MinWaterCSP

Minimized water consumption in CSP plants

Deliverable 10.9:
Communication / Dissemination actions at events – part 3
WP 10, Tasks 10.5 Events

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0 Publishable Summary

The Communication and Dissemination activities of the MinWaterCSP consortium comprise diverse tools to reach and promote the project achievements and results.

The following deliverable report describes in more detail the event related activities carried out by the consortium during the last 11 months (M26-36).

The objective of this task was to:

- **Create wide visibility** and
- to **ensure the acceptance of the technological improvements** of the MinWaterCSP project as well as of its activities and benefits among the public, technical and legislative audience by **awareness raising** communication actions.
- **Share experiences and best practices** by carrying out networking and coordination activities with other projects funded within similar calls under Horizon 2020.

The Communication and Dissemination activities are led by Steinbeis 2i GmbH and carried out by all partners of the MinWaterCSP consortium which consists of: Kelvion Holding GmbH [overall coordinator] (Germany), ENEXIO Management GmbH [technical coordinator] (Germany), Kelvion Thermal Solutions Pty Ltd. (South Africa), Fraunhofer ISE (Germany), Sapienza University of Rome (Italy), ECILIMP Termosolar SL (Spain), Stellenbosch University (South Africa), Notus Fan Engineering (South Africa), Laterizi Gambettola s.r.l. – SOLTIGUA (Italy), ENEXIO Germany GmbH (Germany), Institut de Recherches en Energie Solaire et Energies Nouvelles – IRESEN (Morocco), Steinbeis 2i GmbH (Germany), WATERLEAU Group NV (Belgium).

1 Introduction

WP 10 provides a platform to communicate about the progress and outcomes of the technical activities but also about the outcomes of WP11 related to defined exploitable results and exploitation actions. Therefore, all partners have been involved in all tasks of WP10 in the last 11 months (M26-M36).

This deliverable report is presenting an update of Del. 10.1 (submitted in M3), Del. 10.4 (submitted in M13) and Del. 10.7 (submitted in M25) and describes in more detail the Communication and Dissemination activities related to events in the last project period:

- Events organised / co-organised by MinWaterCSP
- External events

All activities have been performed as planned in Annex I. No deviations have occurred.

2 Objectives and expected Impact

The Communication and Dissemination plan (D10.1 M3) presented the overall objectives of the whole set of activities performed within WP10.

By organising and participating at events, the objective was to **establish closer contacts with strategic stakeholders (physical meetings)** who were able to positively influence the project approaches by **providing relevant information, expertise or networks.** Besides, these stakeholders further acted as multipliers for the dissemination of the project progress in the context of WP10 activities. Actions were implemented at regional, national, EU and international level.

The WP actions aimed to foster strong and sustainable contacts to the target groups.

The participation at events and the organisation of events (such as the MinWaterCSP conferences and site visits) offered the opportunity to identify and get in touch with suitable stakeholders for networking and know-how exchange, e. g. for the replication of project activities.

By **creating synergies with similar projects,** the number of relevant stakeholders can be increased. For more information, please refer to the chapters 3.1.1 and 3.1.2.

By cumulating all **event activities**, the project reached an audience of over 2.000 people in the last 11 months. In 2018, MinWaterCSP also organised joint activities with 14 further CSP projects funded under H2020, thus further enlarging its outreach.

All activities in WP10 also aim to support the impact of WP11.

3 Events

In order to reach new audiences and to keep contact with identified stakeholders, it was necessary to attend conferences, workshops and other events in the field of concentrated solar power, water management or advanced materials. In the context of these events, the project was presented in Power Point presentations, at exhibition stands, with posters or through active networking. Thus, the MinWaterCSP project partners have participated/organised/co-organised 15 events in the last 11 months.

PARTNER	ACTION
All partners	Promoting the project at events and advertising events among their stakeholders, participation at events (with presentations, stands or networking); contributing to the two MinWaterCSP conferences in the advertisement and as speakers and/or session chairs; many partners contributed to joint events with other CSP projects.
Kelvion Holding	Additionally: Supporting the organisation of the MinWaterCSP conferences taking place in Marrakech and Stellenbosch
Fraunhofer ISE	Additionally: Supporting the conferences in the preparation phase, as overall co-moderator in Marrakech, as "session chairs"
Kelvion TS	Additionally: Main organiser of the site visit in Stellenbosch in November 2018
IRESEN	Additionally: Main organiser of the first conference taking place in Marrakech in April 2018; Main organiser of the site visit in Marrakech (Ben Guerir, Green Energy Park) in April 2018
ECILIMP	Additionally: Div. site visits in S-Spain and Morocco in in 2017 and 2018
SUN	Additionally: Main organiser of the second conference taking place in Stellenbosch in November 2018, Overall Moderator of the Stellenbosch conference Co-organiser of the site visit in Stellenbosch in November 2018
S2i	Supporting the organisation of the two MinWaterCSP conferences and two site visits in Morocco and South Africa; coordinating D&C event activities in the consortium; coordination of joint CSP activities with up to 15 other projects; coordination of D&C activities in the WP
ENEXIO Mgt	Additionally: Supporting the organisation of the conferences taking place in Marrakech and Stellenbosch; contributions with participation at events (with a stand)

