1st Fall Symposium Building Beyond Borders
Reflecting on the dynamisms of intercultural collaboration in build projects
9-10 November 2020, Hasselt, Belgium

Placemaking across borders

learning-by-building as a tool to interact with communities – lessons learned from a European training program

Double-blind review process

Do not include authors in the body text at this time

ABSTRACT:
Since its foundation in 2015, the Building Impact Zero Network BIØN aims to share knowledge and contribute with educational activities and practical experiences to promote architectural approaches with low environmental and positive social impact.
LearnBIØN, the network's educational project where eight associations and university departments from six European countries cooperate to train adults in the field of sustainable architecture, is currently in its second edition. The present paper focuses on the outcomes of the first triennial run. After defining a shared theoretic module the network partners held a series of practical workshops in specific communities in the hosting countries. Small architecture projects are built during these training events in cooperation with local communities. Each intervention focuses on a specific technique based on non-toxic materials, which makes the building sites accessible to a broad audience and aims at providing a meaningful space in hosting communities. They include small towns hit by demographic decrease, urban areas with specific social issues or peculiar user groups. Mobility-agreements facilitate the participation of trainees from different countries allowing them to get in contact with peculiar realities far from home as well as with fellow trainees from other cultural contexts. At the same time, their presence in the hosting communities triggers discussions among the locals and helps them see their own reality with different eyes. Most of the exchange in terms of culture and knowledge occurs directly on site. Face-to-face communication and direct cooperation proofed to be strong learning tools.
KEYWORDS: Adult learning, Local materials, Hands-on, International network, Communities

1. THE BUILDING IMPACT ZERO NETWORK AND THE TRAINING PROGRAM LEARN-BIØN

The Building Impact Zero Network BIØN includes eight associations and university departments from six European countries (Portugal, Spain, Italy, France, Belgium and Sweden) who cooperate to train adults in the field of sustainable architecture.

Since its foundation in 2015, the network aims to share knowledge and contribute with educational activities and practical experiences to promote architectural approaches with low environmental and positive social impact. The network includes architects, planners, social scientists and economists.

Learn-BIØN is the network's educational programme. It has a strong focus on learning-by-building. Besides simply providing technical skills, this methodology allows for beneficial impacts on multiple layers. Concretely, the proposed training sessions led to the realization of a small architecture projects built in cooperation with local communities. Each intervention focused on a specific technique and was aimed at providing a meaningful space in the involved communities which include small towns hit by demographic decrease, urban areas with specific social issues or peculiar user groups. Six workshops have been activated in four European countries.

The member organisations of *BIØN* all had previous experiences in practical education, self-building and building techniques with low environmental impact. Through *LearnBIØN* this knowledge could be shared and verified with teams from other contexts. The exchange opportunities provided by the programme included joint staff meetings, where representatives from the partner organisations met in order to share organisational aspects of the project, joint staff training courses, where those representatives that had to act as trainers received specific inputs, i.e. on group building techniques, different ways of fostering participation or expressing leadership as well as different understandings of sustainability.

Moreover, for the training sessions a mobility agreement among the network partners facilitated the participation of trainees in other partner's workshops providing the possibility to travel and get in contact with peculiar realities far from home as well as with fellow trainees from other countries. Further participants were recruited locally among students, professionals, NEETs or simply curious citizens. The presence of heterogeneous and dedicated workgroups in hosting communities helped triggering discussions among the locals and see their

own reality with different eyes with respect to urban development, place-making or other choices that make affect the sustainability of their living place.

2. SHARED CONCEPTUAL FRAMEWORK

An extensive discussion on the understanding of sustainability, learning and similar crucial concepts preceded the practical sessions. Representatives from the partner organisations gathered to agree a "Common Module" [9] which condensed this shared conceptual framework. The contents, simplified in Table 1, provided the common ground for the mentioned series of training and building workshops.

