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Final Report

Market Transformation for Solar Water Heating in Albania

Swiss Assistance to the UNDP/GEF-Programme

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Executive Summary

Within the framework of the GEF Albanian country SWH-programme, managed by UNDP Tirana, a consortium of Swiss institutions and consulting companies, led by INFRAS, has provided assistance during the year 2010 to 2012, with a focus on capacity building in the field of testing and quality management on the supply side.

The overall objective of the UNDP/GEF-programme is to accelerate a sustainable market development of solar water heating in Albania with good quality products and services. Specific objectives are:

- Installation of additional 75,000 m2 new solar water heating systems during the programme period, and a total installed capacity of SWH systems of 540,000m2 by 2020,
- Reduction of GHG emissions by 800'000 t of CO2 (cumulative amount) till 2020.

The main objective of the Swiss assistance was the improvement of quality of solar thermal systems designed, manufactured and installed by Albanian designers, planners, manufacturers and installers. Specific objectives of the Swiss contribution were:

- Capacity building in testing for Albanian manufacturers and testing institutions,
- Capacity building along the local supply and services chain: Improving the quality of system design, engineering, fabrication and installation – and to strengthen the trust of prospective customers into SWH technology – through the training of company staff active in these fields.

The main contribution of the Swiss consortium to the UNDP/GEF-programme comprised two components:

- Training in testing at SPF in Rapperswil, study tour to Switzerland for manufacturers,
- Training courses for and support to supply side actors in Albania.

The Swiss assistance is considered to have had the following impacts:

- The awareness for quality concerns and for the need for quality and quality management has increased among the supply side actors.
- The Albanian manufacturers have understood the value of proper quality testing methods and equipment. They have also realised, however, that testing can be very costly and that the establishment of a complete and well equipped test plant will most likely remain an illusion in Tirana.
- The Albanian actors have realised that, in a globalised world, the Albanian solar thermal market is no isolated market. The Albanian manufacturers have to compete with their quickly increasing number of competitors. This in particular means that the initial idea to create a local Albanian standard and labelling system is unrealistic since such a label would be of no value in practise.

It is further assumed that the quality of new solar thermal systems to be designed and implemented in Albania is in the process of being improved and will further tend to improve:

- the Albanian manufacturers should be in a position and motivated to continue the constant quality improvement and optimisation process including the redesign of the main components (mainly solar thermal collectors and storage tanks), the replacement sub-optimal materials and of components,
- The Albanian planners, engineers and installers should be prepared and eager to further improve the quality of design and installation of the solar thermal systems they are involved in future. Moreover, they should be able to design, plan and install larger and more complex systems, and see the necessity to work more carefully.

1. Introduction, Background, Project Setup

Over 80% of the domestic hot water heating systems in Albania are powered by electricity. At present, about 2/3 of Albania's total electricity consumption is used for the domestic hot water and space heating. Based on present growth rates of electricity demand of more than 8%, Albania's most realistic and economical way to stabilise electricity consumption will be alternatives for the bulk of its electricity demand using renewable energy resources. Albania, with its typical Mediterranean climate, could in fact offer preferential climatic conditions for the utilization of hot water system based on solar thermal energy. Till date, the market for solar water heating systems has however been very limited and markets grow at a rather slow rate.

In 2005, the National Energy Agency (NEA) of Albania proposed a project to GEF's executive board designed to accelerate the market development for solar water heating (SWH) in Albania. The SWH (Solar Water Heating) Albania Programme is one of the first country programmes that together build GEF's Global SWH Programme.

Within the framework of this GEF-Albanian country SWH-programme, managed by UNDP Tirana, a consortium of Swiss institutions and consulting companies, led by INFRAS, has provided technical assistance, with a focus on capacity building in the field of testing and quality management on the supply side.

Unfortunately, the country programme of Albania suffered from an extremely long starting phase. While the project document of the SWH Albania Programme had been submitted to UNDP/GEF in September 2007, the GEF/UNDP Global Solar Water Heating Programme (as umbrella for the Albanian SWH Programme) only got the GEF EB endorsement on 29 July 2008. Even then, the Albanian UNDP/GEF-programme – and hence the Swiss assistance – had to wait for the official endorsement and the financial contribution of the Albanian Government, which was delayed up to autumn 2009! As a matter of fact, the Swiss consortium could only launch its activities after a series of inception workshops conducted by UNDP in Tirana in the first quarter of 2010.

2. Objectives

The overall objective of the UNDP/GEF-programme is to accelerate a sustainable market development of solar water heating in Albania with good quality products and services. Specific objectives are:

- Installation of additional 75,000 m2 new solar water heating systems during the programme period,
- Total installed capacity of SWH systems of 540,000m2 by 2020,
- Reduction of GHG emissions by 800'000 t of CO2 (cumulative amount) till 2020.