Table 1: Contributing Partners

3.1 Project Events

The MinWaterCSP consortium has planned to organise conferences, site visits and enable joint events with other CSP projects.

Conferences: Two conferences have been organised in 2018 – one in April in Marrakech, MA and a second one in Stellenbosch, ZA (as final event).

Site visits: Three of the participants are located in countries where CSP plants are in operation or under construction, namely Spain, Morocco and South Africa. MinWaterCSP took advantage of this opportunity to visit stakeholders and end-users in these countries or to enable them to see the MinWaterCSP test stands / facilities. Two site visits have been organised in the frame of the two

conferences (Morocco and South Africa), one partner (ECILIMP) visited stakeholders and end-users in Spain, Morocco to present and promote the developments arising from the project.

3.1.1 MinWaterCSP conference in Marrakech, Morocco

The organisation of the first international MinWaterCSP conference started in July 2017. The conference took place in Marrakech, Morocco from 24th to 25th April 2018.

Organisation:

The planning started in July 2017, the structure was defined by S2i and the session chairs. Each session was led by one project partner who took over the moderation. The overall conference moderation was taken over by the host IRESEN and Fraunhofer ISE.

The programme has been published on the Project Website and the registration has been opened in January 2018. The programme updates for the sessions (presentation titles, speakers) were done regularly, followed by social media announcements. The MinWaterCSP partners identified and contacted speakers coming from the MinWaterCSP consortium, H2020 CSP projects and relevant companies, research centres or institutions external to the project. The consortium partners also supported the event marketing and the invitation of participants. S2i took over the overall coordination of the conference.

Overview:

The topic of this event was the *Reduction of water consumption in Concentrated Solar Power (CSP) plants* with a special focus on new approaches in mirror cleaning, cooling and simulations.

The aim of this conference was to present and discuss new technological solutions to minimise water consumption in CSP plants as well as to create networking opportunities.

The 1,5-day conference gave valuable insights into innovative solutions for mirror cleaning and anti-soiling, air-cooled condensers and cooling towers, axial flow fan development, simulation-based analysis of water consumption and water management strategies. In addition to the MinWaterCSP solutions, two related H2020 projects presented their approaches: WASCOP and RAISELIFE.

The conference format: In total 5 sessions linked to the different WPs were organised and chaired by project partners. 4 Sessions ran in parallel and 2 sessions were plenary sessions (at the beginning and at the end of the conference programme).

The projects MinWaterCSP, WASCOP and Raiselife presented themselves with a stand in the coffee-breaks.

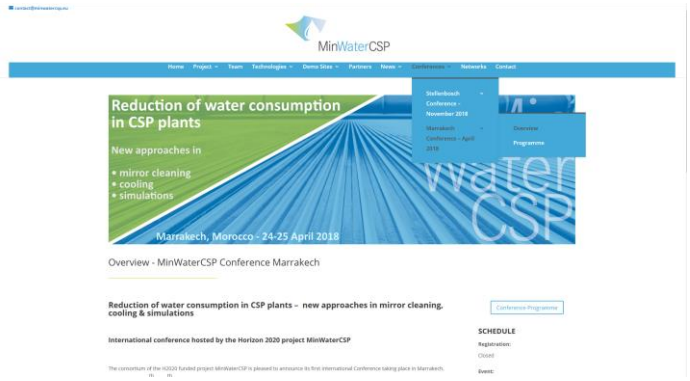
Additionally to the conference, a site visit was organised. Participants of the conference were invited to join the site visit to the MinWaterCSP test-stand at Green Energy Park in Ben Guerir (see description next chapter 3.1.2).

