is encouraging in terms of expected competencies in relation to rebuilding after displacement. There are no REGARD competencies that are ‘Not Key and Not Relevant’ (NR) for every professional competency in every professional category, so every REGARD competency in the framework has some significance for at least one built environment professional role. There are 50 REGARD competencies that have ‘Key and Covered’ (K) values for at least one professional competency included in the professional documentation representing almost seventy percent of the total. This is a key finding that shows that the professional documentation has already identified the importance of REGARD competencies of built environment professionals in the context of rebuilding after displacement. The 22 competencies in the REGARD framework that have no ‘Key and Covered’ (K) value for all the documented competencies in professional roles do have Key and Partially Covered (P) and/or Key but Not Covered (NC) results. These may represent an opportunity for skills development with respect to documentation relating to rebuilding after displacement for at least one, a few, or all built environment professional roles.

A summary of all professional categories is presented below in Figures 4–7, for REGARD competences by Tier 1, 2, 3a, and 3b, respectively.

![Percentage Relevance of TIER 1 REGARD Foundational Competencies—ALL CATEGORIES](image)

**Figure 4.** Relevance of Tier 1 REGARD Competences.
Figure 5. Relevance of Tier 2 REGARD Competences.

Figure 6. Relevance of Tier 3a REGARD Competences.
3.1. Positive Outcomes

Seven of the twenty-two competencies in the REGARD framework which are not ‘Key and Covered’ (K) for any built environment professional are in Tier 1 of the framework. This is significant because this tier of 13 competencies is the tier that is not exclusive to the built environment and simply stipulates an interest in mass displacement for a positive result. Tier 1 could be used by any sector that is seeking to build capacity in the ability to respond to mass displacement episodes. Clearly, the built environment profession must be broader than this important yet specialist consideration, and their documentation must reflect that there is a need for highly competent professionals whose roles do not require them to take an interest in mass displacement. Consequently, if negative results are evident in the audit, it is desirable that they are in Tier 1/ REGARD framework mapping.

The seven REGARD competencies with no ‘Key and Covered’ (K) value for any built environment professional were: societal impacts of mass displacement, stakeholders of mass displacement and their characteristics, language issues, health issues (mental and physical), livelihoods and employment (including access to means, land, etc.), access to education and training, and addressing discrimination against displaced people. Further analysis of this latter group of Tier 1 REGARD competencies revealed that only one of these without a (K) value, societal impacts of mass displacement, did not have the next most preferred outcome of ‘Key and Partially Covered’ (P) in the audit (Table 2). In addition, there were six REGARD competencies in Tier 1 with the most positive outcome of ‘Key and Covered’ (K) from the mapping exercise; causes, contents, and dynamics of mass displacement; legal, policy, and institutional frameworks; cultural awareness and diversity; enabling measures; resilience; and sustainable development. This means that twelve Tier 1 competencies were identified by our audit of the built environment documentation.
as either ‘Key and Covered’ (K) or ‘Key and Partially Covered’ (P) for rebuilding after displacement, which is a highly positive indication of industry interest in the subject.

Table 2. Positive Outcomes from the Mapping Audit.

| Highest Mapping Audit Result (n=) | Key and Covered (K) | Key and Partially Covered (P) | Key but Not Covered (NC) | Not Key/Not Relevant (NR) |
|-----------------------------------|--------------------|-------------------------------|--------------------------|--------------------------|
| Tier 1 (N = 13)                   | 6                  | 6                            | 1                        | 0                        |
| Tier 2 (N = 16)                   | 12                 | 3                            | 1                        | 0                        |
| Tier 3a (N = 26)                  | 19                 | 7                            | 0                        | 0                        |
| Tier 3b (N = 17)                  | 13                 | 0                            | 4                        | 0                        |

Of Tier 2’s 16 REGARD competencies, there were only four with no ‘Key and Covered’ (K) value: contextual differences (causes, scales, and dynamics of displacement, industrialised versus developing countries, etc.); policy, legal, and regulatory frameworks relevant to the built environment (e.g., land issues, regional and local strategies, building codes, etc.); disaster resilience (including multi-hazard mapping and the Build Back Better agenda), and inclusive built environment (including supporting vulnerable and special needs groups). Only one of these; policy, legal and regulatory frameworks relevant to the built environment; did not have the ‘Key and Partially Covered’ (P) outcome for at least one point of mapping; every mapped point was found to be ‘Key but Not Covered’ (NC), which represents an opportunity for the development of the documentation. There was only one profession for which we did not find a ‘Key and Covered’ (K) point for in Tier 2: Planners. This is possibly attributable to the relatively few documents we could identify for the planning profession making for a higher percentage (73%) of ‘Key but Not Covered’ (NC) results in that group compared with the other four professions and reducing the overall potential for more positive results.

Within Tier 3a, covering Planning and Design, there are 26 REGARD competencies. From these, seven REGARD competencies were mapped with no ‘Key and Covered’ (K) value in the documentation: how planning and design can alleviate mass displacement challenges, disaster resilience, disaster management, transport infrastructure and services, sociology of housing, location decisions, and cultural sensitivity in housing design. All of these had multiple points mapped with the ‘Key and Partially Covered’ (P) value instead, which indicates at least a keen interest and some inclusion in the sector. The high number of positive results was largely due to these REGARD competencies being closely aligned to Construction and Facilities Management, Architect, and Surveyor professional competency documentation. Despite this being the Planning and Design tier, Planners again registered no ‘Key and Covered’ (K) values. This reinforced the feeling that a relatively small collection of documentation could have adversely impacted the results from this profession.