The effort was necessary to acknowledge local and cultural differences, both in the building techniques and in the way of teaching and interacting with beneficiary communities.

Table 1: Shared conceptual framework on the understanding of sustainability in architecture

BETTING ON CIRCULAR ECONOMY	WORKING TOWARD ARCHITECTURAL QUALITY	CHOOSING APPROPRIATE TECHNOLOGY	BELIEVING IN PEOPLE IN ACTION
upcycling _understood as a process of transforming an unwanted good into a new one with higher quality value. The good can be a product, a building or an entire settlement.	**comfort** _design elements as source for well-being: proportion, light, textures, colours, openings _spatial perception: how a space becomes a place	**small is beautiful** _ referred to building process _ during use of the building	**knowledge sharing** _ the building site as a knowledge hub _ dissemination of existing knowledge _ production of new (shared) knowledge
synergy of production processes _ if we manage to link the production of architecture and building materials to other production lines it is easier to get them economically sustainable. Suitable "partner"-sectors can be food-production or the textile-sector.	**lifetime awareness** _ awareness about the life time cycle of the materials after building _ capacity of maintenance: the life of the building is connected to the nature of the material and the action of users _ capacity of returning to the natural cycle without impact	**healthy environment** _ hygrothermal behaviour _ toxicological aspects	**community involvement** _ empowerment _ access to local knowledge _ place making (appropriation)
economic context of reference affordable/accessible _recognising non-monetary forms of value (social cohesion, enthusiasm, knowledge sharing)	**local architecture as political challenge** _ power of change _ power of education _ build a social awareness and environmental respect _ relation of reciprocity: a good environment makes people care about it	**low embodied energy** _ acknowledging the whole energy required for building (life cycle assessment) _ strategies to reduce embodied energy: local materials with low degree of transformation and extended lifetime	**self-construction** _ be part of the building process _ direct control over profit production (anti speculation) _ close relation with architecture ("it's for me, not to be sold") _ labour-intensive approach _ construction of relations (mutual aid) _ safety issues & legal framework
minimising speculation _building for usage not for investment _usage of resources, in a local system loop	**contemporary vernacular** _ local knowledge: rethinking local culture according to contemporary values and needs _ providing appropriate time for each phase of design and construction: evolutive, phased and detailed _ global knowledge: adapting to context and needs, techniques from different origins	**resource management** _ water _ waste _ mobility	**collaborative work** _ emerging strategies _ interdisciplinarity _ co-creation

3. PRACTICAL WORKSHOPS

The partner organisations adapted the shared brief to specific situations chosen in cooperation with local partners. Although the central aim of each workshop was on learning and knowledge sharing, all partner organisations had the ambition to use the outcome of the practical training within a specific community and with a social purpose. The technical aspects where thus combined with specific needs of the chosen local communities.

The Haute-Ecole de Bruxelles-Brabant as part of the network accompanied all the learning and building sites in its socio-pedagogic aspects. Six workshops in four different countries have been run with this modality during the three years of the programme.

3.1 Design and build with compressed earth blocks

The Portuguese partner *Oficinas do Convento,* an NGO active in empowering the local inhabitants in the development of locally sustainable projects, both in the cultural and socio-economic sector organised the first training-workshop. It focussed on the technique of compressed earth blocks (CEB) and the trainees had the possibility to learn about the production and the way of assembling these unburned but strong bricks. As for all the *LearnBIØN* workshops it was an explicit ambition of the organising network to find a balance between theory and practice, approaching each technique in detail in order to allow participants to practice straight away and share their new skills with others at the end of the 4-weeks training. In this way they would actively empower others by knowledge sharing.

Photo 1+2: Trainees on the building site and while pressing CEB in Oficina's Raw earth laboratory.