Duration: 1.5 days of conference

Conference language: English, partly in French with translation into English

Link to conference website: http://www.minwatercsp.eu/conference-marrakech-april-2018/

- Link to programme: http://www.minwatercsp.eu/programme/
- Link to registration *(now closed)*: https://www.eventbrite.de/e/minwatercsp-conference-reduction-of-water-consumption-in-csp-plants-tickets-39299893038?aff=minwaterwebsite



The programme is attached to this Report in Annex 5.

Number of participants: around 100 from 12 countries

Target group:

Power utilities, power plant operators, technology suppliers, research institutes and academia, stakeholders for mirror cleaning, cooling processes or similar, any users of those technologies, policy makers and investors interested in the topics as well as the press.

Advertising of the conference

- A "SAVE THE DATE" notice has been distributed via Social Media and Newsletter already in 2017.
- In December 2017, a special section dedicated to the conference has been published on the MinWaterCSP website. The draft conference programme has already been published in February 2018, several updates were announced on social media.
- Blog #22 in January 2018 announcing the programme and joint actions with sister projects. https://www.minwatercsp.eu/blog-22-announcement-minwatercsp-conference_marrakech/
- Invitation to D&C contacts of similar CSP projects and request to support the marketing
- Partners invited their clients to the conference using the offered invitation letters or own formats.

Press Work

- Invitation to the local press by IRESEN
- Press release in English and French
  English: https://www.minwatercsp.eu/wp-content/uploads/2018/04/2018-04-25_presse-release_MinWaterCSP_Marrakech-Conference_EN_Final.pdf
  French: https://www.minwatercsp.eu/wp-content/uploads/2018/04/2018_04_25_presse_release_MinWaterCSP_Marrakech_Conference_FR_Final.pdf

Annex (Pictures): https://www.minwatercsp.eu/wp-content/uploads/2018/04/2018-04-25_MinWaterCSP_Marrakech_conference_press_annexes.zip

Published in English media:

- Cordis wire: *https://cordis.europa.eu/news/rcn/129321_en.html*
- IDW (Informationsdienst Wissenschaft, Information service science): *https://idw-online.de/en/news685858*

Published in French media:

LesEco.ma: *http://www.leseco.ma/economie/65839-les-avancees-du-projet-minwatercsp-presentees-a-marrakech.html*

MAP-ECOLOGY: *http://mapecology.ma/actualites/appel-a-creer-synergies-entre-services-de-leau-de-lenergie-afin-de-traiter-deux-ressources-de-maniere-liee-a-lechelle-internationale-nationale-responsable/*

RDV-Marrakech: *http://www.rdv-marrakech.com/des-experts-internationaux-reunis-les-24-et-25-avril-a-marrakech-pour-reduire-la-consommation-deau-dans-les-centrales-thermiques/*

Le Matin.ma: *https://lematin.ma/journal/2018/liresen-reunira-24-25-avril-marrakech-experts-internationaux/291169.html*

https://www.vitaminedz.org/reduction-de-la-consommation-d-eau-dans/Articles_19609_6256499_0_1.html

Pictures of the conference:

Picture - Key note speaker: Mr. Ahmed Ghzaoui, Head of solar energy service; Ministry of Energy, Mines and sustainable development, Morocco
© Steinbeis 2i GmbH

Picture - Key note speaker: Mr. Karim Saoud, Director of Water and Energy; Executive Direction of Industrial Operation - OCP Group, Morocco
© Steinbeis 2i GmbH

Picture: Overall moderators and Session chairs
© Steinbeis 2i GmbH

Picture: Contributing projects WASCOP, RAISELIFE
© Steinbeis 2i GmbH

Picture Series 1: Pictures of the conference in Marrakech

3.1.2 Site visit in Marrakech

Overview:

At the Green Energy Park near Ben Guerir, a containerised fouling test rig, consisting of four small deluge cooling towers, was installed.

At the fouling test rig, visitors could watch how researchers of IRESEN, Kelvion Thermal Solutions and ENEXIO investigate the effect of fouling on thermal performance and the overall lifecycle in dry/wet hybrid cooling systems. In addition, visitors had the opportunity to see the various soiling level measurement tools used to assess the performance loss of local CSP mirrors due to dust and observe the operation of a novel automatic cleaning system developed within the project.

See also blog 25: https://www.minwatercsp.eu/blog-25-first-international-minwatercsp-conference-in-marrakech-showed-new-approaches-to-reduce-water-consumption-in-csp-plants/

Target group: same as for conference

Duration: 0,5 days

Some pictures of the site visit:

Picture: Site visit to Ben Guerir, Green Energy Park
© Steinbeis 2i GmbH

Picture: containerised fouling test rig, consisting of four small deluge cooling towers
© Steinbeis 2i GmbH

Picture Series 2: Pictures of the site visit in Marrakech

3.1.3 MinWaterCSP conference in Stellenbosch, South Africa

The second conference was planned as final conference which took place in Stellenbosch, South Africa from 7th to 8th November 2018. It was organised by partners SUN and S2i, supported by the consortium.

