Sustainable refurbishment of a primary school, near Al Azarije, Palestine

Project data

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Comment of the Holcim Awards jury Africa Middle East

The jury appreciated the approach to refurbish an inadequate existing structure and to upgrade it with well-directed and precise low-tech measures to a functional educational unit. Rapid construction over only two months enabled the project to be conducted exclusively during school holidays and confirmed the feasibility of the concept. Arising from disadvantageous parameters, a number of benefits such as long-term improvement of educational conditions, generation of local labor andknow-how as well as a strengthening of social community are achieved, moreover resulting in differentiated and accomplished in- and out-door spaces. The simplicity of the underlying concept, its elaboration and realization, and easy transferability make this project a remarkable blueprint.

Project description by author

ARCO designs Abu Hindi Primary School for an international cooperation project led by Vento di Terra NGO, an organization working in Palestine for fundamental rights to education and health care of children. The social and territorial context of the ARCO project is the Abu Hindi Bedouin community, situated south of Jerusalem in the West Bank, close to the Israeli colonies of Maale Adumim and Qedar. Here Bedouins live in very critical environmental conditions, due to the air and ground pollution and to the serious water scarcity of the area. The refurbishment project had to face restrictions imposed by the Israeli military authority, which state the maintenance of the existing situation and the impossibility of any new development for the existing school building. The building fabricated from metal sheet rooms, totally unfitting any acoustic and thermal insulation requirements usually needed for educational activities.

The project transforms the school into a climatically comfortable and energetically sustainable new building, by means of two main actions: natural ventilation and thermal insulation. The new sandwich panel roof is tilted and raised, to realize new openings of 60cm high on the west side and 30cm high on the east side, which creates an efficient air circulation system, while they can be closed with sliding pleated panels. External walls are thermally insulated by adapting the pid technique to local needs: new internal layers were built by laying and stamping layers of moist soil and straw between wooden boards, which are used as quarterned. The final result in the school is a wall 90cm thick, including lime plastering, bamboo panels as quarterned, soil and straw layer, existing external metal sheet, air cavity and a final external sliding bamboo panel on the east side, which creates an efficient air circulation system, while they can be closed with sliding pleated panels.

Economic performance and compatibility – Prosperity

The financing of this project comes from voluntary funding raised by Vento di Terra NGO. All money has been spent in Abu Hindi surroundings. Moreover the building activity, carried on as auto construction by Bedouin workers with the supervision of ARCO team, improves their professionalism and accessibility of new higher-skilled jobs, thus producing a tangible long-term benefit for local communities. All materials and elements are provided by local builders or artisans, thus boosting local economy and opening new market areas in the building sector for unusual and very cheap low-tech materials, such as straw and bamboo. Cost and easy availability on site of materials used make local communities independent from any scarcity, commercial embargo or inflation.

Relevance to target issues by author

Innovation and transferability – Progress

Innovation and transferability are relative concepts, as they are related to the context in which they are. This project answers the local inhabitants’ attitude towards building activity in Palestine, introducing the practice of sustainable refurbishment of existing buildings. We basically work on the envelope making an innovative use of low-cost and low-tech materials. This simple solution is highly transferable in many situations to improve existing buildings in poor countries. Moreover the creation of an illustrated instruction booklet makes dissemination of this technique easy and fast. Local workers employed for this building can now spread their acquired knowledge and autonomously apply it to other situations.

Ethical standards and social equity – People

The Abu Hindi Primary School project was borne from a strict cooperation and exchange of ideas and information about needs and desires between the Jerusalem Bedouin Committee of Aatica, the promoter Vento di Terra NGO and the ARCO team. This building refurbishment answers the children’s need for a safe, clean and functional school and to the need for an identity collective place for the whole Abu Hindi community. Local inhabitants are employed as workers in a process of complete and transparent participati-

Environmental quality and resource efficiency – Planet

Refurbishment activity is a highly efficient use of land, moreover of basic importance; in a country with land scarcity as Palestine. We use low tech materials, easily available and recyclable, with minimum environmental impact, passive mechanisms for thermal energy balance, offered by the bamboo shading panels, ventilated air cavity of the external walls, transpiring walls made of straw and mud, ventilated roof.

Contextual and aesthetic impact – Proficiency

ARCO uses simple cheap materials to reach high performance and architectural quality. The color and texture of bamboo panels, naturally changing with sunshine, is in harmony with the desert landscape. The creation of strip windows on top of external perimeter walls, together with classrooms internal white plastering, creates a warm and beautiful natural light inside the building. The restoration of the building brings a great positive impact on children perception of their everyday school life.

Regional Holcim Awards competition 2011

Silver Award Africa Middle East

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