The main objective of the Swiss assistance was the improvement of quality of solar thermal systems designed, manufactured and installed by Albanian designers, planners, manufacturers and installers. Specific objectives of the Swiss contribution were:

- Capacity building in testing: Training the staff of the leading institute in the field of system testing and demonstration, with a view to promote SWH systems in Albania and to build up Albania's future competence centre in SWH systems;
- Capacity building along the local supply and services chain: Improving the quality of system design, engineering, fabrication and installation – and to strengthen the trust of prospective customers into SWH technology – through the training of company staff active in these fields.

During the inception phase of the Swiss contribution it was realised that the first objective, the training and support of the testing team supposed to operate the mobile test bed at the Harry Fulz Institute (HFI) in Tirana, has to be dropped. The reasons were:

- Incompatibilities of the testing philosophy and methods used by the Swiss specialist (SPF) responsible for the testing with the mobile test equipment designed, supplied and installed by a German institution that had provided assisted to the UNDP/GEF-programme and its key actors in the early phase of the overall programme
- The lack of qualified staff, considered to be competent to build-up, market, operate and maintain testing facilities for solar thermal components adequate to suit the needs of the solar supply side actors at the HFI. The business plan for the development of these testing facilities, which could not at all convince the Swiss consortium, contributed to the lack of trust to be able to achieve a stable set-up and a sustainable operation of the test facilities.

The support of the Swiss consortium therefore strongly focussed on the capacity building on the supply side (manufacturers, designers, planners and installers).

3. Strategy, Approach, Organisation and Activities

The Swiss assistance package was designed and implemented as follows:

Strategy

The strategy chosen comprises three pillars:

- Capacity building, managerial and technical assistance in the field of design, fabrication, testing, planning, engineering and installation of SWH systems
- Strengthening capacities of supply side actors already existing and involved in UNDP/GEF project
- Concentration of the capacity building to rather large and complex SWH systems “high end applications” (mainly for public and service sector buildings, e.g. hotels, hospitals, buildings of national institutions and international organisations) as lighthouse projects to promote the aspired market acceleration.

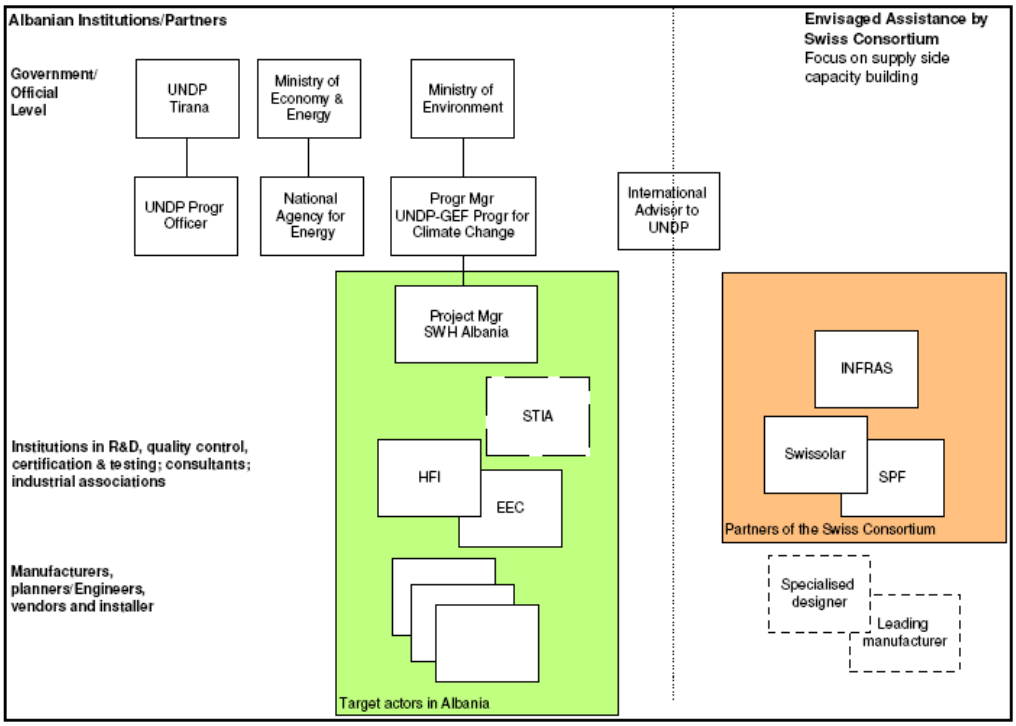
Approach

The project design foresaw two phases:

- Phase 1 – Inception/planning phase: Assessment of situation in Albania, identification of prospective key actors for implementation, elaboration of detailed proposal and discussion with the local Albanian partners (UNDP, HFI, private sector actors), refocus/embedding into the UNDP/GEF country programme, detailed specification and planning of Swiss assistance package
- Phase 2 - Implementation phase: Implementation of capacity building programme as described below. During which the Swiss team shall provide assistance to the following programme components (of the UNDP/GEF Programme).

