



**TOWARDS BUILDING A COMPETITIVE LOCAL RET INDUSTRY**  
Increasing local content and manufacturing capacity of SWH collector components

## Investing in the future - Skills for Green Jobs (S4GJ)

### Intro:

Climate- and environmentally-friendly production standards and competitive generation of electrical energy will have positive impacts on the creation of new jobs, as well as on the preservation and quality of existing jobs. Thus, the South African-German initiative Skills for Green Jobs (S4GJ) aims to improve the conditions for the supply of adequately skilled personnel and energy efficient technologies. Appropriate skills and technology solutions are both critical success factors for the establishment of a green economy.

However, due to insufficient cooperation and capacity constraints of both public and private key players, implementation power for green economy interventions is currently limited. The S4GJ initiative therefore provides support measures for public and private key players to develop and improve coordination mechanisms for such interventions. This is carried out in a practical, visible and replicable manner through experiential learning projects (ELPs), which use applied technology transfers for localisation advancements in renewable energy sectors, for example by increasing local content of solar water heating (SWH) collector components.

## Increasing local production capacities for SWH collector components

### Rationale and problem statement:

The South African government has approved an ambitious approach to revive the National Solar Water Heating Programme (NSWHP). The programme is largely driven by the country's developmental imperatives with specific focus on increasing local manufacturing capacity, job creation and skills development. For public sector procurement the government stipulated a 70% local content threshold requirement for the two main components of SWH systems, i.e. the collector panel and the storage tank, aiming to increase local manufacturing capacity for SWH systems. Subsequently, fully imported collectors or tanks will not qualify under government procurement requirements, for example under the NSWHP.

According to the South African Bureau of Standards (SABS), there are currently only a small number of companies who are potentially in line with the stipulated local content requirement for tanks and collectors, and they exhibit rather limited production capacity. The Skills for Green Jobs (S4GJ) initiative is already supporting the government's endeavours around the NSWHP, for example through crucial skills development to ensure better quality installations of SWH appliances, and supporting activities which increase local manufacturing capacity for SWH systems is an important interface and will create significant synergies.

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# TOWARDS BUILDING A COMPETITIVE LOCAL RET INDUSTRY

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## Increasing local content and manufacturing capacity of SWH collector components – an experiential learning project (ELP)

### Background:

Together with the Department of Science and Technology (DST) and their Technology Localisation Implementation Unit (TLIU), a number of experiential learning projects (ELPs) were initiated through a call addressed to all technology stations, universities and science councils. From the onset, the planning process was designed as a competitive approach and in its very early planning stage linked industry, organised business, technology stations, universities and science councils in order to make advancements in the localisation of renewable energy technology (RET) systems and components. The process revealed that a well designed competitive call, including a description of the technology gap and/or the technical problem that needs to be solved, competitive pressures, market opportunities etc., is an appropriate tool for innovation management and an excellent starting point for advocating localisation advancements for selected industrial RET sectors. It is thus expected that this approach will also be used in future by the TLIU and their host, the Council for Scientific and Industrial Research (CSIR).

As a result of the above-mentioned approach, the project proposal of the Tshwane University of Technology (TUT) of the Department of Higher Education and Training (DHET) with its Technology Station in Electronics and Faculty of Engineering and the Built Environment of the DST, in collaboration with Solardura SA and Sonnenkraft Deutschland GmbH, has been selected as an experiential learning project (ELP). The ELP aims to offer solutions for increasing local content and manufacturing capacity of SWH collector components.

### What is to be expected? What is to be achieved?

Supporting Solardura SA, a representative of the local SWH manufacturing industry and in association with SWH technology manufacturers in the European Union, includes various measures for local content and manufacturing capacity advancements for SWH collector producers. This experiential learning project (ELP) consequently aims to achieve a number of results:

- (i) Demonstrating the cooperation between the Department of Higher Education and Training (DHET), particularly their university branch, and the Department of Science and Technology (DST), the latter being the custodian of the Technology Station Programme (TSP) which placed technology stations on various university campuses.
- (ii) Demonstrating the following impacts at industry level:
  1. Enhancing the local manufacturing process by providing appropriate and state-of-the-art technology, including tooling and equipment for tube punching, frame brazing, ultrasonic welding and component testing necessary for meeting or overachieving the 70% local content threshold requirement for manufacturing and assembly of SWH collector panels.
  2. Initially the creation of around 40 new jobs in SWH collector manufacturing.
  3. Engineering students, i.e. post- and undergraduates, as well as engineers will participate in the project and will be upskilled in relevant manufacturing technologies and testing procedures and standards.
- (iii) Institutional capacity development of implementing agencies will lead to improved innovation management skills of TLIU.
- (iv) Institutional capacity development of technology stations/universities, i.e. the industry-based and solution-oriented technology transfer approach will empower the Tshwane University of Technology to offer local content advancements for SWH component manufacturing by commercialising new technology-based services and products.

- (v) Human capacity development will take place in higher education / academic institutions by incorporating state of the art technologies into academic programmes.

### How to get there: the roadmap

This experiential learning project (ELP) will demonstrate advancements based on solutions that will increase local content and manufacturing capacity for SWH collector components and will be measured against baseline indicators.

### The planning and preparation roadmap (04/15 – 10/15):

- (i) Confirming funding, roles and obligations between DST/TLIU and GIZ/S4GJ.
- (ii) Designing a competitive call as an appropriate tool for innovation management and a starting point for advocating energy efficiency advancements for selected industrial sectors. This includes a description of the technology gap, competitive pressures, market opportunities, collaboration requirements and risks involved. For each major activity the proposals need to describe the work to be undertaken, including:
  1. Procedures or research methods to be employed
  2. Project members involved in each task and their role
  3. Expected duration of each activity
  4. Indicators of success and completion criteria (objectively verifiable)
  5. Hardware and expertise required (financial requirements)
  6. Milestones and deliverables
- (iii) Implementing the call, i.e. inviting project proposals, adjudication and contracting.
- (iv) Fine-tuning the project and confirming:
  1. Project objectives and baseline values
  2. Roles and obligations, including post-project commitments of all stakeholders, such as Tshwane University of Technology, Solardura SA (industry) Sonnenkraft Deutschland GmbH (industry and technology partner), Research and Test Centre for Thermal Solar Systems (TZS), University of Stuttgart (technology partner), DST/TLIU and GIZ/S4GJ
  3. Hardware and skill requirements
  4. Implementation timelines (Gantt chart) for project activities and expected outcomes reflecting the entire scope of work to be undertaken (realistic project plan)
- (v) Establishing a communication strategy and Monitoring & Evaluation (M&E) mechanisms.

### The implementation and learning roadmap (10/15 – 06/17):

- (vi) Procurement of hard- and software (local and from Germany) through DST/TLIU/CSIR.
- (vii) Contracting technical expertise for training/skills development, both locally and in Germany through German resources matching DST's support allocation.
- (viii) Project implementation (technology demonstrator) against a realistic project plan including critical milestones, activities, resource and timing dependencies.
- (ix) Assessment of results and relevant processes based on M&E mechanisms.
- (x) Project documentation and recommendations for commercialising new technology-based services and products.

### Who is actively involved?

Tshwane University of Technology | Solardura SA | Sonnenkraft Deutschland GmbH | Research and Test Centre for Thermal Solar Systems (TZS) - University of Stuttgart