



Nebula

A Built**4**People Project

B4P INNOVATION

CLUSTERS

REQUIREMENTS

DELIVERABLE D1.1



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INTRODUCTION

This document is the deliverable D1.1 of the NEBULA project.

It first introduces the key concepts: Innovation Cluster (IC), B4P Innovation Cluster (B4PIC), B4PIC network, B4PIC Charter and describes six B4PIC success factors that define the requirements an Innovation cluster has to meet to be considered as a B4P Innovation Cluster.

This sets the basis of the B4PIC Charter (described in D1.2), a declaration committing ICs to work together and be integrated into the network to fundamentally contribute to the B4P objectives. By signing the Charter, ICs make a formal commitment to increase their maturity towards becoming B4PICs along the six B4PICs success factors, as well as to the willingness to be integrated into the B4PIC network and become its active members.

By analyzing different B4P requirements, a B4PIC Maturity framework is then introduced. A B4PIC Maturity framework is based on the levels of maturity, which a B4PIC has reached on each of B4PIC success factors and identifies the main principles of B4PIC maturation process. Three levels of B4PIC maturity are identified and formalized.

In Annex, the Built4People¹ (B4P) general and specific objectives and the principles of the New European Bauhaus² (NEB) are described, and their interdependence is discussed. This demonstrates that the maturation process of an IC to become a B4PIC is developed in respect to both (B4P / NEB) complementary frameworks.

¹ [Built4People \(ectp.org\)](https://ectp.org)

² [About the initiative \(europa.eu\)](https://europa.eu)



1 INTRODUCTION

Built4People (B4P) is a European partnership under Horizon Europe. The partnership aims to catalyse the transition to a people-centric, climate-neutral, sustainable and smart built environment. One of the key actions to be implemented by the Built4People (B4P) partnership is to develop and connect national or regional Innovation Clusters in line with Horizon Europe to maximise innovation impacts.

The NEBULA projects builds upon the B4P partnership as well as the New European Bauhaus initiative to activate and nurture a network of B4P Innovation Clusters, by implementing:

- Improved visibility, adoption and uptake of innovative solutions that are in line with the New European Bauhaus thanks to increased awareness on benefits from innovation and better access to co-financing,
- Intensified, cross-sectorial and interdisciplinary peer-learning from front runners as well as cross-border cooperation and networking,
- Preparation for the long-lasting activities of the network of B4P Innovation Clusters and the integration of the next clusters.

The project will therefore support a first batch of existing and emerging clusters to increase their maturity through 'maturity push' activities including peer learning on New European Bauhaus concepts, support to open innovation, business & finance help desk, match-making and promotional events.

This deliverable presents the requirements set up by the NEBULA project for Innovations Clusters to become B4P Innovation Clusters. It first provides definitions of what is a B4PIC and key concepts, then introduces the Charter that will be based on the proposed requirements. Finally, the B4PIC maturity framework and maturity levels are explained.



2 KEY CONCEPTS

A brief literature review gives several definitions of Innovation clusters (e.g., see ³ and ⁴). The generic and synthetic definition of an IC used in this project (and introduced in Grant Agreement Part B) is as follows:

An **Innovation Cluster (IC)** is a local or regional socio-technical ecosystem bringing together actors of the built environment sector (in particular SMEs and mid-caps⁵), where pools of capital, tacit knowledge, expertise, and talent foster the development of new innovations, their demonstration (e.g., exhibiting how innovations are implemented, demonstrating their added value, etc.) and their market uptake (should the market be regional, national or beyond).

Compared to the above generic definition, we define B4P Innovation Clusters (B4PICs) as innovation clusters that **engage in a maturing process** towards increased EU-scale, multidisciplinary and sustainable innovation, **through a formal engagement with the ECTP and the WGBC, the private partners that are coordinating the B4P partnership together with the EU Commission** (signing the dedicated charter and implementing the activities agreed upon).