Tier 3b in Construction and Facilities Management included four REGARD competencies with no ‘Key and Covered’ (K) value from its total of 17 competencies: project management considerations for mass displacement construction and maintenance contexts, employment and livelihood opportunities in construction and maintenance, infrastructure provision and management in mass displacement contexts, and construction and maintenance of public buildings and spaces in mass displacement contexts. Unusually for the results seen up until this point, none of these four competencies had any ‘Key and Partially Covered’ (P) values mapped either. There were, however, effectively only four professional roles to map these REGARD competencies against because the entire tier was identified as ‘Not Key/Not Relevant’ (NR) for Planners. Consequently, to have 13 REGARD competencies where there was a ‘Key and Covered’ (K) value is highly encouraging for the built environment sector seeking to assist with rebuilding after displacement.
3.2. Negative Considerations

Most results (mean = 59%) from the mapping audit are categorised as ‘Key but Not Covered’ (NC) (Table 3). There are currently fewer ‘Key and Partially Covered’ (P) results than ‘Key but Not Covered’ (NC) results mapped across all professions and REGARD competency framework tiers, with the sole exception of Tier 3a and the Surveyor professional competency documentation. This suggests scope for the development of the professional documentation to reflect the competencies identified as required by the REGARD framework. Even if some of the documentation was developed so that ‘Key but Not Covered’ results were updated to be ‘Key and Partially Covered’ results (if not fully to ‘Key and Covered’ results), that would be a positive outcome. Of relevance is that across the entirety of Tiers 3a and 3b, REGARD competency matches are reliant on the Construction and Facilities Management and the Surveyor professional role documentation to provide the majority of ‘Key and Covered’ (K) matches. The other three professional roles contribute zero or very few of these results (Planners 0%, Chartered Engineers 0%, Architects 4%) despite these competencies being identified in the REGARD framework as “relevant to professionals and practitioners in built environment occupations and roles”.

Table 3. Negative Outcomes from the Mapping Audit.

| Result of Each Point of Mapping Audit (%) | Key and Covered (K) | Key and Partially Covered (P) | Key but Not Covered (NC) | Not Key/Not Relevant (NR) |
|------------------------------------------|---------------------|--------------------------------|--------------------------|---------------------------|
| Tier 1                                   | 4                   | 13                             | 65                       | 18                        |
| Tier 2                                   | 8                   | 21                             | 66                       | 5                         |
| Tier 3a                                  | 13                  | 31                             | 53                       | 3                         |
| Tier 3b                                  | 8                   | 18                             | 53                       | 21                        |

As was acknowledged at the beginning of this research, it is not essential that every REGARD framework competency is matched positively with every professional documentation competency. It is sufficient to identify that in one of the profession’s competencies there is a ‘Key and Covered’ (K) match, if indeed mass displacement is a subject of interest to the professional. Consequently, these data are useful for contextual purposes and an indication of how the built environment profession might like to develop additional consideration for rebuilding after displacement, but it does not signify problems in the sector.

3.3. Criticality Analysis

To better examine the coverage afforded to each REGARD competency by professional documentation, we undertook a criticality analysis of each result (Appendix C). A value of 3, 2, 1, or 0 was assigned according to the level of criticality of the possible results: 3 for ‘Key and Covered’ (K); 2 for ‘Key and Partially Covered’ (P); 1 for ‘Key but not Covered’ (NC); and finally, 0 for ‘Not Key and Not Relevant’ (NR). These values were then summed by professional role, for each REGARD competency, with the result being divided by the maximum possible value, achieved if all the results were identified as (K). For example, Construction and Facilities Management professional documentation has 12 competencies, so the maximum value for any single REGARD competency would be 36. The actual sum of Construction and Facilities Management results for the REGARD competency “Causes, contents and dynamics of mass displacement” was 13, so 13 divided by the maximum value of 36 gives a result of 36.1% (rank 53, Construction and FM column in Appendix C).

The weighted average of each REGARD competency was obtained, applying the same process to all professional role results for that competency. There are 69 professional competencies across the five professional roles, each carrying a maximum individual
mapping result of 3, which provides a maximum possible sum of 207 for each REGARD competency. For the REGARD competency “Causes, contents and dynamics of mass displacement”, the sum of all the points of mapping was 69. This 69 was divided by 207 to give the weighted average of 33.33%.

The weighted average allows us to globally rank all the REGARD competencies to identify where the greatest level of coverage exists for rebuilding after mass displacement in the built environment sector, and where development may be considered, not only globally but by profession.

There is a large variation between the highest weighted average of 82.13% (Ethics and Professionalism) and 14.98% (Addressing Discrimination Against Displaced People) (Appendix C). Tier 1 REGARD competencies tend to occupy lower ranks in the analysis, and lower weighted averages. Industry-wide built environment competencies (Tier 2) and occupational competencies (Tiers 3a and 3b) score more highly, with Tier 3a’s planning and design competencies occupying eight of the highest ten rankings (Figure 8). Clearly, this result is influenced by the high scoring of the Construction and Facilities Management professional role in Tier 3a. Only for one (planning and design policy, legal and regulatory framework) of the Tier 3a competencies in the highest ten rankings is the result for the profession less than 100%. This position is supported by the positive mapping of the surveyor profession with this tier of competencies, showing a result always above 78%, and on half the calculations above 90%. Notably, the planning profession does not score so highly, an unexpected result given that Tier 3a of the REGARD competencies covers “Planning and Design”. That they are considerably distant from the other professions in the results suggests there may be differences in the profession’s relative involvement in work relating to displacement, their approach to their documentation, or perhaps simply that fewer professional planning bodies and documents exist from which to draw competencies.
4. Conclusions