Organisation:

The preparation started in April 2018. The structure was defined by SUN and S2i and discussed with the work package leaders. Each session was led by one project partner who took over the moderation and session chair. The overall conference moderation was taken over by the host SUN.

The programme has been published on the project website in July 2018 and the registration has been opened in August 2018. The programme updates for the sessions (presentation titles, speakers) were done regularly, followed by social media announcements. The MinWaterCSP partners identified and contacted speakers coming from the MinWaterCSP consortium, H2020 CSP projects and externals. The consortium partners also supported the marketing and the invitation of participants. S2i took over the overall coordination of the conference.

Overview:

The topic of this event was again the *Reduction of water consumption in Concentrated Solar Power (CSP) plants* with a special focus on achieved solutions.

The two-day conference reviewed its three years of efforts to promote the competitiveness of CSP plants in arid regions. Following on the success of its first conference in Marrakech, Morocco, in April 2018, this 1,5-day conference presented applicable technologies in mirror cleaning and cooling to minimise water consumption in CSP plants. Participants were able to share their experiences about the water challenges in CSP plants and learn more about the technological solutions MinWaterCSP has to offer. Besides the MinWaterCSP solutions, the CSP H2020 project RAISELIFE presented its approach.

The **conference** programme was accompanied by an **exhibition** where stakeholders from industry and research (MinWaterCSP partners and external speakers) informed about their projects, products and services.

In addition to the presentations on the second day, a **site visit to the full-scale test facility** in Stellenbosch was organised where two main aspects of a novel hybrid (deluge) cooling system, developed within MinWaterCSP, are tested:

- a 7.315 m (24 ft) diameter axial flow fan and
- a deluge cooling water circulation system.

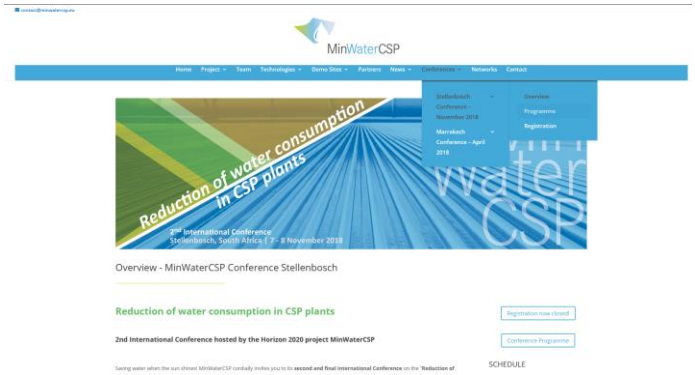
Target group:

Power utilities, power plant operators, technology suppliers, research institutes and academia, stakeholders for mirror cleaning, cooling processes or similar, any users of those technologies, policy makers and investors interested in the topics as well as the press.

Duration: 1.5 days of conference

Conference language: English

- **Link to conference website:** https://www.minwatercsp.eu/overview-conference-stellenbosch-november-2018/
- Link to programme: https://www.minwatercsp.eu/programme-stellenbosch-conference/
- Link to registration (now closed): https://www.eventbrite.de/e/reduction-of-water-consumption-in-csp-plants-registration-48643355586



The programme is attached to this Report in Annex 5.

Number of participants: around 77 from 6 countries

Target group:

Power utilities, power plant operators, technology suppliers, research institutes and academia, stakeholders for mirror cleaning, cooling processes or similar, any users of those technologies, policy makers and investors interested in the topics as well as the press.