Oficinas do Convento proposed to use the building workshop to implement the facilities of their organisation by building an artist's residence in Montemor-o-Novo, Portugal. The small building gathers two rooms and a hallway with storage area and integrates itself in the complex of clay and ceramic labs that *Oficinas do Convento* established in 2015 on a municipal area with abandoned common washing facilities (*lavadouros*).

For the specific workshop, a group of volunteers produced the needed amount of blocks within *Oficina*'s earth-building laboratory before the training using locally sourced raw earth. The group of trainees, which included 20 students, professionals and NEETs was in charge of building the foundation and erecting all the masonry work. They also participated in part of the rendering and tiling work, which was completed by volunteers after the workshop itself. Driven by the enthusiasm of seeing the building completed and by applying the learned skills directly, some of the participants proposed themselves as volunteers for an extra-period after the workshop [8].

Photo 3: The artist's residence built in Montemor-o-Novo, Portugal during the course on compressed earth blocks

3.2 Design and build with wattle-and-daub and light earth

The second workshop has been organised by *AK0 – architettura a kilometro zero*, an Italian non-profit association active in the field of sustainable architecture and international cooperation. The association is based in Rome with activities in Europe, Africa and Latin America. The LearnBIØN workshop proposed to focus on lightweight structures with raw earth, namely wattle-and-daub and light-earth.

AK0 decided to operate in Casaprota, a small town in central Italy hit by demographic decrease despite some environmental and agricultural attractions. Together with local associations and the local administration it was agreed to convert a void concrete building abandoned in the early 1980's before completion into a training building site and to graft a small multipurpose space into it which could be used by local associations or informal youth groups after the workshop.


Photo 4+5: Participants assembling Quincha-frames and practical exercises to assess quality of local earth

Each of the four weeks was dedicated to a specific technical issue treated both in theory and practice. The faced items included items such as the energetic behaviour of different wall systems or the possibility of combining prefabrication and natural materials. Small conferences and encounters with representatives from the local community provided food for further discussions.

After the workshop *AK0* and *SabinArti*, the local partner organisation, continued to use the place as venue for training activities in the field of natural construction [6].

Photo 6: The multi-purpose space built with wattle-and-daub and light earth and grafted into an abandoned concrete-skeleton in Casaprota, Italy

3.3 Design and build with cordwood

The Swedish team from *AES – Architectural and Environmental Startegies*, a non-profit organization founded in 2009 by a group of architects, landscape architects, educators and anthropologists and active in the field of architecture, planning and sustainable development chose to reinterpret the traditional Scandinavian technique of Cordwood. Wooden chunks or logs are used as bricks in a wall stacked with a thick raw earth mortar. Like most of the techniques proposed in the whole educational programme it can be defined of vernacular origin with a contemporary perspective.


Photo 7+8: A break with trainees and farmers during the assembly of the timber structure and workshop participants laying the cordwood-floor.

AES decided to partner with *Eko-Odlarna i Telje*, a social enterprise in ecological farming established with the municipality to offer a support programme to people in long term unemployment. During the 4-week workshop

participants from eight different countries collaborated to build a small vegetable shop for the cooperative in Östertälje. The design was previously elaborated together with the team of farmers accordingly to the goal of building agency for them in finding more ways to create inclusive practices on site as well as finding ways for people in general to effect their built environment [7].

Photo 9: Inner view of the boutique for Östertälje's farmer cooperative in Sweden, built with cordwood.

3.4 design and build with canes

Giant reed (*Arundo donax*) was the main material used during the CanyaViva workshop. CanyaViva is an association that researches, develops and promotes bioconstruction projects to contribute to a sustainable conversion of human activities. It continuously develops the building system with assembled arches of canes; a system that allows for structures that blend with the landscape and disappear, thanks to organic forms and natural materials.

Photo 10 + 11: Learning the criteria to classify the harvested canes and erection of a structural cane arch.