This audit has shown both strengths and weaknesses in the existing professional competency documentation of the built environment sector in relation to mass displacement events and the rebuilding of communities. Given the scope of the REGARD project, we aggregated our results by profession rather than country, but there are clearly national differences in the provision of information on competency expectations, as witnessed by the different volumes of documentation. Consequently, this scoping exercise could be used as a template for the study of an individual nation’s built environment sector competency towards the REGARD framework. The research could also be applied to geographical areas where the risk of natural hazards, conflict, and potential for displacement is acute. Additionally, there are more generic documented skills that may be included, such as project management competencies (for example, those advised by the Project Management Institute). The opportunity to identify whether a sector, nation, and/or region can sustain and respond positively to mass displacement events is evident.

It was highlighted that the Tier 1 results would be lower where the built environment professional role has limited, or no, interest in the subject of displacement. However, that displacement is a global problem, and one that is increasing in scope, requires the professions in the sector to develop an interest if one does not already exist. The results of Tier 1 of the REGARD framework comparison with professional documentation show that built environment professionals in general could benefit from an understanding and appreciation of displacement events and their impact on the people at the centre of the problems. These include considerations that may not otherwise be thought of as built environment issues, such as language barriers, discrimination, and access to education and training. It was noted that the REGARD framework was deliberately delineated, particularly in the separation of Tier 3 into ‘Planning and Design’ and ‘Construction and Facilities Management’ sub-tiers. However, there are relationships between the competencies of the REGARD framework that call for a more holistic approach. Access to the different services displaced persons require can be complicated and interconnected. Determining that an entire sub-tier of competencies is of no relevance to a profession is potentially limiting the capacity for future solutions. That said, the built environment sector is, according to our results, currently well-placed to respond to the need for competency development, and there are many strengths within and between professions. Appropriate additions to competency documentation and expectations would see this strength grow and contribute to the response to one of the major challenges of our era.

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## Appendix A

### Table A1. Accrediting professional bodies in REGARD partner nations.

| Category   | BE Professionals | Professional Bodies                                      | UK/EU | Int’l Presence | Document Availability | Online Document Link                                                                 |
|------------|------------------|---------------------------------------------------------|-------|----------------|------------------------|---------------------------------------------------------------------------------------|
| **Surveying** | **Quantity Surveyors** | RICS—Royal Institution of Chartered Surveyors          | ✔     | ✔              |                        | https://www.rics.org/globalassets/rics-website/media/qualify/pathway-guides/pathway-guides-requirements-and-competencies-v1.3-oct-2018.pdf |
| **Surveying** | **Civil Engineering Surveyors** | The Chartered Institution of Civil Engineering Surveyors (CICES) | ✔     | ✔              |                        | https://www.cices.org/membership/about/competencies/                                   |
| **Design**    | **Architects**   | RIBA—Royal Institute of British Architects            | ✔     | ✔              |                        | Think-Architecture-PDF.pdf                                                            |
| **Design**    | **Architects**   | Chartered Institute of Architectural Technologies (CIAT) | ✔     | ✔              |                        | https://architecturaltechnology.com/uploads/assets/uploaded/2901cf7f-8ff5-47d2-9b40fb5ad8d3814a.pdf |
| **Design**    | **Architects**   | The Association of Consultant Architects (ACA)         | x     | x              |                        | CIAT Requirements for Registration: CIAT Chartered Practices (architecturaltechnology.com) |
| **Design**    | **Landscape Architects** | The Landscape Institute (LI)                            | x     | x              | x                      | https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2020/12/LI-Entry-Standards-and-Competency-Framework-Additional-Landscape-Competencies.pdf |
| **Design**    | **Urban Design** | Urban Design Group                                      | x     | x              | x                      | Urban Design Group (udg.org.uk)                                                       |
| **Design**    | **Interior Architect** | Chartered Society of Designers                        | ✔     | ✔              |                        | https://www.csd.org.uk/content/uploads/2015/10/PATHWAY-TO-CHARTERED-DESIGNER-GUIDANCE.pdf |
| **Design**    | **Town Planner** | RTPI—Royal Town Planning Institute                     | x     | ✔              |                        | https://www.rtpi.org.uk/media/2052/rtpi-2019-membership-guidance-summary-of-changes-june-2019-edit.docx |
| **Construction** | **Builders**   | CIOB—Chartered Institute of Building                   | ✔     | ✔              |                        | Industry PR Guidance Notes.pdf (ciob.org)                                           |
| Engineering Field | Professional Body | ICE — Institute of Civil Engineers | StructE — The Institutions of Structural Engineers | Chartered Institute of Building Services Engineer | CIPHE — Chartered Institute of Plumbing and Heating Engineering | Water and Environmental Management Professionals | CIWEM — Chartered Institution of Water and Environmental Management | Wastes Management Professionals | Chartered Institution of Wastes Management | Materials, Minerals and Mining Engineers | The Institute of Materials, Minerals and Mining (IOM3) | APM — Association for Project Management | ICM — The Institute of Construction Management | IWFM — The Institute of Workplace and Facilities Management (Former BIFM) | Professional Standards—Handbook.pdf (iwfm.org.uk) |
|-------------------|-------------------|-------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------------|------------------------------------------|-----------------------------------------------------|------------------------------------------|-----------------------------------------------------|-----------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| Civil Engineer    | Varies            | Varies                              | Varies                                        | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                   | Varies                                              | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                              | Varies                                              |
| Engineer-Structural Engineer | Varies | Varies                              | Varies                                        | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                   | Varies                                              | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                              | Varies                                              |
| Engineer-Building Services Engineer | Varies | Varies                              | Varies                                        | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                   | Varies                                              | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                              | Varies                                              |
| Engineer          | Varies            | Varies                              | Varies                                        | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                   | Varies                                              | Varies                                        | Varies                                              | Varies                                   | Varies                                              | Varies                                              | Varies                                              |