Project Organisation

The figure below shows the basic structure of the project with its main Albanian and Swiss actors.



The Albanian Partners

Existing Execution/Implementation Arrangement

The National Agency of Energy (NAE) is the local executing agency that manages the project on behalf of the Government of Albania. It is supported by the Climate Change Unit of the Ministry of Environment, UNDP's local office, national and international experts. During the starting phase, an international consultant was contracted to guide the local UNDP staff in Albania.

At the implementation level, the target actors of the Swiss assistance are:

- Harry Fultz Institute (HFI): A technical high school, selected by ADA to host and operate the mobile testing facility, financially supported by the Harry Fultz Foundation, USA;
- Albania-EU Energy Efficiency Centre (EEC): The leading local technical Institute at the University of Tirana, the backstopper of HFI in the starting phase. The head of EEC, Mr. Edmond Hido, is the renowned Albanian expert for the use of renewable energy resources and a specialist in solar energy applications;
- Solar Thermal Industry Association (STIA): the Albanian roof organisation originally envisaged be built up during the project.

The Swiss Consortium

The Swiss consortium that provided the agreed services to the Albanian partners and to UNDP/GEF consisted of the following three partners:

- INFRAS (Lead) : Private consulting firm experienced in providing es consulting services in the fields of energy, environment and economy and related policies in developing countries.
- SPF, at Hochschule Rapperswil: internationally recognised institution for testing and R&D regarding solar thermal technologies.
- SWISSOLAR: Swiss roof association in the field of solar energy, with special competences in the field of solar thermal standards and capacity building.

Implementation, main activities

The main contribution of the Swiss consortium to the UNDP/GEF-programme comprised two components and included the following activities:

– *Core component 1 - Training in testing at SPF in Rapperswil, study tour to Switzerland for manufacturers:*
  As the first part of the planned series of trainings, the training and study tour for Albanian manufacturers took place in Switzerland from 30 May to 9 June 2011. Key characteristics of this training were:
  - Target group: Albanian manufacturers of solar thermal components, including an Albanian interpreter and tour organiser
  - Concept and time plan: Study tour and specific training in Switzerland and Germany, consisting of three components:
    1-3 June 2011: Training at SPF in Rapperwil (based on solar thermal components manufactured and delivered by Albanian manufacturers)
    6-7 June 2011: Visit of two Swiss manufacturers of SWH equipment and visit of a few of their SWH installations in Eastern/Central Switzerland
    8-9 June 2011: Visit of Intersolar Europe in Munich.
– *Core component 2 - Training of and support to supply side actors in Albania:*
  - Target group: Apart from the manufacturers, this training component also addressed most other (i.e. non-manufacturing) actors on the supply side of the SWH market, i.e. architects, engineers, planners, importers of SWH-equipment, installers of SWH-equipment.
  - Concept and approach: Two training weeks in Albania in November 2011 and June 2012, each training comprising two parts:
    Part 1: “In-class training” on solar fundamentals, prepared and lead by Swiss solar thermal expert (Swissolar) to achieve a solid and common background for the participants.
    Part 2: Individual “on-the-job-trainings” to get a direct support bound to real projects, conducted “upon roofs”, mostly in the city of Tirana, but also in other cities. Training sessions were “tailor made”, based on requests of the participants to get support and training with a view to concrete contracts they have at hand. Further training objects were SWH-systems that were already installed and in operation, whereby for most of them problems were reported or the operation of these systems had already been stopped. The participants, guided by the Swiss expert, could review, examine and discuss strong and weak points of the design and installation of the system, identify critical or even faulty elements and discuss possible improvements.

4. Results

Results with reference to Component 1 - Training in testing at SPF in Rapperswil, study tour to Switzerland for manufacturers

Four Albanian manufacturers of solar thermal systems and one representative of the Harry Fulz Institute (HFI), responsible to build up the testing facility at HFI participated in the training and study tour in Switzerland.

As a basis for the testing and training at SPF in Rapperswil, each manufacturer that had expressed his interest to participate in the training at SPF had to produce two identical collectors and send one for inspection and testing to SPF in Rapperswil.

SPF pre-tested the supplied materials and also prepared and conducted a tailor-made one week programme for the Albanian participants. During this week, the participants could augment their knowledge, skills and experience substantially. Heart of the training at SPF was the detailed physical examination and testing of the solar collectors of all the participating Albanian manufacturers at SPF's premises in Rapperswil. Possible improvements in design, materials, way of fabrication and tools were discussed with Swiss experts. This should provide the basis for the redesign and the modification of materials and fabrication process of the Albanian manufactured components (see Chapter 5).