Advertising of the conference

- A "SAVE THE DATE" notice has been distributed via Social Media and Newsletter after the Marrakech conference (after April 2018).
- In May 2018, a special section dedicated to the conference has been published on the MinWaterCSP website. The draft conference programme has already been published in August 2018, several updates were announced on social media.
- Partners invited their clients to the conference using the offered invitation letters or own formats.
- Specific focus on external speakers (industrial, associations etc.) to use their channels for marketing
- Information leaflets at the coordinators' day in Brussels (26th June 2018) to other CSP project coordinators and D&C contacts.
- Social Media communication with several sub-titles describing different aspects of the conference topics.
- Invitation to D&C contacts of similar CSP projects and request to support the marketing
- Promotion at the IRESEN stand at SolarPACES in Casablanca

Press Work

- Contacts to the local press by SUN
- Press releases in English
  https://www.minwatercsp.eu/wp-content/uploads/2018/11/2018-11-08_presse-release_MinWaterCSP_Stellenbosch-Conference_final.pdf

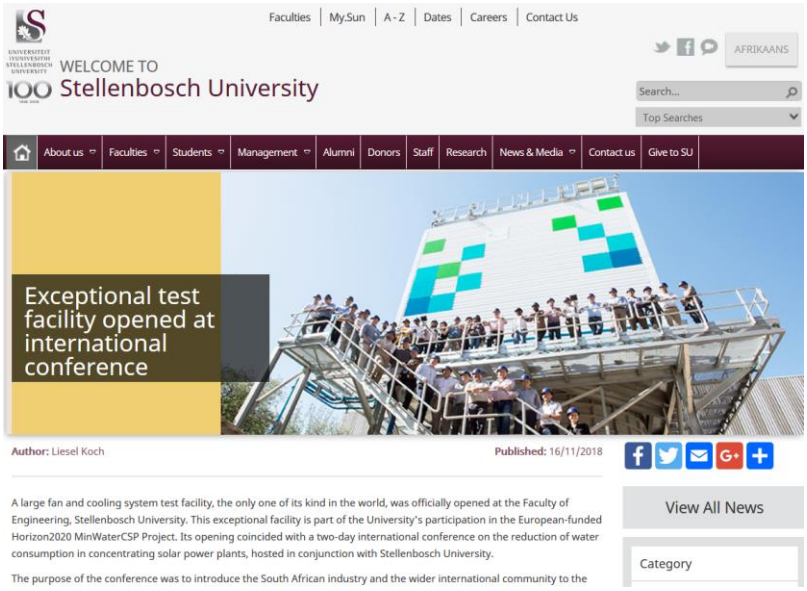
  https://www.minwatercsp.eu/wp-content/uploads/2018/11/2018-11-08_MinwaterCSP-Conference-site-visit_final.pdf

Published in English media:

- Cordis wire : *https://cordis.europa.eu/news/rcn/130243_en.html*
- IDW : *http://idw-online.de/en/documentstats?document_type=press_release&document_id=705598*

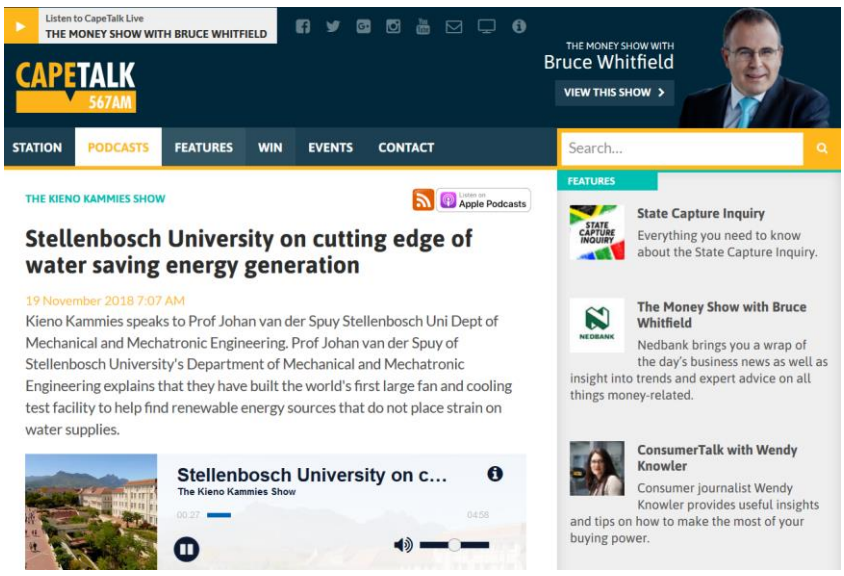
Published in South African media:

- http://www.sun.ac.za/english/Lists/news/DispForm.aspx?ID=6094



- https://www.thenewspaper.co.za/exceptional-test-facility-opened-at-international-conference/

- Cape Talk (article and interview): http://www.capetalk.co.za/podcasts/140/the-kieno-kammies-show/135096/stellenbosch-university-on-cutting-edge-of-water-saving-energy-generation

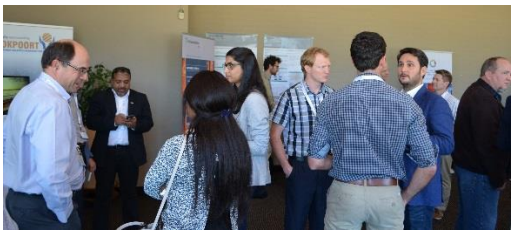


On 19th of November 2018, Prof. Johan van der Spuy had a phone interview with the CapeTalk radio station on the facility and the project in general.