https://www.engc.org.uk/engcdocuments/internet/Website/UK-SPEC%20third%20edition%20(1).pdf
https://www.cibse.org/getmedia/7c84096b-6a31-439a-9551-2d0af0200023/Factsheet-M21.pdf.aspx
https://www.cibse.org/getmedia/4ddec097-de4a-4875-90ae-d7a69b67cc3/Factsheet-F21.pdf.aspx
https://www.ciwem.org/assets/pdf/Membership/Application%20Guidance/C.WEM%20MC%20Guidance.pdf
https://rise.articulate.com/share/v7zQhnENPeTUk9nGmb0YhpLrqm2LL.rsn#/
https://www.iom3.org/resource/guide-to-ceng-cenv-and-csci-2020.pdf.html
https://www.apm.org.uk/media/2274/apm-competence-framework.pdf
https://the.icm.co.uk/tag/digital-competencies-framework/
| Country  | Field                  | Organization                                                                 | UK | US | Language | Link                                                                                     |
|----------|------------------------|-------------------------------------------------------------------------------|----|----|----------|-----------------------------------------------------------------------------------------|
| Estonia  | Design Architects      | EAA—Estonian Association of Architects under the ACE—Architects’ Council of Europe | ✓  | x  | only in Estonian language | https://www.kutsekoda.ee/wp-content/uploads/2019/KS/Uldised-kompetentsid.pdf |
|          | Design Landscape Architects | Estonian Landscape Architects’ Union under IFLA—the International Federation of Landscape Architects | ✓  | ✓  | ✓        | 190413 IFLA Europe Membership Application_Guidelines_CBr                                  |
|          | Design Spatial Planner | EAP—The Estonian Association of Planners                                    | ✓  | ✓  | ✓        | http://www.planeerijad.ee/doc/ruumilise-keskkonna-planeerija-kutse-materjalid/194-hindamisstandard-2017/file |
|          | Construction Builders  | Estonian Association of Construction Entrepreneurs                            | x  | x  | ✓        | http://eeel.ee/kutse-andmine/ehituse-kutseala-kutseomis-tamise-kord/                      |
|          | Engineering Civil Engineer | EEL—The Estonian Association of Civil Engineers                         | ✓  | x  | ✓        | //www.kutseracco/ctrl/en/KAO/vaata/10086630                                              |
|          | Management Project Manager | EPMA—Estonian Project Management Association                          | x  | ✓  | ✓        | https://shop.ipma.world/?v=79c8ba185463                                                 |
| Sweden   | Design Architects      | Sveriges Arkitekter (Architects Sweden)                                    | ✓  | ✓  | ✓        | 190413 IFLA Europe Membership Application_Guidelines_CBr                                  |
|          | Design Landscape Architects | Sveriges Arkitekter (Architects Sweden)                                    | ✓  | ✓  | ✓        | 190413 IFLA Europe Membership Application_Guidelines_CBr                                  |
| Design      | Interior Architect | Sveriges Arkitekter (Architects Sweden) | SPMA—The Swedish Project Management Association, under the IPMA—International Project Management Association | 190413 IFLA Europe Membership Application_Guidelines_CBr |
|-------------|--------------------|----------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Management  | Project Manager    | SPMA—The Swedish Project Management Association, under the IPMA—International Project Management Association | SPMA—The Swedish Project Management Association, under the IPMA—International Project Management Association | https://shop.ipma.world/?v=79c8a1185463 |
| Management  | Facilities Managers| IFMA—International Facilities Management Association | IFMA—International Facilities Management Association | https://ifmacdn.azureedge.net/sfcdn/docs/default-page/marketing/pd-pages/11-core-competencies_oct2020.pdf?sfvrsn=2 |
| Sri Lanka   |                     | IQSSL—Institute of Quantity Surveyors Sri Lanka | Society of Structural Engineers—Sri Lanka (SSESLL) | https://shop.ipma.world/?v=79c8a1185463 |
| Engineer    | Structural Engineer | The Institution of Engineers | The Institution of Engineers | PROFESSIONAL REVIEW RULES (iesl.lk) |
| Engineer    | Building Services Engineer | The Institution of Engineers | The Institution of Engineers | PROFESSIONAL REVIEW RULES (iesl.lk) |

Note: Tick (yes); x (no). Accessed date for documentation is 14 December 2021.
## Appendix B