We can therefore propose the following definition:

³ Engel, Jerome S, "**Global Clusters of Innovation: lessons from Silicon Valley**", California Management Review, winter 2015, Vol. 57 Issue 2, pp. 36-65 / Engel, Jerome S, "**Clusters of Innovation in the Age of Disruption**", Edward Elgar Publishing, ISBN: 978 1 80088 515 8, 7 July 2022.

⁴ Olga Nikulina, 2013. "**Advantages Of Formation Of Innovative Clusters In Modern Economy**," ERSA conference papers ersa13 p577, European Regional Science Association / Olga Nikulina, Liudmila Ponomarenko, Anastasia Perova, Vladimir Pokul, "**Developing Innovation Activity of Industrial Enterprises Against the Background of Digitalization of the World Economy**", Proc: 5th International Conference on Economics, Management, Law and Education (EMLE 2019).

⁵ Mid-Caps is a category of companies re. market capitalization which refers to the total number of outstanding shares of a company in the market multiplied by the current price of each share, and is a measure of the estimated valuation of a company. Mid-Caps are those companies having recently entered the stock market, with a lower market capitalization than (well-established) Large-Cap companies.



A **B4P Innovation Cluster** (hereafter called **B4PIC**) is a group of innovation-driven stakeholders, typically formed by one or two local/regional cluster(s)⁶, that engage in a maturing process to foster EU-scale, multidisciplinary and sustainable innovation in the Built Environment sector. Such a process is supported and monitored by the B4P Partnership partners (ECTP and/or WGBC) so that the B4PIC addresses, as a group and on a negotiated timeline, the following six dimensions, identified as success factors to foster EU-scale, multidisciplinary and sustainable innovation in the Built Environment sector:

1. **Whole value chain:** integrating as many as possible different stakeholder types from the whole Built Environment innovation value chain (e.g., any entity or organization representing academia (universities), research (RTOs...) & industrial innovators, architects and contractors, end users' associations, local authorities, etc.);
2. **Multi-objectives:** targeting several B4P objectives and objectives of the New European Bauhaus (co-design, inclusiveness, circularity, etc.) – see Annex 1 for the complete list;
3. **Cross-sectoral:** integrating different industrial sectors, whose members might be transdisciplinary;
4. **Locally anchored with national and European outreach:** connecting a local territory with networks at national and European levels (e.g., national or European clusters or metaclusters⁷);
5. **Cross-border:** interconnecting with clusters from other regions or Member States (e.g., euro-regions or two regions within the same member state);
6. **Access to testbeds and demonstration spaces:** integrating or connecting to test beds, pilot buildings, living labs or other facilities to demonstrate innovations and facilitate market uptake.

These **B4PIC success factors** are therefore used to evaluate the initial maturity level of B4PICs and how their maturity evolves along this framework after signing the B4PIC

⁶ In the case of 2 clusters, this means that a formal collaboration agreement between the 2 clusters has been or will be put in place, defining an overall governance for the B4PIC.

⁷ A metacluster is a combination of two or more clusters and potentially individual organisations that have an interest in collaborating together. Metaclusters enable the collaboration between sectors and/or regions in order to come up with new innovations and/or integrated business value chains. They can be created horizontally at regional, national or European level or be used for the vertical integration of regional, national and European instances. A typical example of a metacluster is a national (construction) technology platform or a European Association like the ECTP.



Charter. In order to become a B4PIC, an IC is indeed requested to mature along the 6 success factors of the B4PIC maturity framework, as introduced in section 4, and needs to define which success factors and maturity levels will be reached at the end of the transformation process. It should also present an envisaged brief action plan explaining the steps to reach this goal. The action plan should include a timeline to achieve the defined maturity level in a minimum number of success factors (this also links to the 'status' of an B4PIC, as introduced in section 3). It is anticipated that at least 3 among the 6 success factors should be tackled in the B4PIC action plan.