Other key benefits of the participants were:

- practise oriented "learning by doing" through a) the joint execution of performance and quality tests of Albanian solar collectors, and b) the demonstration and explanation of the most relevant mistakes in design and fabricating of the collectors, which caused problems in performance and quality, to the manufacturers
- the exposure of Albanian manufacturers and tester to international standards, testing and quality methods and procedures, in particular the characteristics and the process to undergo certification as per Solar Keymark
- learning from demonstration objects at highest international standards, in particular from the exposure to large scale solar systems, thanks to the visit to different installations and
- getting to know customers' requirements in a developed solar market through contacts and communication with Swiss solar thermal market leaders and the exchange of views with their clients and with operators of relative large and complex applications in Switzerland
- the establishment of international connections to the solar thermal market scenery, that the participants managed to set up during the visit to "Intersolar Europe" in Munich in June 2011.

Results with reference to component 2 - Training of and Support to Supply Side Actors in Albania

Training documentation and attendance

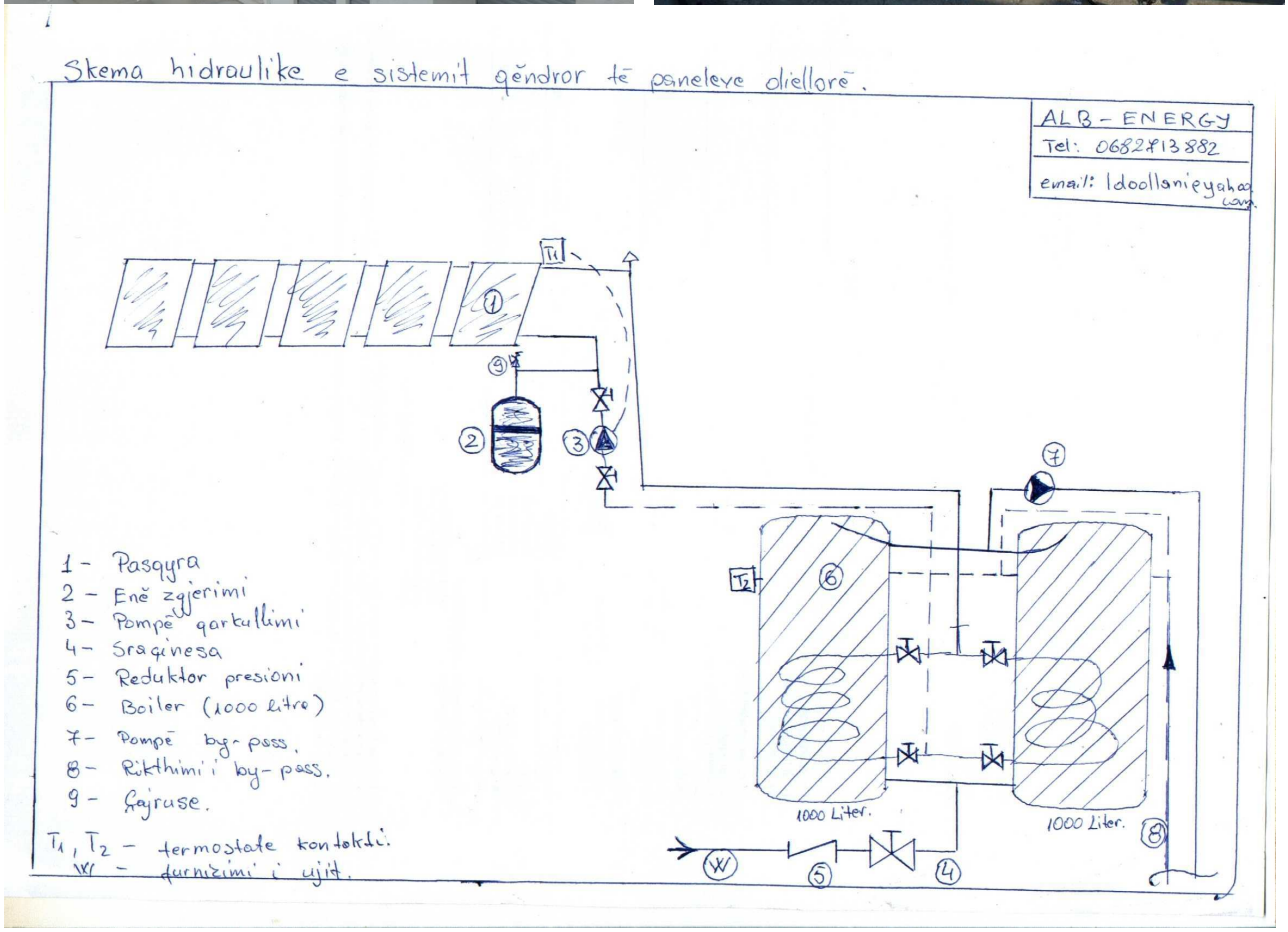
As a basis for the trainings in Albania, the Swiss expert – in close collaboration with the Albanian project partner – prepared a subset of the new Swiss training handbook "Solarwärme", recently revised for the training of solar professionals in Switzerland, translated into Albanian language. Based on the handbook, visual aids and training exercises were prepared for the in-class training, too. The training manual and the additional training documentation for instructors was used and hopefully will further be used for the training of solar planners, manufacturers, importers and installers in Albania.