Some pictures from the conference and the exhibition:







Picture Series 3: Pictures of the conference and exhibition in Stellenbosch
© Stellenbosch University, Steinbeis 2i GmbH

3.1.4 Site visit in Stellenbosch

Overview:

At Stellenbosch University a **full-scale test facility** has been erected.

Two main aspects of a novel hybrid (deluge) cooling system, developed within MinWaterCSP, are tested here:

- a 7.315 m (24 ft) diameter axial flow fan and
- a deluge cooling water circulation system.

The site visit was organised in the frame of the 2nd MinWaterCSP conference and also marked the official inauguration of the site. It was opened by the Vice-Dean Research of the Engineering Faculty at Stellenbosch University, Prof. Willie Perold.

See also blogs 29 and 32:
https://www.minwatercsp.eu/blog-29-full-scale-testing-in-stellenbosch-south-africa/
https://www.minwatercsp.eu/blog-32-2nd-international-minwatercsp-conference-in-stellenbosch/

Kelvion TS has developed a branding for the Stellenbosch test facility in collaboration with a service contractor. The results can be seen on the façade of the test facility, inside the test-facility as well as in the corridors leading to the control room, next to the test facility.
Further, a video has been produced in which the coordinators and some partners from SUN and Kelvion TS explain the MinWaterCSP objectives as well as history of the facility erection and its future opportunities: https://www.minwatercsp.eu/videos/

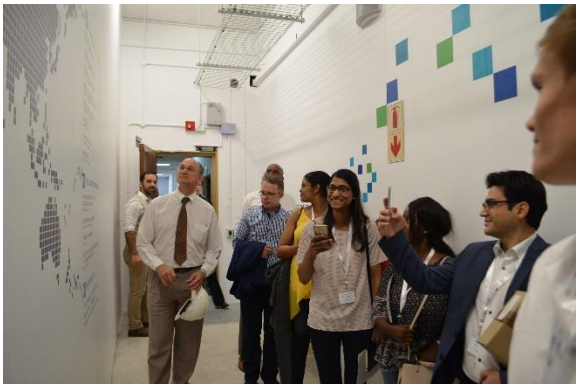
See also the latest version of the MinWaterCSP newsletter 2018-12 edition: https://www.minwatercsp.eu/wp-content/uploads/2018/12/2018-12_MinWaterCSP_newsletter_december_final.pdf