The **B4PIC Charter** is a declaration by which the ICs commit to work together and become integrated in the B4P network to fundamentally contribute to the B4P objectives (as defined in the MoU signed between the European Commission and the Partners other than the Union represented by ECTP and WGBC) and contribute to its expected impact. They also commit to leveraging on the New European Bauhaus (NEB), which provides a set of principles and a framework for a creative and transdisciplinary movement to reimagine enriching, sustainable and inclusive living and allow actors from different backgrounds to join forces.

Following the principle of inclusion, any Regional or National Innovation Cluster in Europe may apply to become a B4PIC:

- with the capacity to demonstrate that the fields of R&D&I it encompasses as well as the developed technologies and innovations are in the fields of B4P;
- if it is willing to promote the B4P objectives and targets as defined in the B4PIC Charter;
- if it is interested to capitalize on the value proposition of the B4P network of B4PICs and to contribute to it by sharing knowledge and expertise as well as good practices and feedback, thus participating in a European synergetic Community of Practice focused on a decarbonized and resource-efficient Built Environment.

As meta-clustering is a key dimension in the maturing process defined above, B4PIC candidates ideally apply as a core group of **two or more (national or regional) ICs** willing to go beyond their current scope of activity in order to unlock synergies. If a single IC apply, the potential pairing with another cluster (or at least the development of common collaboration with other clusters) may be supported by the **NEBULA consortium by helping to find a partner IC**. Whilst such connection or interaction with another cluster is not necessary at the moment of application, a clear commitment must be made to engage in meta-clustering with other ICs when signing the B4PIC Charter.

An IC interested in signing the B4PIC Charter will need to provide a description document (an appropriate template, along with the application/evaluation/selection process description, will be developed in WPI/T1.3) describing the objectives, structure, involved



stakeholders, business/funding model, as well as the rules of collaboration and/or governance.

The **B4P Innovation Cluster network (B4PIC network)** is composed of the B4PICs that have formally engaged in the B4P maturing process (i.e., signed the B4PIC Charter), assure the exchange of good practices and foster collaboration among B4PICs.

The benefits for an IC gained by becoming a B4PIC and integrating the network of B4PICs are synthesised in the figure below. This value proposition, and what NEBULA will bring to the B4PICs, will be further detailed in the Charter.