Both trainings were attended by a group between 20 and 30 participants, all active in the field of designing, planning, engineering, manufacturing and testing SWH systems, including some UNDP project team members and instructors from vocational training centres.

"In-class trainings"

With the help of the new manual and the training provided in Tirana, the participants got the opportunity to both strengthen their theoretical know-how and their practical skills as well as to get a better understanding of fundamentals and to particularly widen their knowledge concerning larger and more complex applications.

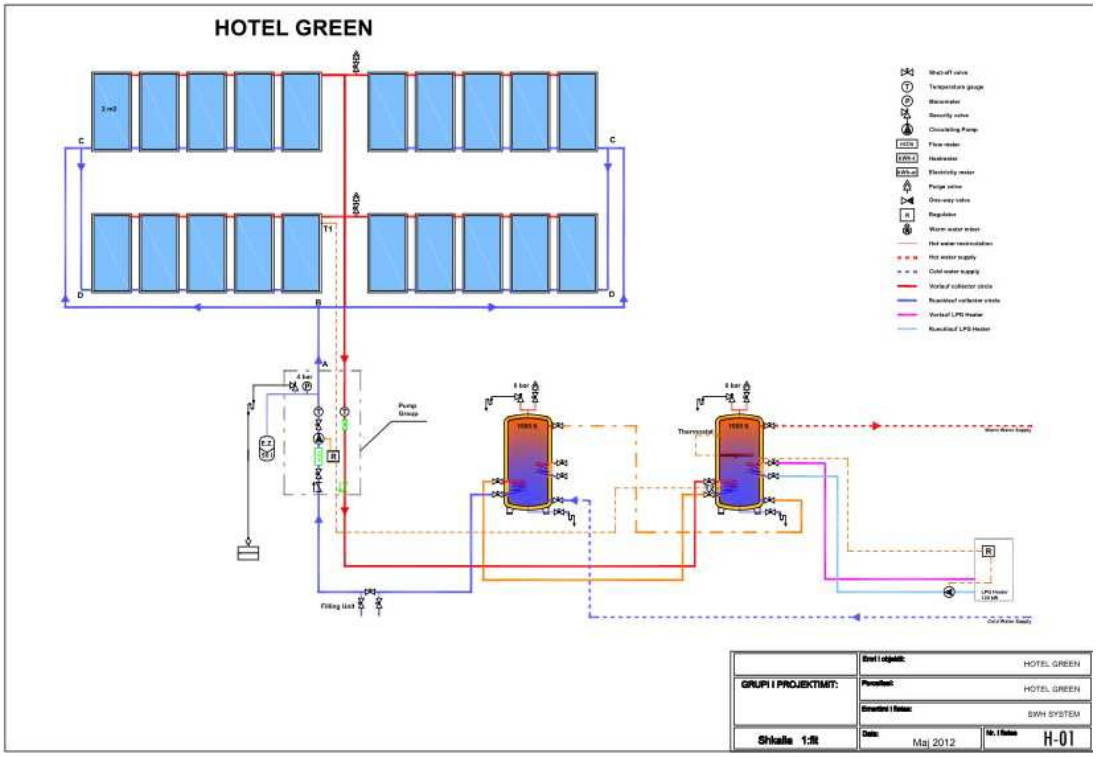
“On-the-job trainings”



Through the guided learning from own mistakes and/or errors of others, the participants could acquire new skills and make experience in professional trouble shooting (analysis of systems not working properly or out of service) and the way to find and arrive at better solutions, including partly the replacement of faulty components and the implementation of improvements on the spot. This training also included professional expertise and practical hints of the Swiss expert with a view to alternative system designs, which could provide better solutions for the same application.

Based on the expertise and new thoughts brought in by the Swiss expert, and enforced by numerous discussions among the participants as well as with planners and clients, the basis

was laid to improve the design, layout and engineering of new plants, as well as for the modification of the examine or other plants of the suppliers/installers participating in the training.



5. Impacts, Outcome

Impacts of the Swiss Assistance

The Swiss assistance is considered to have had the following impacts:

- The awareness for quality concerns and for the need for quality and quality management has increased among the supply side actors.
- The Albanian participants of the training and study tour in Switzerland have got the opportunity to compare their quality of their products and services with Swiss quality. They have also got the chance to exchange view with Swiss supply side actors and have seen new fabrication procedures and tools. This has expanded their know-how and experience

to improve quality and will certainly trigger further new ideas that will ultimately lead to better quality of products and services.