**Table A2.** Professional competencies included in professional accrediting body documentation.

| Professional Category | Competencies Highlighted in Professional Body Documents | Competencies |
|-----------------------|--------------------------------------------------------|--------------|
| **Occupational Competence** | Planning and organising work | Managing health, safety, and welfare/well-being |
| | | Managing quality |
| | | Sustainable and environmental practices in construction |
| | | Knowledge of commercial, contractual, and legal issues |
| **Construction and FM** | Communication | Decision-making |
| **Management Competence** | Managing information | Strategic management/financial management |
| | Developing people and teams | Innovation |
| **Commitment to Professionalism** | Commitment to professionalism | |
| **Capacity Check: Knowledge and Skills** | Foundations of urban design | Urban Design Topics: Form and context |
| | Urban Design Topics: People | Urban Design Topics: Servicing |
| | Urban Design Topics: Management | |
| **Planners** | Carrying out urban design studies and appraisals | Preparing urban design policy, guidance, and statements |
| | Masterplanning | Designing |
| **Capacity Check: Roles in Urban Design** | Communicating design in two dimensions (by hand or computer) | Providing urban design advice |
| | Communicating design in three dimensions (by hand or computer) | Managing urban design processes |
| | Promoting placemaking | |
| **Chartered Engineers** | (A) Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology. | (A1) Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology. |
| | (B) Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems. | (A2) Engage in the creative and innovative development of engineering technology and continuous improvement systems. |
| | (C) Provide technical and commercial leadership. | (B1) Identify potential projects and opportunities. |
| | | (B2) Conduct appropriate research and undertake design and development of engineering solutions. |
| | | (B3) Manage implementation of design solutions and evaluate their effectiveness. |
| | | (C1) Plan for effective project implementation. |
| | | (C2) Plan, budget, organise, direct and control tasks, people and resources. |
| | | (C3) Lead teams and develop staff to meet changing technical and managerial needs. |
(C4) Bring about continuous improvement through quality management.

Global and built environment climate fundamentals
Climate fundamentals
Financial risks and net zero economy
Environmental impacts of the built environment
Sustainable urbanism, architecture, and engineering
Built environment policy, legislation, regulations, commitments, benchmarks, and construction industry guidance

RIBA Sustainable Outcomes and common threads
RIBA Sustainable Outcomes Guide: outcome-based briefing and design, plan for use, soft landings, and post-occupancy evaluation
Retrofit, adaptation, and reuse
Planning for climate extremes, disaster risk, resilience, redundancy, and adaptation
Life-cycle costing, investment, and procurement
Research and innovation
Human factors
Health and wellbeing
Communities, interconnectivity, and inclusion
Social value
Biophilic and sensory design
User experience design and occupancy behaviour

Circular economy
Resource efficiency and geographic implications
Designing for change (flexibility and adaptability) and regeneration
Environmental and health impacts of materials and waste
Waste as a resource
Responsible and ethical sourcing

Energy and carbon
Passive design
Active design
Whole life carbon (for retrofit and new build): modelling, carbon assessments, and iterative design process
Offsetting
Operational energy and carbon, modelling and technology

Ecology and biodiversity
Biodiversity and net gain
Nature-based solutions
Land use and building density
Bio-regional urbanism and design
Urban farming and sustainable food production

Water
Water cycle, demand, supply, and reduction
Water recycling and reuse
Rainwater harvesting, stormwater management, and sustainable urban drainage
Water pollution in (natural) aquatic habitats
Climate change impacts (floods, droughts, and water quality)
Connectivity and transport
Site location
Compact development and walkability
Regional and local infrastructure and planning
Low carbon transport and multimodal transportation networks
Planning for future of transportation

Ethics in practice
History and definitions
Recognising an ethical issue
Virtue Ethics / Social Contract Ethics / Duty Ethics / Utilitarian Ethics
Defining behaviours—Codes, Regulations, Sanctions and Best Practice
The Public Interest—How it is defined and who is responsible
The 6 duties
Duty to oneself
The codes of conduct and practice
Principles and values
Competence
Continuing professional development
Pro bono work
Corruption
Dilemma—A conflict of interest
Duty to the Profession
The Codes of Conduct and Practice
Reputation and Value
Respecting previous appointments
Copyright and Credit
Whistleblowing
Research, POE and Building Performance
Equity, Diversity, and Inclusion (including the RIBA Inclusion Charter)
Dilemma—Competition
Duty to those in the workplace
Employment Law
The Codes of Conduct and Practice
Company culture
Respecting colleagues
Managing practice
Equity, Diversity, and Inclusion (including the RIBA EDI Policy Guide)
Dilemma—Workplace
Duty to those Commissioning Services
The Codes of Conduct and Practice
Lay clients
 Experienced private clients
Public Sector clients
| Confidentiality | Duty to Society and the End User |
|-----------------|---------------------------------|
| Confidentiality | Duty to Society and the End User |
| Client’s best interest | Building Regs, Housing Standards and Planning Policy |
| Duty to Society | The Codes of Conduct and Practice |
| Client’s best interest | Equity, Diversity, and Inclusion (including bias and discrimination) |
| Duty to Society | Health and safety |
| Client’s best interest | Modern Slavery |
| Duty to Society | Community Engagement and Regeneration |
| Client’s best interest | Social Value and Social Responsibility |
| Duty to Society | Rights of Future Generations |
| Client’s best interest | Dilemma—Affordable housing provision |
| Duty to Society | Duty to the Wider World |
| Client’s best interest | The Codes of Conduct and Practice |
| Duty to Society | The Climate and Biodiversity emergency |
| Client’s best interest | Sustainable and Regenerative design |
| Duty to Society | Supply Chains |
| Client’s best interest | Rights of Nature |
| Duty to Society | Dilemma—Challenging the brief |
| Client’s best interest | Resolving Ethical Issues |
| Duty to Society | Core values |
| Client’s best interest | Decision making |
| Duty to Society | Lifelong learning |
| Client’s best interest | Independence |
| Duty to Society | Advocacy |
| Client’s best interest | Resources and toolkits |
| Duty to Society | Preparing to visit site |
| Client’s best interest | Site surveys and research |
| Duty to Society | Plan of work |
| Client’s best interest | Site occupation and vacant sites |
| Duty to Society | Clothing, equipment, and personal protective equipment |
| Client’s best interest | Weather conditions |
| Duty to Society | First aid |
| Client’s best interest | Undertaking site visits |
| Duty to Society | Lone working |
| Client’s best interest | Personal site safety |
| Duty to Society | Person responsible for control of the site |
| Client’s best interest | Induction and orientation |
| Duty to Society | Safety signage |
| Client’s best interest | Navigating around site |
| Duty to Society | Site vehicles and mobile plant |
| Client’s best interest | Inspecting construction work |
| Duty to Society | Communication with site personnel |
| Client’s best interest | Site behaviour |
| Duty to Society | Action in the event of an emergency |
| Client’s best interest | Post-site-visit activity |
| Duty to Society | Site hazards |
| Client’s best interest | Site assessment |
| Duty to Society | Site contamination |
| Client’s best interest | Falls from height |