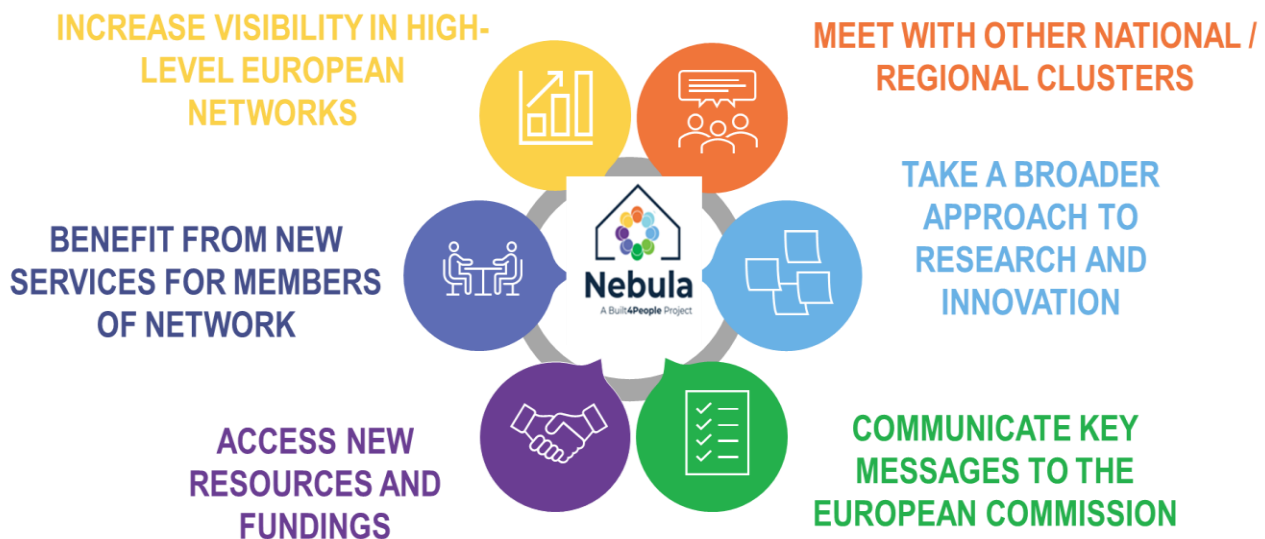


Figure 1: Benefits from becoming a B4PIC

The journey of an IC to become a B4PIC and be integrated into the B4PIC network is illustrated in Figure 2. This journey will be fine-tuned and presented in detail to ICs willing to join the network.



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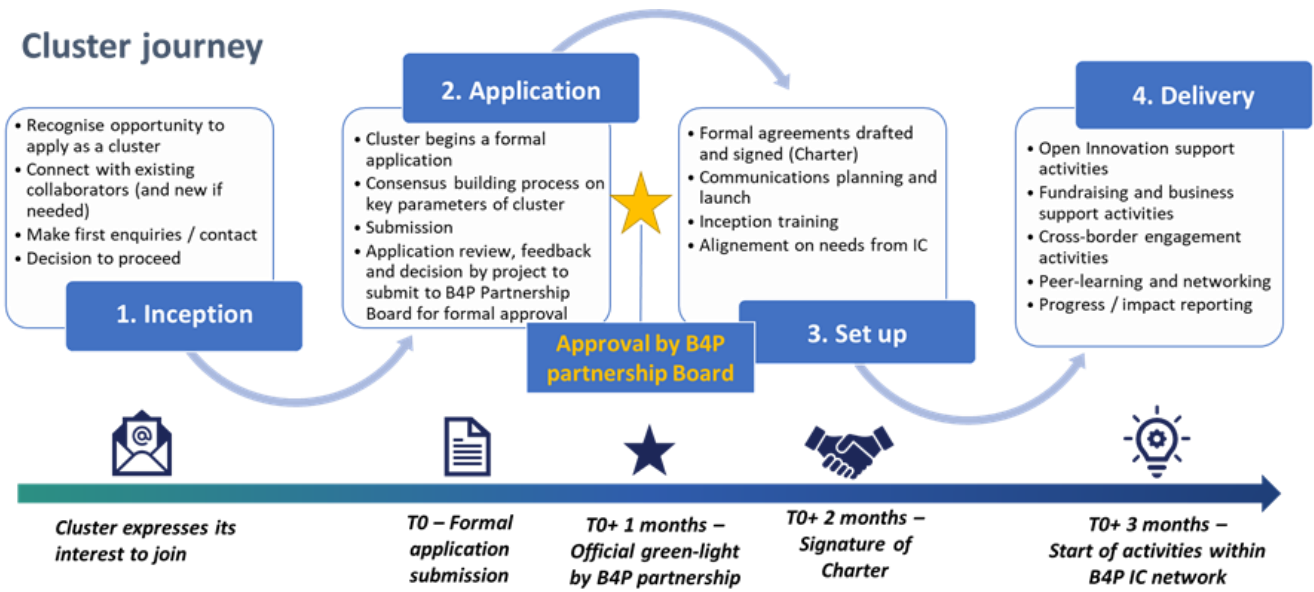


Figure 2: IC-to-B4PIC journey



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3 THE CHARTER: FORMAL ENGAGEMENT TO BECOME AN OPERATIONAL B4PIC

The Charter is a declaration and a commitment of Innovation Clusters (B4PIC candidates) to work together and to become part of the B4PIC network to fundamentally contribute to the B4P objectives (as defined in the MoU signed between the European commission and the Partners other than the Union represented by ECTP and WGBC).

The Charter will be a brief document (not exceeding 4-6 pages), presenting the objective of the Charter signature, including maturity levels at the moment of signing the Charter and maturity levels to be reached, as defined by the B4PIC candidate(s) for each of the selected success factors, according to a given timeline (which might not be the same for each success factor).