- The Albanian manufacturers have understood the value of proper quality testing methods and equipment. They have also realised, however, that testing can be very costly and that the establishment of a complete and well equipped test plant will most likely remain an illusion in Tirana.
- The Albanian actors have realised that, in a globalised world, the Albanian solar thermal market is no isolated market. The Albanian manufacturers have to compete with their quickly increasing number of competitors. This in particular means that the initial idea to create a local Albanian standard and labelling system is unrealistic since such a label would be of no value in practise.
- The Albanian actors have also realised that the solar thermal market is demanding. There are no simple systems and quick fixes and unlikely – at least in the staring phase – big profits. To be successful and to reduce risks, quality is a must. In order to ensure the supply and installation of reliable systems, a company should not start with a complex system design but rather use a simple and robust design and install first systems in easily accessible locations.

It is further assumed that the quality of new solar thermal systems to be designed and implemented in Albania is in the process of being improved and will further tend to improve:

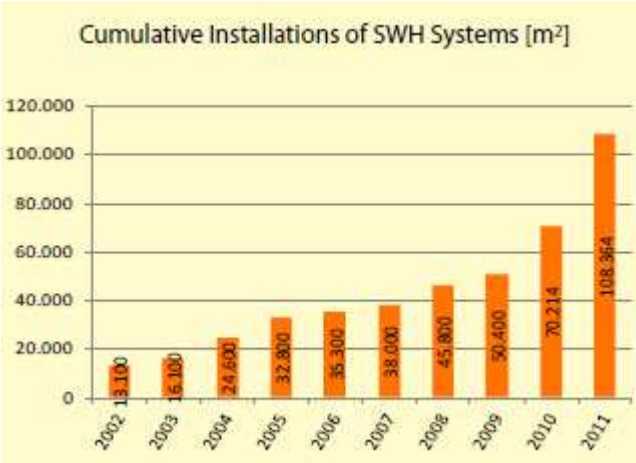
- The Albanian manufacturers should be in a position and motivated to continue the constant quality improvement and optimisation process including:
  - the redesign of the overall solar systems (pumped systems vs. thermo-syphon system, types of storage tanks),
  - the design of main components (solar thermal collectors, storage tanks, pumps, control and piping systems), and
  - the replacement of sub-optimal materials and of components (inadequate thermal insulation material, pumps, hydraulic piping, thermostats, etc.).
- The Albanian planners, engineers and installers should be prepared and eager to further improve the quality of design and installation of the solar thermal systems they are involved in future.
- Moreover, they should be able to design, plan and install larger and more complex systems. However, the large number of badly designed or inoperative systems observer during the field visits in Albania, mostly pure hot water applications, made it clear that the capacity building should continue to focus on pure hot water installations. The time seems to be too early for the relative inexperienced Albanian suppliers to design, engineer and install solar thermal systems to produce hot water for space heating or even for production processes. These are still too complex, providing a risk that the image of solar thermal systems is due to low quality and additional incomplete or faulty systems
- As a consequence of the push to increase quality, costs are expected to rise. At a first glance, this seems to decrease economics of the locally produced solar thermal systems. Given the large number of badly designed or faulty systems found during the numerous site-visits in and around Tirana with substantially reduced generation capacities (compared to the performance achievable under normal operation conditions), costs per kWh generated will however clearly be decreased.

Since only two months have passed since the last training, and there were so far no opportunities for another visit to Albania to see for progress, the last three points are hypotheses which remain to be verified.

Intermediate Outcome of UNDP/GEF-Programme

Of interest is the observation of the UNDP-programme management that the Albanian SWH market has developed as per the expectations. The targeted figure of 75'000 additional m^2 collector area installed by the end of the programme (2014) has already been reached (see

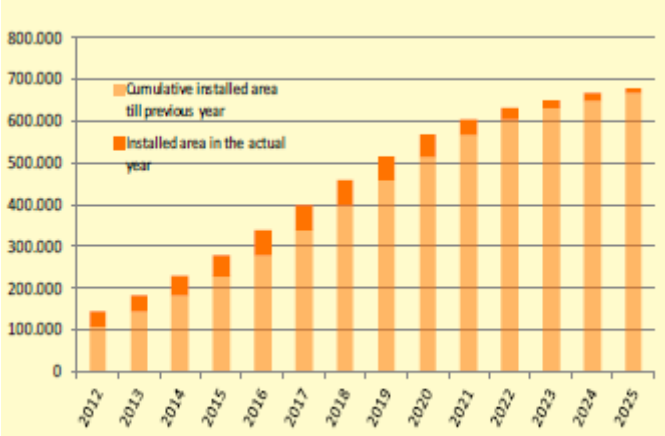
figure below; source: UNPD's SWH Newsletter April 2012). Another interesting fact is the visible trend showing in particular an increasing demand for relative large and complex SWH-applications in hotel/tourism and in the food industry. The type of SWH systems required for these market sectors are exactly those on which the capacity building approach has been focussed from the very beginning.