**RIBA Health and Life Safety Knowledge Schedule**

- Preparing to visit site
- Site surveys and research
- Plan of work
- Site occupation and vacant sites
- Clothing, equipment, and personal protective equipment
- Weather conditions
- First aid
- Undertaking site visits
- Lone working
- Personal site safety
- Person responsible for control of the site
- Induction and orientation
- Safety signage
- Navigating around site
- Site vehicles and mobile plant
- Inspecting construction work
- Communication with site personnel
- Site behaviour
- Action in the event of an emergency
- Post-site-visit activity
- Site hazards
- Site assessment
- Site contamination
- Falls from height
| Surveyors (RICS Mandatory Competencies) | Level 1 | Level 2 | Level 3 |
|----------------------------------------|---------|---------|---------|
|                                       | Accounting principles and procedures | Communication and negotiation | Ethics, rules of conduct, and professionalism |
|                                       | Business planning | Health and safety | |
|                                       | Conflict avoidance, management, and dispute resolution procedures | |
|                                       | Data management | |
|                                       | Diversity, inclusion, and teamwork | |
|                                       | Inclusive environments | |
|                                       | Sustainability | |
### Appendix C

**Table A3. Criticality Analysis of all REGARD Competencies.**

| N. | Category | REGARD Competency                                                                 | Weighted Average | Rank | Construction and FM Planners | Chartered Engineers | Architects | Surveyors |
|----|----------|----------------------------------------------------------------------------------|------------------|------|------------------------------|--------------------|------------|-----------|
| 21 | TIER 2   | Ethics and professionalism                                                        | 82.13%           | 1    | 66.67%                       | 100.00%           | 100.00%    | 100.00%   |
| 48 | TIER 3a  | Inclusivity                                                                      | 70.53%           | 2    | 100.00%                      | 42.86%             | 48.15%     | 69.57%    | 93.94%    |
| 49 | TIER 3a  | Flexibility                                                                      | 68.60%           | 3    | 100.00%                      | 33.33%             | 48.15%     | 69.57%    | 93.94%    |
| 50 | TIER 3a  | Stakeholder engagement in planning and design                                    | 67.63%           | 4    | 100.00%                      | 54.76%             | 37.04%     | 59.42%    | 90.91%    |
| 35 | TIER 3a  | Planning and design policy, legal and regulatory framework                        | 65.22%           | 5    | 72.22%                       | 50.00%             | 33.33%     | 68.12%    | 96.97%    |
| 52 | TIER 3a  | Constructability                                                                 | 64.25%           | 6    | 100.00%                      | 28.57%             | 66.67%     | 59.42%    | 78.79%    |
| 53 | TIER 3a  | Energy efficiency                                                                | 64.25%           | 7    | 100.00%                      | 28.57%             | 66.67%     | 59.42%    | 78.79%    |
| 54 | TIER 3a  | Recycling of building materials                                                  | 64.25%           | 8    | 100.00%                      | 28.57%             | 66.67%     | 59.42%    | 78.79%    |
| 51 | TIER 3a  | Whole life costing                                                               | 60.87%           | 9    | 100.00%                      | 30.95%             | 37.04%     | 59.42%    | 78.79%    |
| 11 | TIER 1   | Enabling measures                                                                | 59.42%           | 10   | 41.67%                       | 71.43%             | 100.00%    | 42.03%    | 66.67%    |
| 20 | TIER 2   | Stakeholders of built environment interventions (including typical institutional frameworks) | 57.00%           | 11   | 83.33%                       | 45.24%             | 51.85%     | 56.52%    | 48.48%    |
| 55 | TIER 3a  | Flexibility in use                                                               | 56.52%           | 12   | 72.22%                       | 28.57%             | 66.67%     | 56.52%    | 66.67%    |
| 66 | TIER 3b  | Types of housing                                                                 | 53.14%           | 13   | 80.56%                       | 0.00%              | 33.33%     | 68.12%    | 75.76%    |
| 65 | TIER 3b  | Approaches to housing construction                                              | 52.17%           | 14   | 75.00%                       | 0.00%              | 33.33%     | 68.12%    | 75.76%    |
| Tier | Level | Topic                                                                 | Percentage | Mean | Median | Standard Deviation | Minimum | Maximum |
|------|-------|----------------------------------------------------------------------|------------|------|--------|-------------------|---------|---------|