The Charter will provide a simple and clear definition of the B4PIC maturity levels, based on maturity levels of the success factors.

It will describe the various commitments of the B4P candidates in the form of an action list to be implemented which can reach from participating in NEBULA webinars and workshops, to setting up a B4PIC task force with dedicated contact points, setting up the profiles of the participating innovation clusters, their members and B4PICs on the METABUILDING platform, etc.

The Charter is to be signed on one side by the legal entity representing and/or acting on behalf of the IC, and on the other side by the B4P Partnership, and more precisely by the B4P Partnership Board represented by its 2 Chairs from the European Commission and the Partners Other than the Union.

The Charter should formalise a commitment process as follows:

- The B4PIC candidates engage in an evolution or transformation process, with a dedicated timeline, to step-by-step integrate (all or most of) the 6 B4PIC success factors and improve their maturity level.
- The B4P partnership, through ECTP and WGBC forming with the EC the B4P management team, ensure the provision or enhancement of appropriate tools and services to B4PICs, to support and strengthen their commitment to progress towards required maturity, according to the Charter.



The Charter should therefore include:

- The actions tackled by the IC to achieve a certain number of the 6 success factors in a period of time, and in all cases by the end of the Horizon Europe EC Framework Programme (by end of 2027)⁸.
- Considering the objectives as selected by the IC, each necessarily correspond to some KPIs in B4P that may be considered as 'induced' KPIs for the monitoring of ICs: the ICs will indeed support the monitoring of the B4P Partnership (B4P Additional Activities each year, full Biennial Report every 2 years), thus easily demonstrating IC achievement to the EC
- The support services proposed and further managed by the NEBULA consortium (and after NEBULA completion, by any project funded under the HORIZON-CL5-2023-D4-02-04 call/topic⁹), as well as targeted benefits for B4PICs.

The Charter template will be delivered at the end of April 2023.

Eventually, the Charter defines three types of B4PICs, considering the following characteristics:

- **Prospective B4PIC** (candidate): a cluster has expressed interest and is exploring becoming a B4PIC, in relationship with the B4P Partnership (supported by NEBULA partners over the duration of the NEBULA project);
- **Emerging B4PIC** (Stage 1): a cluster has applied and been accepted (the Charter is signed) to progress towards required maturity (but is not yet meeting these minimum requirements)
- **Established B4PIC** (Stage2): an accepted B4PIC has demonstrated it meets the initially targeted maturity level within the defined timeline, as agreed in the Charter. If such maturity level is not reached at the end of Horizon Europe (by 2027), it will be considered as defaulting and lose its status of Emerging B4PIC.

It is worth noticing that the status of Prospective B4PIC is optional, and indeed an IC can directly apply to become an Emerging B4PIC (typical case of some clusters as identified in the NEBULA project).

These three B4PIC maturity levels are detailed in the next section.

⁸ It is questionable if some commitments are to be achieved at the time of NEBULA's completion.

⁹ HORIZON-CL5-2023-D4-02-04:

Fast-tracking and promoting built environment construction and renovation innovation with local value chains



4 B4PIC MATURITY FRAMEWORK

The B4PIC maturity framework identifies three maturity levels of a B4PIC based on the maturity levels of each success factor.

4.1 MATURITY LEVELS OF B4PIC SUCCESS FACTORS

There are three levels of maturity for each B4PIC success factor. They are detailed in Table 1.