6. Future Prospects

Prospects for the overall market development

Given the trend of solar installations in the first five years of the UNDP/GEF-SWH-Albania-programme and the market expansion in the industrial sector, the market of solar thermal collectors in the next ten years is expected to continue to steadily rise. According to the projections made in the framework of the country programme, the cumulative installed surface of solar thermal collectors by 2025 is expected to reach an overall of 660,000 m^2 (as shown in the figure below; source: UNPD's SWH Newsletter April 2012). The final level predicted is clearly beyond the initial target figure of the country programme, a collector area totalling at least 540'000 m^2 by the year 2025.



Expectations among the Albanian partners

UNDP/GEF Tirana, in particular its project manager, and the other Albanian partners are very keen to continue and extend the highly esteemed cooperation with the Swiss experts and trainers. They can hardly understand why the Swiss assistance is terminated before the end of the UNDP/GEF-programme. They consider the termination of the Swiss support to be

inefficient, as the marginal costs of additional trainings, in particular those in Albania, would be fairly low compared to the "initial costs" accumulated during the long start, inception and planning/preparation phase. This is particularly true, as the Swiss consortium, more or less compelled to terminate its support and project by the end of June 2012, has not fully used up its budget.

Proposed extension of Swiss support

The Swiss consortium has therefore intensively discussed options to extend the project with the Albanian partners and has developed a number of ideas.

(A) *A Minimum-Budget-Option* is to extend the Swiss capacity building support through one or both of the actions as given below:

(A1) Additional training, with a focus on further on-the-job trainings in Albania: Christian Völlmin, the Swiss expert that was responsible for the trainings in Albania, would be ready to plan and conduct another mission to Tirana later this year or in spring 2013.

(A2) Organisation of a stage for one or two young staff of Albanian manufacturers as hands-on-training with one of the leading manufacturers and/or installers of solar thermal systems in Switzerland.

(A3) Support to the specification, identification and procurement of tools and machinery that help to improve manufacturing and/or installation processes and hence have a strong potential to increase the quality of products, systems and services.

With a longer perspective and a larger budget, the Swiss and Albanian partners have jointly worked out a basic concept for a more substantial extension of the current capacity building project. The focus of the proposed extension is outline below.

(B) Swiss financed *Follower-Project*, concentrating on two areas:

(B1) SUPPLY Side: Extended support to capacity building and quality improvement

- Further support to quality enhancement of locally produced or assembled panels and systems
- Guidance for Albanian manufacturers to receive Solar Keymark certification
- Professional/Vocational Training: Development of curricula for solar planners and installers (based on the recently established Swiss profile "Solarteur") and introduction of this new profile/course at a professional school/vocational training centre

(B2) DEMAND (market) Side: Support to innovative building standards/regulations and demo *projects*

- Support to the development/adoption of new building energy efficiency regulations promoting the use of solar thermal systems (responding to a request of the Ministry of Public Works)
- Technical and financial assistance to demonstration projects in new market areas such as public and multi-apartment buildings (if possible with a strong link to B1)

Envisaged timeframe for the proposed extension of the Swiss Support as per option (B):

- Phase 3: Begin of 2013 to end of 2014 (end of UNDP/GEF-programme)
- Optional Phase 4: 2015 (as UNDP/GEF-programme will most likely be extended, too).

Though they have expressed a high interest in extending the collaboration, neither UNDP nor the private sector is however prepared to provide the necessary funds. The Swiss consortium has therefore approached seco/WEIN with a view to explore the opportunities to get financial assistance from seco to finance and enable the extension of the project. Though seco seems to basically support the idea and the concept for the extension, the project manager for Albania has made it clear that seco does currently not have a budget to provide the requested financial support.

Possible replication of the project in other countries

Most neighbour countries of Albania, i.e. Macedonia, Montenegro, Southern Serbia (Kosovo) or Bulgaria can offer very similar conditions for the acceleration of the solar thermal market as in Albania:

- similar demand for hot water
- similarly attractive atmospheric conditions for solar systems (solar radiation and duration of solar exposure)
- low penetration of solar thermal systems
- relative high operation costs of fossil powered hot water systems vs. low incomes/ household budgets for hot water.

As a matter of fact, German institutions have already launched similar activities in the field of testing as in Albania. Again, as in Albania, these seem to be rather isolated activities that are not planned as part of an overall concept to strengthen quality management of solar thermal systems.