| 67   | TIER3b| Construction and maintenance considerations in the repair/renovation/refurbishment of existing housing | 52.17%     | 15   | 75.00% | 0.00%             | 33.33%  | 68.12%  | 75.76%  |
| 68   | TIER3b| Managing services to and maintenance of housing in use                | 52.17%     | 16   | 75.00% | 0.00%             | 33.33%  | 68.12%  | 75.76%  |
| 17   | TIER2 | Green and sustainable built environment (including nature-based solutions) | 51.21%     | 17   | 33.33% | 57.14%            | 66.67%  | 40.58%  | 72.73%  |
| 22   | TIER2 | Types and stages of housing (emergency, temporary, transitional, permanent, resettlement, relocation, social housing, etc.) | 51.21%     | 18   | 58.33% | 42.86%            | 33.33%  | 52.17%  | 66.67%  |
| 69   | TIER3b| Consideration of vulnerable and special needs groups in housing construction and maintenance | 51.21%     | 19   | 69.44% | 0.00%             | 33.33%  | 68.12%  | 75.76%  |
| 47   | TIER3a| Designing for vulnerable and special needs groups                     | 50.24%     | 20   | 58.33% | 30.95%            | 33.33%  | 56.52%  | 66.67%  |
| 31   | TIER3a| Repair/rebuild/resettle decisions                                     | 49.28%     | 21   | 69.44% | 30.95%            | 33.33%  | 33.33%  | 96.97%  |
| 2    | TIER1 | Legal, policy, and institutional frameworks                            | 48.79%     | 22   | 44.44% | 50.00%            | 62.96%  | 36.23%  | 66.67%  |
| 34   | TIER3a| Environmental sustainability                                           | 48.79%     | 23   | 44.44% | 52.38%            | 33.33%  | 44.93%  | 69.70%  |
| 72   | TIER3b| Stakeholder engagement in construction and maintenance                | 48.79%     | 24   | 66.67% | 0.00%             | 33.33%  | 66.67%  | 66.67%  |
| 41   | TIER3a| Types of housing and their specific planning and design considerations | 47.34%     | 25   | 58.33% | 33.33%            | 33.33%  | 46.38%  | 66.67%  |
| 40   | TIER3a| Sociology of housing                                                  | 45.89%     | 26   | 33.33% | 33.33%            | 33.33%  | 55.07%  | 66.67%  |
| 13   | TIER1 | Sustainable development                                              | 45.41%     | 27   | 44.44% | 54.76%            | 51.85%  | 37.68%  | 45.45%  |
| 24   | TIER2 | Inclusive housing (including supporting vulnerable and special-needs groups) | 45.41%     | 28   | 47.22% | 45.24%            | 0.00%   | 52.17%  | 66.67%  |
| 27   | TIER2 | Transport infrastructure and services                                 | 43.96%     | 29   | 38.89% | 38.10%            | 33.33%  | 50.72%  | 51.52%  |
| 23   | TIER2 | The importance of housing (for social cohesion and integration, livelihoods, etc.) | 43.48%     | 30   | 44.44% | 38.10%            | 0.00%   | 52.17%  | 66.67%  |
| 45   | TIER3a| Resource efficiency (including materials, labour, equipment, etc.)    | 43.48%     | 31   | 50.00% | 11.90%            | 33.33%  | 52.17%  | 66.67%  |
| Tier | Category                                                                 | Percentages | Mean | Standard Deviation | Min | Max |
|------|--------------------------------------------------------------------------|-------------|------|--------------------|-----|------|
| 17   | Inclusive built environment (including supporting vulnerable and special-needs groups) | 43.00%      | 32   | 36.11%             | 50.00% | 33.33% | 46.38% | 42.42% |
| 38   | Energy infrastructure and services                                       | 43.00%      | 33   | 47.22%             | 40.48% | 33.33% | 46.38% | 42.42% |
| 45   | Water supply, sanitation, and hygiene (WASH)                             | 42.51%      | 34   | 50.00%             | 38.10% | 33.33% | 37.68% | 57.58% |
| 50   | Waste management                                                         | 42.51%      | 35   | 47.22%             | 40.48% | 33.33% | 37.68% | 57.58% |
| 62   | Water supply, sanitation, and hygiene (WASH)                             | 42.03%      | 36   | 50.00%             | 38.10% | 33.33% | 44.93% | 39.39% |
| 66   | Location decisions                                                       | 51.06%      | 37   | 33.33%             | 33.33% | 33.33% | 43.48% | 66.67% |
| 69   | Cultural awareness and diversity                                         | 43.06%      | 38   | 50.00%             | 38.10% | 33.33% | 44.93% | 39.39% |
| 73   | Waste management infrastructure and services (including drainage, wastewater treatment, reuse and recycling of materials, etc.) | 41.06%      | 40   | 47.22%             | 40.48% | 33.33% | 43.48% | 36.36% |
| 77   | Transport infrastructure and services                                    | 39.13%      | 41   | 38.89%             | 38.10% | 33.33% | 33.33% | 57.58% |
| 81   | Repair/renovation/refurbishment of existing (damaged) housing            | 39.13%      | 42   | 69.44%             | 2.38%  | 33.33% | 34.78% | 66.67% |
| 85   | Disaster resilience                                                      | 38.65%      | 43   | 38.89%             | 33.33% | 33.33% | 33.33% | 60.61% |
| 89   | Disaster management                                                      | 37.68%      | 44   | 33.33%             | 33.33% | 33.33% | 33.33% | 60.61% |
| 93   | Access to basic needs and services                                       | 37.68%      | 45   | 27.78%             | 33.33% | 0.00%  | 46.38% | 66.67% |