Table 1: Maturity levels of B4PIC success factors

Level	Whole value chain	Multi-objectives	Cross-sectoral	Locally anchored with national and European outreach	Cross-border	Access to testbeds and demonstration spaces
1	IC gathers stakeholders with same professions (e.g., only academia, only industrials, ...)	IC is focused on one type of objectives (e.g., sustainability, decarbonization, ...)	IC is focused on one sector (but addressing multiple applications)	IC is local/regional	IC has no cross-border interactions	IC has no connection to testbeds and demonstration spaces
2	IC gathers stakeholders with a few distinct profiles, but not the whole value chain	IC addresses different groups of objectives (e.g., circularity and integrating cultural values into design, ...)	IC is focused on one sector but clusters with one IC from a different sector	IC is local/regional and is connected to one or a few other local/regional ICs from the same or a different country (i.e., joint activities, exchanges between members)	IC has a few cross-border contacts and is actively promoting interregional activities and programmes to its members	IC has contacts with local/regional testbeds and demonstration spaces to facilitate for its members the demonstration and market uptake of their innovations
3	IC gathers stakeholders from research to industry, public authorities and citizen	IC addresses the 7 B4P specific objectives and NEB values and actively promotes – as	IC is focused on one sector but actively engages in clustering and joint road mapping with several clusters	IC is vertically integrated in the national construction technology platform and/or ECTP/METABUILDING	IC has implemented at least one strategic relationship with a cluster from another country (for example	IC is actively seeking testing opportunities for its members using the services of Open Innovation Testbeds like METABUILDING



associations/ NGO included	ambassador - some or all of them	from different sectors, which members might be trans- disciplinary	Built Environment ecosystem/ B4P network	within an Euroregion) and engages in joint road mapping in line with RIS3 of the concerned region	LABS, iClimabuilt, MEZeroE providing co- development and testing opportunities with real users (LivingLabs).
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4.2 B4PIC MATURITY LEVELS

Three types of B4PICs can be characterized according to their maturity level:

- **Prospective B4PIC** (candidate, PrB4PIC): an IC which expressed interest and is exploring the possibility of becoming a B4PIC, in relationship with the B4P Partnership (supported by NEBULA partners over the duration of the NEBULA project).
 - An IC that wants to engage/commit to align itself with all B4PIC success factors (without an obligation to achieve all of them)
 - An IC needs to contain the maturity of all 6 success factors at least at level 1 (cf. Table 1)
 - An IC can be a PrB4PIC up to 12 months before signing the Charter
- **Emerging B4PIC** (Stage 1, EmB4PIC): a cluster has applied and been accepted (the Charter is signed).
 - An IC is accepted on the basis of a commitment to progress towards a targeted maturity (but it is not expected to meet these minimum requirements yet).
 - An IC is becoming an Emerging B4PIC when the Charter is signed: (i) commitment to share B4P objectives, (ii) commitment to promote NEB values and (iii) commitment to aim at achieving B4PIC success factors by increasing its maturity levels for each factor.
 - An IC is an EmB4PIC if 3 success factors reach level 2 (cf. Table 1) within a defined timeline (which might not be the same for different success factors, e.g., 12, 24 or 36 months. They are defined in the Charter and detailed in the action plan).
- **Established B4PIC** (Stage2, EsB4PIC): an accepted EmB4PIC has reached the initially targeted maturity level within the defined timeline.
 - The NEBULA projects suggests that two success factors: (1) Whole value chain and (2) Multi-objectives innovation – are mandatory; and that four success factors: (3) Cross-sectoral, (4) Locally anchored with national and European outreach (combined local and national/EU networking), (5) Cross-border connections, and (6) Access to testbeds and demonstration spaces – are optional.



- The NEBULA project suggests that an EsB4PIC needs to reach the highest maturity level (level 3) for at least 3 of 6 success factors (cf. Table 1) at the end of the NEBULA project. This includes the mandatory success factors.

Therefore, by signing the Charter any PrB4PIC takes the engagement to become an EsB4PIC, by achieving highest maturity level on at least 3 from 6 B4PIC success factors within the defined timeline. These factors and the timeline are defined in the Charter, detailed in the action plan and agreed upon before signing the Charter. Different success factors might have different timelines (e.g., 12, 24 or 36 months).



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CONCLUSIONS AND FUTURE ACTIONS

This deliverable synthesises the findings of task T1.1. “B4P Innovation clusters requirements elicitation processes”.