All partners of the INFRAS consortium team are convinced that the replication of the Swiss capacity building initiative would make sense in one or several of Albania's neighbour countries in the Balkan region, provided basic structures and a similar programme such as the UNDP/GEF-programme is at sight or already in the phase of preparation or even in operation.

7. Conclusions and Recommendations

Conclusions

The INFRAS consortium is confident that the outcome of the Swiss assistance to the UNDP/GEF-programme in Albania is very positive and highly appreciated by the Albanian partners, and that the actors on the supply side have been able to strongly benefit from the Swiss support.

Particular strengths of the Swiss capacity building have been the opportunities for the Albanian beneficiaries to get exposure to international (Swiss) planning, manufacturing and installation standards, techniques and practises, the strong focus on the range of relative large and complex applications which have so far not achieved the required level of attention but have meanwhile generated increasing interest in the Albanian SWH market, and the practise oriented and hands-on approach and experience provided by the Swiss experts. These elements combined are considered to provide optimal grounds to transfer the newly gained know-how into new and own experiences of the Albanian supply side actors.

The three main challenges for the Swiss consortium were:

- the very long phase to start the project on the UNDP/GEF-side due to unavailability of government funds,
- the limited number of manufacturers that were prepared to enter a commitment to cooperate with the UNDP/GEF-project and the Swiss consortium over a longer period, and
- the lack of documentation concerning the existing but often faulty solar thermal systems that were selected as show and training cases for the on-the-job-training of supply side actors in Albania.

In view of the objective to build-up capacities and – on the long term – strengthen institutions that have the potential to form a sustainable basis for the continuous process to enhance know-how, skills and experience to contribute to the spreading of SWH systems all over Albania, short trainings and study tours are not enough. If a higher stable standard of quality of

products and services should be achieved, the duration of trainings and the exposure to international experts and systems has to be elongated. On the long run, this can best be achieved by a combination of two elements:

- the development of suitable curricula for professionals in the field of SWH and the integration and strengthening of such type of SWH vocational trainings at vocational training centres.
- enhancement of the training of solar thermal experts in Albania through stages of several months in a reputed company active in the field of SWH abroad, e.g. Switzerland.

There is also a lack of professional structures and organisation among the Albanian supply side actors. There are no associations yet that advocate the interests of the SWH-companies and institutions. The Swiss consortium considered the support to build up and establish such a roof association in Albania but realised it was too early. The supply side actors were not yet interested in this form of cooperation. However, the time might have come meanwhile to think about, discuss, and probably launch the process to establish such a professional association in Albania.

Given the progress and the results achieved with the help of the Swiss assistance to the capacity building process, the Albanian partners have difficulties to understand why the Swiss experts had to terminate their capacity building activities. As contacts are well developed and a certain basis has been laid, training activities should from their and our point of view be extended and further developed at least till the end of the UNDP/GEF programme. This would enable the optimisation of both Albanian and Swiss efforts to further improve qualities of systems and services and would – as initial investments were spread to additional services – ensure an even better ratio of performance and gain to costs of support services.

Recommendations

Based on the experience of the last five years, the Swiss consortium suggests not to simply leave the Albanian partners but to consider undertaking the following steps:

Activity	**Who to undertake?**	**Who to decide (finance)?**
1) Assess and discuss the option for the extension of the capacity building initiative in Albania, along the options A) or B) outlined in Chapter 6 .	INFRAS Consortium in cooperation with UNDP/GEF	REPIC Steering Committee seco?
2) Assess and discuss opportunities for the replication of the Swiss assistance to capacity building in the field of SHW systems in other countries in the Balkan region (see Chapter 6 as well).	INFRAS Consortium in cooperation with UNDP/GEF	REPIC Steering Committee seco/SDC?
3) Launch the development of a concept to expand and strengthen the model for capacity building used so far by additional components such as the embedding of the capacity building in vocational training centres and stages abroad.	INFRAS Consortium in cooperation with UNDP/GEF, swisscontact and the Albanian Government	REPIC Steering Committee ?
4) Discuss the idea of an Albanian SWH roof organisation with relevant and interested actors in Albania and assess the possibilities to provide Swiss support to the establishment of such an organisation.	INFRAS Consortium in cooperation with UNDP/GEF, swisscontact and the Albanian Government	REPIC Steering Committee ?

8. References

The following detailed reports have been assembled and are enclosed as a separate Annex (SolarWaterHeating_Albania_FinalReport_Annex_INFRAS_Cons.pdf) to this Main Report:

Annex A1	Report on Training in Testing at SPF in Rapperswil / Study Tour to Switzerland for Manufacturers
Annex 2a	Report on Training No. 1 for Supply Side Actors in Albania, November 21 to 26, 2011
Annex 2b	Annex to Report on Training No. 1
Annex 3a	Report on Training No. 2 for Supply Side Actors in Albania, May 21 to 26, 2012
Annex 3b	Annex to Report on Training No. 2