| 97   | Cultural sensitivity in housing design                                   | 37.68%      | 46   | 33.33%             | 11.90% | 33.33% | 43.48% | 66.67% |
| 101  | Construction materials and resources                                     | 36.23%      | 47   | 86.11%             | 0.00%  | 37.04% | 33.33% | 33.33% |
| 105  | Disaster resilience (including multi-hazard mapping, Build Back Better)  | 35.75%      | 48   | 33.33%             | 45.24% | 33.33% | 33.33% | 33.33% |
| Tier  | Topic                                                                 | 12-14% | 15-26% | 27-38% | 39-50% | 51-60% | 61-82% |
|-------|------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|
| 1     | Causes, content, and dynamics of mass displacement                      | 33.33% | 53     | 36.11% | 30.95% | 33.33% | 33.33% |
|       | Policy, legal and regulatory frameworks relevant to the built environment | 33.33% | 54     | 33.33% | 33.33% | 33.33% | 33.33% |
| 2     | Contextual differences (causes, scales and dynamics of displacement, industrialised versus developing countries, etc.) | 31.88% | 58     | 27.78% | 28.57% | 33.33% | 33.33% |
| 3     | Societal impacts of mass displacement                                   | 28.99% | 64     | 27.78% | 28.57% | 22.22% | 30.43% |
| 4     | Stakeholders of mass displacement and their characteristics            | 29.95% | 62     | 33.33% | 33.33% | 25.93% | 26.09% |
|       | Cost estimation, cost control, and contract management                  | 29.95% | 63     | 52.78% | 0.00%  | 33.33% | 33.33% |
| 6     | Health issues (mental and physical)                                    | 31.40% | 60     | 30.56% | 16.67% | 18.52% | 44.93% |
| 14    | How planning and design can alleviate mass displacement challenges      | 33.33% | 55     | 30.56% | 33.33% | 40.74% | 31.88% |
| 15    | Procurement, contracts, and project delivery                            | 30.92% | 61     | 58.33% | 0.00%  | 33.33% | 33.33% |
| 30    | Financing of construction and maintenance                              | 31.88% | 59     | 63.89% | 0.00%  | 33.33% | 33.33% |
| 56    | Cost implications                                                       | 33.33% | 56     | 69.44% | 0.00%  | 37.04% | 33.33% |
| 57    | Time implications                                                       | 33.33% | 57     | 69.44% | 0.00%  | 37.04% | 33.33% |
| 58    | Quality implications                                                    | 33.82% | 52     | 72.22% | 0.00%  | 37.04% | 33.33% |
| 26    | Access to basic needs and services (food, livelihoods, health, education, recreation, etc.) | 34.30% | 50     | 27.78% | 38.10% | 0.00%  | 46.38% |
| 19    | Economics and financing of interventions (including cost benefit analyses, whole life costing) | 33.82% | 51     | 30.56% | 28.57% | 40.74% | 36.23% |
| 12    | Resilience (disaster, climate change, etc.)                             | 34.30% | 49     | 38.89% | 35.71% | 33.33% | 31.88% | 33.33% |
| 4     | Stakeholders of mass displacement and their characteristics            | 29.95% | 62     | 33.33% | 33.33% | 25.93% | 26.09% |
| 62    | Cost estimation, cost control, and contract management                  | 29.95% | 63     | 52.78% | 0.00%  | 33.33% | 33.33% |
| 5    | Societal impacts of mass displacement                                   | 28.99% | 64     | 27.78% | 28.57% | 22.22% | 30.43% |
| 63    | Project management considerations for mass displacement construction and maintenance contexts | 26.57% | 65     | 33.33% | 0.00%  | 33.33% | 33.33% |
| Tier | Description                                                                 | Value 1  | Value 2 | Value 3 | Value 4 | Value 5 | Value 6 | Value 7 | Value 8 | Value 9 | Value 10 |
|------|------------------------------------------------------------------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 3b   | Infrastructure provision and management in mass displacement contexts       | 26.09%   | 66      | 30.56%  | 0.00%   | 33.33%  | 33.33%  | 33.33%  |         |         |          |
| 3b   | Construction and maintenance of public buildings and spaces in mass displacement contexts | 26.09%   | 67      | 30.56%  | 0.00%   | 33.33%  | 33.33%  | 33.33%  |         |         |          |
| 3b   | Employment and livelihood opportunities in construction and maintenance      | 25.60%   | 68      | 27.78%  | 0.00%   | 33.33%  | 33.33%  | 33.33%  |         |         |          |
| 1    | Language issues                                                              | 22.71%   | 69      | 16.67%  | 28.57%  | 11.11%  | 21.74%  | 33.33%  |         |         |          |
| 1    | Access to education and training                                             | 22.22%   | 70      | 25.00%  | 26.19%  | 3.70%   | 20.29%  | 33.33%  |         |         |          |
| 1    | Livelihoods and employment (including access to means, land, etc.)           | 20.29%   | 71      | 27.78%  | 30.95%  | 22.22%  | 2.90%   | 33.33%  |         |         |          |
| 1    | Addressing discrimination against displaced people                            | 14.98%   | 72      | 27.78%  | 14.29%  | 14.81%  | 0.00%   | 33.33%  |         |         |          |
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