The workshop for LearnBIØN was held in the Natural Park of Colleserola, situated in the hills along the north side of Barcelona. As its building objective it had the construction of an external covered space of 30mq to be used for cultural meetings and for theoretic classes during *CanyaViva´*s courses on cane construction. The project was preceded by a collaboration between *Valldaura Labs*, part of the university of architecture *IAAC* and the association *CanyaViva*, with the agreement that the space could be used by *CanyaViva* for the following year [2].

Photo 12: The cane canopy for outdoor lessons in Colleserola, Spain before being covered.

3.5 design and build with rammed earth

Dehesa Tierra, a group gathered with the goal of spreading and promoting earthen construction and architecture in Extremadura (Spain) decided to work on rammed earth. The building technique has a long tradition in south-eastern Spain as in many other regions of the world and is increasingly used also for contemporary architecture projects. Acknowledging the benefits of rammed earth for the local context *Dehesa Tierra* decided to use the training as an opportunity to introduce an updated way of working with this decades-old technique. Suitable ways of building with rammed earth, how to process the raw materials on site and how to design a rammed building able to last in time and meet current comfort and security standards where the items treated during the course.


Photo 13 + 14: Manual ramming and collaboration between trainees and experts while removing formwork.

The municipality of Valverde-de-Burguilllos accepted the challenge and agreed with the organisation to build a small library to be added to the municipal swimming pool; an idea derived from the already existing habit of exchanging and lending books on the lane in this small recreational facility. 16 participants from 9 different countries erected the building with the help of *Dehesa Tierra*'s design team and some local craftsmen [3].

Photo 15: The rammed earth library near the municipal swimming pool in Valverde de Burguillos, Spain

3.6 _design and build with recycled materials

The series was concluded with a workshop in Milan. Here in the industrialized metropolitan area, the most available resources that could be sourced were recycled materials.


Photo 16 + 17: Fun and effort while compacting the super-adobe wall and collaboration of trainees with different cultural backgrounds on the bottle-wall.

ARCò Architecture and Cooperation, a design cooperative founded in 2012 with a strong focus on social, economical and environmental sustainability and extensive experiences both in Italy and in the context of international cooperation, is familiar with the process of valorizing abundantly available resource with appropriate technologies and secondary use of waste materials for having applied these concepts for architecture projects in different countries. For LearnBIØN, *ArCò* decided to partner with an association in charge of receiving and integrating newly arrived immigrants. The asylum seekers temporary housing at Casa Chiaravalle at the outskirts of Milan needed an additional space for social and cultural activities to be added to the existing complex of dormitories and lunch-room.

The workshop participants erected walls assembled from recycled glass bottles and disused window-elements from other building sites. The self building approach aims at showing the participants the possibility to actively "make architecture" thinking about space and finishing, mixing low tech and cheap resources, with natural and recycled elements [1].

Photo 15: The event space at Casa Chiaravalle in Milan, Italy built with recycled materials.

4. DIFFERENCES AND COMMON FEATURES

As mentioned the partner organisations dedicated a large effort to define a shared conceptual framework. This was necessary to build a common ground while acknowledging some important differences between the specific approaches and local situations. These differences include:

- type of organisation: number of active members, different levels of technical specialization; rather locally rooted or rather global activities;
- the way of choosing and relating to local project partners: Some partners used other local associations as intermediate agents to interact with broader local communities while others chose to become active in contexts where they were already rooted. In some cases the local partners were representative of a specific group of beneficiaries while other partners interacted via the local administrations;
- group composition during the workshop: some initiatives had a strong prevalence of trainees from the geographic area where the workshop took place while others where more internationally participated;
- socio-economic or demographic contexts: small towns suffering phenomena of abandonment, metropolitan area etc.

5. CONCLUSION AND FUTURE PERSPECTIVES

Despite these differences the workshops reached similar results. All of them proved that merging education and place-making, both in the sense of physical construction and of triggering new perspectives for an active participation of citizens, can provide beneficial synergies for all involved stakeholders.