It describes the requirements that ICs should meet to be considered as B4PICs and take part in the B4PIC network. These requirements are based on increasing ICs maturity level along six B4PICs success factors. Three levels of B4PIC maturity are identified and formalized.

This deliverable introduces the B4PIC maturity framework, which is conceptually coherent with both B4P and NEB visions. It creates the foundation to detail the proposed methodology at later stages in line with further development of B4P and NEB frameworks.

This deliverable sets the basis of the B4PIC Charter, which will be delivered at the end of April 2023 (M7).



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ANNEX 1: B4P/NEB-BASED IC-TO-B4PIC FRAMEWORK

This section describes the B4P objectives and the NEB principles and shows that the maturation process of an IC to become a B4PIC is developed in respect to both (B4P / NEB) complimentary frameworks.

B4P GENERAL AND SPECIFIC OBJECTIVES

From one side, B4PICs are developed in respect to the B4P vision, so they share and communicate to their members (most of) the B4P objectives. This refers to both:

3 B4P General Objectives:

1. “Scientific”: to generate holistic innovation towards sustainability
2. “Economic”: to revitalize the sector through decarbonization and sustainability transition
3. “Societal”: to induce lasting behavioural change towards sustainable living

and 7 B4P Specific Objectives:

- A. Develop holistic solutions in a systemic approach
- B. Demonstrate overall performance in the life-cycle perspective
- C. Demonstrate clean energy transition potential
- D. Demonstrate sector decarbonization pathways
- E. Demonstrate sustainable, circular business and value chain
- F. Demonstrate affordability and cost-effectiveness
- G. Demonstrate no trade-offs on economy comfort, health, functions, cultural heritage

NEB CORE VALUES AND WORKING PRINCIPLES

From another side, by engaging to foster EU-scale, multidisciplinary and sustainable innovation in the Built Environment, B4PICs will be encouraged to share the NEB principles enabling the green transition of our societies and economy. They are described



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by the NEB Compass¹⁰, a guiding framework for decision makers and project leaders wishing to apply the NEB principles and criteria to their activities. The NEB Compass describes the **three core values**:

- Beautiful
- Sustainable
- Together

their corresponding ambitions (3 for each value according to the level of its maturity), as well as **three working principles** that describe how to operate and work to achieve the highest level of ambition in the three values. These three working principles are as follows:

- Participatory process
- Multi-level engagement
- Transdisciplinary approach

Each working principle also has three levels of ambitions, which are characterized by and correspond to different levels of maturity. These three levels of ambitions aim at involving all stakeholders in an open and equal manner, promoting a fair transformational outcome which is not only accepted, but also beneficial for everyone and considering systemic and close relationships between complex social, environmental and structural factors. Moreover, they contribute to yielding knowledge and insights which can be scaled up and transferred to other outcomes or fields of knowledge.

PRINCIPLES OF IC-TO-B4PIC MATURATION PROCESS

As such, the maturation process of ICs to become B4PICs is developed in respect to the interdependent (B4P / NEB) frameworks. In order to be considered as B4PICs and form the B4PIC network, ICs should aim at achieving the B4P objectives, by promoting the NEB working principles and the NEB core values.

First, it is important to underline that despite different origins, the B4P general objectives and the NEB core values are conceptually based on the same principles towards sustainability, aesthetics and inclusion from scientific, economic and societal points of

¹⁰ [The New European Bauhaus Compass – BEDA](#)



view. Second, there is a strong interdependence between the 7 specific B4P objectives and the NEB core values and working principles. This allows three conclusions:

1. any IC sharing B4P general and specific objectives and aiming at (some of) them is potentially NEB-adherent;
2. the maturity level of a B4PIC can be defined and evaluated on the basis of the B4PIC success factors, by introducing maturity levels for each success factor;
3. the B4PIC maturity framework is coherent with the B4P and NEB frameworks

Moreover, the B4PIC maturity framework defined in such a way could potentially be improved in the future by introducing additional new elements of the B4P and/or NEB frameworks (e.g., following the development of the NEB Compass) and by remaining conceptually coherent.



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