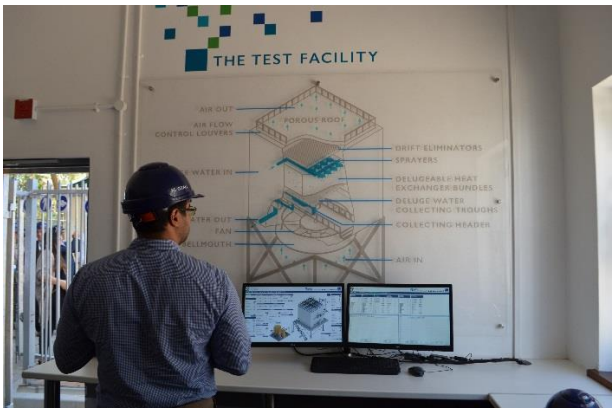
Target group: same as for conference

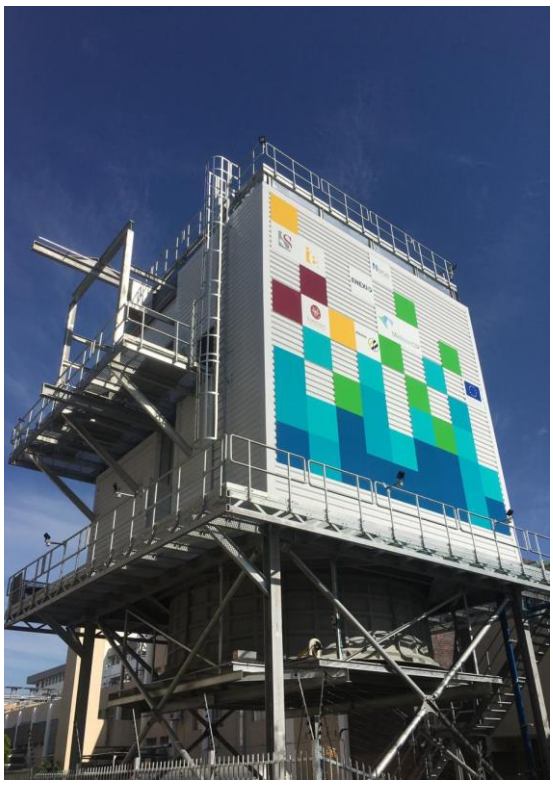
Date: 8th November 2018

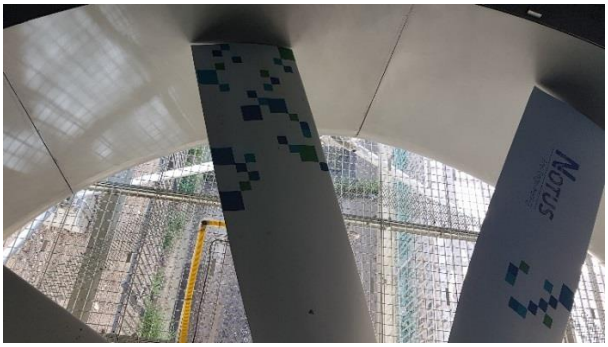
Duration: 0,5 day, in addition to the 2nd MinWaterCSP conference

Pictures of the site visit:









Picture Series 4: Pictures of the site visit in Stellenbosch
© Kelvion Thermal Solution, ENEXIO Germany, Stellenbosch University

Further site visits / activities linked to the test facility up to now:

- 15th November 2018: SUN guided about 30 persons from the Solar Thermal Energy Research Group to the test facility.
- On 19th November 2018, Prof Johan van der Spuy had a Phone interview with the CapeTalk radio station on the facility and the MinWaterCSP project in general.
- 30th November 2018: SUN presented the site to a team of six visiting engineers from the Exxaro mining company.

3.1.5 Site visits by partner ECILIMP

ECILIMP visited stakeholders and end-users in Spain, Morocco and South Africa to present and promote the developments arising from the project linked to their cleaning trucks.

Every single demonstration done has been accomplished with a commercial overview of ECILIMP and its services, paying special attention to new developments under the MinWaterCSP project.

All visits were organised according to the following structure:

- Presentation (slides)
- Demonstration
- Break (lunch or breakfast)
- Discussion and next steps

Some examples of site visits between April 2017 – July 2018:

Main impact of the visits has been the internationalisation of ECILIMP (Morocco and South Africa), both to increase the participation of the Spanish market.

Visit at Valle plants (near Cádiz, Spain), presentation to Torresol Energy Operation & Maintenance (TOM) to demonstrate brushes at trough collectors

Visit at Valle plants (near Cádiz, Spain), presentation to ACWA Power (run Ouarzazate II in Morocco) to demonstrate brushes at trough collectors

Visit at Gemasolar Plant, presentation to ACWA Power (Ouarzazate III in Morocco) to demonstrate brushes at HE54 Heliostats

Visit at SOLNOVA Complex, presentation to Abengoa Solar. Demonstration of spray cleaning tool and brushes.

Visit at NOORo II & III plants (Ouarzazate, Morocco) of ACWA Power and SENER. Demonstration of Parabolic Trough Brushes cleaning tool performance on site.

Demonstration (with same truck) of Heliostat Spraying cleaning on site.

Visit at Kathu Solar Park, Bokpoort (South Africans plants)

Workshop with SASTELA at Ecilimp's headquarters.

Picture Series 5: Pictures of the site visits of ECILIMP
© ECILIMP termosolar

3.1.6 Joint events in 2018

Initially, it was planned to have 3 joint events with other CSP projects. **In 2018, MinWaterCSP used synergies with the projects Raiselife, WASCOP and ORC-Plus in 4 joint events.**

In the whole MinWaterCSP project, partners participated (organised, co-organised, participated) in 5 joint events with around 300 stakeholders.
Synergies were generated in the marketing of these events, the relevant target audience was reached and the exchange of know-how on site was enabled.

