

# Vocational Training to Support Start-Ups



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In the framework of the New Urban Resources (NUR) Project, vocational training was prioritized to help build the vocational skills of Palestinian youth. Developing vocational skills was entrusted to EnAIP Piemonte, a nonprofit association that operates nationally and internationally to service youth, workers, and companies, and VIS –

Volontariato Internazionale per lo Sviluppo an Italian NGO with decades of experience in the vocational training sector. These parties worked closely together to identify teachers, develop detailed plans, and deliver vocational training modules.

The training specifically focused on boosting youth skills in the installation of renewable energy systems and providing technical and vocational skills, as well as general competences to position them for future career opportunities. The training began with technology modules followed by business-creation modules, including a hackathon.

After designing the macro-project, EnAIP and VIS identified the teaching skills needed and selected two Italian engineers (a male and female to ensure gender equality). The two teachers designed detailed training modules and developed teaching material, paying careful attention to both technical-methodological and linguistic aspects. (Italian material was translated into Arabic and English.)

In the preparatory phase, meetings took place in Italy with a live link to Palestine. This was vital in gathering necessary information to adapt the project to the setting. Interaction between the Italian teachers, the project coordinator in Palestine, and the local tutors was fundamental. The success of the project was contingent upon continuous feedback, and the working group's ability to adapt the initiative to the Palestinian context.

The on-site training has also been particularly important: EnAIP and VIS organized an intensive five-day training-of-trainers (July 2018) on the subject of renewable energy. Beneficiaries included five teachers from the Salesian Technical School in Bethlehem who were selected to be future tutors: two engineers, a head teacher, an electronics teacher, and an electrical engineering teacher. The training was led by a Palestinian engineer with skills in the sector as a teacher of renewable energy at the Industrial School of Deir Debwan, and founder of a small company that

**Within the framework of the NUR Project (co-funded by the Italian Agency for Development and Cooperation), EnAIP Piemonte and VIS NGO cooperate with Palestinian entities to provide vocational training in the field of renewable energies and to incubate new start-ups with innovative business ideas that focus on the effective and smart use of green power.**

■ Training the trainers on the photovoltaic system used for teaching purposes at the Salesian Technical School in Bethlehem.



installs solar panels. Thanks to this theoretical and practical training, the teachers became tutors for courses that were implemented in 2019.

Four courses on energy efficiency and the use of renewable energy (design and installation of photovoltaic panels) took place in March-April 2019 with 60 attendees (28 young people aged between 18 and 25, and 32 electricians), divided into four groups according to age and skills. The youth participated four hours a day over two weeks, while the tradespeople attended seven evenings plus a morning of outdoor activities. The courses were led by five teachers (two Italians and three Palestinians), who were joined by four local tutors. Two Palestinian teachers gave two additional training courses designed to provide business-creation skills (business, life skills, and solar energy business model canvas, June-July 2019). In total, 43 people took part (25 youth and 18 tradespeople). After a time of evaluation, certificates were issued to 103 participants from a variety of educational and career backgrounds. These differences were

vital to the success of the courses.

The training incorporated **integrated learning**, which alternates frontal instruction (using the blackboard, presentations, factsheets, online resources, and audio-visual materials) with interaction and discussion between the members of the group/class. Each student was encouraged to participate as fully as possible in order to develop active listening and knowledge-management skills. **Hands-on learning** required students to carry out tasks, exercises, and real-life activities, becoming active participants in the learning process. The teacher supports the students by offering advice and various problem-solving methods. The focus is on motivation and teamwork: discussing, evaluating options, assuming responsibility, making decisions, and managing conflicts. Both teachers and students used **interactive skills assessment tools** to follow up on the hands-on activities. Teachers used them to give students feedback on their performance, and students used them for self-assessment and to gain awareness of their progress.

■ Students visit the photovoltaic system installed on the roof of the bus station in Bethlehem.



■ Participants in the hackathon on renewable energy during the monitoring mission organized by the city of Turin.

During the training course, EnAIP Piemonte carried out technical/scientific monitoring activities designed to evaluate the project as a whole and the good practices that emerged in order to reproduce them.

A hackathon took place at Bethlehem University in November 2019 to select innovative ideas to incubate in four start-ups. During a hackathon, participants work on a problem for a limited period of time, looking for the most suitable solutions in the context. First, the theme of the hackathon was introduced, namely the innovative use of renewable energy sources, with the support of mentors and experts in the environmental sustainability field, whose task was to encourage participants to come up with suitable business solutions.

Out of the 31 business ideas conceived by individuals or groups, some were short-listed, and then made it through to the final selection of projects to be incubated. Four ideas were considered worthwhile to start a pre-incubation process

that aimed to perfect and fine-tune the idea, while another four embarked on a genuine incubation process, two through the Bethlehem Business Incubator (BBI) and two through the Yunus Social Business Center (YSBC). Social aspects were also included among the evaluation criteria, which were not linked solely to the creation of profit but which also focused on improving the lives of the underprivileged.

The following ideas were selected for pre-incubation: **a PV thermal panel** – photovoltaic and solar systems integrated into a single panel; **a PV-powered wheelchair** – a wheelchair power system that used a photovoltaic panel installed as a roof (capable of recharging the battery); **a carpet that generates energy from footsteps** – a system capable of generating electricity by exploiting the piezoelectric effect; **a portable charger (bicycle)** – a charging station for electric bicycles (and other means of transport), powered by photovoltaic panels that can be installed in various parts of a city.

The ideas selected for incubation through the BBI included **a hot water tank** – a thermal storage system that exploits the properties of phase-changing materials; and **power management at home** – an electricity-consumption control system that is capable of managing and optimizing power use.

The ideas selected for incubation through the YSBC included a **mobile app for waste** – a mobile application to increase the efficiency of municipal solid waste collection by means of a points system for users (as an incentive), to encourage recycling; and **a stick for those who are blind that is operated by solar energy**: a stick equipped with active sensors to enhance perception of the surrounding environment.

One of the main elements for the success of the training program was the full collaboration involving all the stakeholders, starting with identifying training needs. Great attention has been given to teaching materials and methodologies. Methodologies were adapted to the different target groups, and the efficient equipment and teaching materials at the Salesian Technical School that made available the equipment for the laboratories and the photovoltaic system on the roof of the school (and used as a specific case study and resource for practical exercises) proved suitable. Other success factors include the attention given to gender differences when involving teachers and students, attention to good organizational coordination with context-related problem-solving skills, ongoing and follow-up monitoring of the training, and full integration of Italian teachers and local tutors, thanks to daily coordination by VIS.

Article photos are courtesy of the authors.

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■ Mustafa, one of the young students, is using a red multi-meter and is happy to be part of the project.