Although it was made clear to all that the programme's crucial aspect lays on the educational aspects and that the experimental character of the proposed designs could have led to functional cutbacks if required, all teams managed to accomplish the building they steered for. In those cases where the four weeks were not sufficient to achieve total completion, the workshop activities often triggered enough enthusiasm to invest further on the work.

Along with the activity of building architecture the training sessions included a multiple dimension of group building. At one level this effected the social dynamics that occur within the group of trainers and trainees. Participating to a shared goal and working together, both physically and mentally, made that in all of the six workshops the heterogeneous groups of ten to twenty different persons ended up as teams. Privileging labour-intensive building techniques with non-toxic materials helped in involving persons with very different backgrounds in the construction activities and allowing everybody to find her or his place in the team.

At a second level, this social dimension of the working group was reflected on the social dimension the projects brought to the local communities. Here factors such as hospitality, curiosity, helpfulness progressively contributed

to overcome feelings of scepticism or even refuse. In those workshops were representatives of the beneficiary community were involved as trainees this dimension was particularly strong.

In 2019 the Building Impact Zero Network started the second edition of its educational programme. The School of Economics Science Po Grenoble entered the network with the aim of strengthening the socio-economical aspects of BI0N's activities. 5 more workshop are planned until 2022 with the first, held in Extremadura, Spain on prefabricated construction with straw-bales has been already completed while the present lines are written.

ACKNOWLEDGEMENTS

For the implementation of training activities, elaboration of intellectual outputs and the cross-mobility agreements among partners, LearnBIØN received funds from the Erasmus+ Program of the European Commission.

Locally, municipalities, enterprises, associations and private persons contributed to cover or reduce further costs, i.e. for building materials or board and lodging of participants.

The municipalities of Montemor-o-Novo (PT), Casaprota (IT), Södertälje (SE), Collserola (ES), Valverde de Burguillos (ES), Milan (IT) have facilitated the administrative procedures for the building sites.

The Haute Ecole de Bruxelles-Brabant (BE) and the municipalities of Montemor-o-Novo (PT) and Valverde de Burguillos (E) have hosted network-meetings.

The social enterprises *Eko-Odlarna* (SE), *Passepartout* (IT), *Valdaura Fab Lab* (ES) as well as the associations *Amici di Casa Chiaravalle* (IT), *SabinArti* (IT) have acted as local partners and facilitated the interaction with local communities.

In addition to the network's internal training staff, numerous professionals and experts have contributed to the training activities with presentations, talks or practical contributions on the single building site.

REFERENCES

1. Battistella, A., V. Marazzi and L. Trabattoni, (2018) Design and Build with with Ø km (local and recycled materials). *Learn Building Impact Zero Guides.*
2. Cory Wright, J., G. Picotti and B. Silvestri, (2018) Design and Build with Canes. *Learn Building Impact Zero Guides.*
3. Couvreur, L. and A. Buzo, (2018) Design and Build with Rammed Earth. *Learn Building Impact Zero Guides.*
4. Lorant, C. and F. Gillet, (2018) Self building in the social field - Towards a participative methodology. *Learn Building Impact Zero Guides.*
5. Policard, F. (2014). Apprendre ensemble à travailler ensemble : l'interprofessionnalité en formation par la simulation au service du développement des compétences collaboratives. *Recherche en soins infirmiers 117.*
6. Pollak, S., (2018) Design and Build with Wattle-and-Daub and Light Earth. *Learn Building Impact Zero Guides.*
7. Sundman, A. and A. Nyren, (2018) Design and Build with Cordwood. *Learn Building Impact Zero Guides.*
8. Teixeira, T. and J. Trindade, (2018) Design and Build with Compressed Earth Blocks. *Learn Building Impact Zero Guides.*
9. Teixeira, t. and others (2017) A *handbook guide for hands-on learning from the Building Impact Zero Network. Learn Building Impact Zero Guides.*