Date of Event	Title of Event	City / Country	Type of Event	Type of audience reached	Partner (short name)
24.-25.04.2018	Reduction of water consumption in CSP plants – new approaches in mirror cleaning, cooling & simulations	Marrakech, Morocco	Conference (international)	Industry, Scientific Community, Customers, Academic Community, Policy	MinWaterCSP consortium **Joint event with Raiselife**
03.10.2018	SolarPACES 2018: "Water Consumption Management in CSP Plant"	Casablanca, Morocco	Conf. Session (international)	Scientific Community, Industry, Policy makers, national interest groups	IRESEN, Fraunhofer ISE **Joint Workshop with WASCOP**
03.10.2018	SolarPACES 2018**:** TES Systems optimised for Mid-Size-CSP Plant Coupled with an ORC Turbine for 1MWe, The ORC Plus Project Case	Casablanca, Morocco	Conf. Session (international)	Scientific Community, Industry, Policy makers, national interest groups	IRESEN **Joint Workshop with ORC Plus**
07.-08.11.2018	Reduction of water consumption in CSP plants	Stellenbosch, South Africa	Conference (international)	Industry, Customers, Academic Community	MinWaterCSP consortium **Joint event with Raiselife**

Table 2: List of joint events in other CSP projects (01/ - 12/2018)

3.2 External Events

During 2018, the MinWaterCSP partners joined 13 external events, not organised by MinWaterCSP. All events, besides one, took place at international level. The ones highlighted in green are joint events with other CSP projects, already mentioned in the previous chapter.

In 2018 the project was presented to an audience of over 1.700 people.

Date of Event	Title of Event	City / Country	Type of Event (national or international)	Type of audience reached	Activity	Partner (short name)
18.04.2018	Fan 2018 - International conference on fan noise, aerodynamics, applications and systems	Darmstadt, Germany	Conference (international)	Industry, Scientific Community, Customers, Academic Community	Participation, speaker	ENEXIO MGT / UROME / SUN
09.-10.05.2018	North Africa RE Summit 2018	Casablanca, Morocco	Trade fair (international)	Plant owners, operators and technical suppliers	Stand, participation	ENEXIO
11.-15.06.2018	turboexpo2018	Lillestrom, Norway	Conference (international)	Scientific Community, Industry, Policy makers, national interest groups	Participation	UROME, SUN
26.06.2018	Coordinators' meeting of CSP projects at INEA premises	Brussels, Belgium	Workshop (international)	Multipliers, Industry, RTD	Participation, speaker	Kelvion H, ENEXIO Mgt, S2i
26.-27.06.2018	Green Africa Innovation Booster	Yamoussoukro, CÔTE D'IVOIRE	Conference (international)	Industry, Scientific Community, Customers	Participation	IRESEN
04.07.2018	Cologne Sun Colloquium 2018	Cologne, Germany	Conference (national)	Industry, Scientific Community	Participation	Fraunhofer ISE
02.-05.10.2018	SolarPACES (Solar Power and Chemical Energy Systems)	Casablanca, Morocco	Conference (international)	Scientific Community, Industry, Policy makers, national interest groups	Participation, speaker, poster presentation	IRESEN, Fraunhofer ISE
03.10.2018	SolarPACES 2018: **Joint Workshop with WASCOP** on: "Water Consumption	Casablanca, Morocco	Conf. Session (international)	Scientific Community, Industry, Policy makers,	speaker	IRESEN, Fraunhofer ISE

Date of Event	**Title of Event**	**City / Country**	**Type of Event** (national or international)	**Type of audience reached**	**Activity**	**Partner** (short name)
	Management in CSP Plant"			national interest groups		
03.10.2018	SolarPACES 2018**: Joint Workshop with ORC Plus** on: TES Systems optimised for Mid-Size-CSP Plant Coupled with an ORC Turbine for 1MWe, The ORC Plus Project Case	Casablanca, Morocco	Conf. Session (international)	Scientific Community, Industry, Policy makers, national interest groups	Speaker Presentation Green Energy Park & European Projects by IRESEN	IRESEN
16.-18.10.2018	CHILLVENTA – International Exhibition	Nürnberg, Germany	Exhibition (international)	Industry, Scientific Community, Customers	Stand, speaker	Fraunhofer ISE
25.-26.10.2018	CSP Focus Innovation 2018	Xi'an, China	Conference (international)	Industry, Scientific Community, Customers	Participation, speaker	Fraunhofer ISE
04.-06.12.2018	POWER-GEN International 2018	Orlando, FL, USA	Conference (international)	Industry, Customers, Investors	Participation, stand	ENEXIO Germany
07.12.2018	Women4Energy	Stuttgart, Germany	Conference (international)	Industry, Scientific Community, Customers	Participation, stand	S2i

Table 3: List of events in which partners participated (01/ - 12/2018)

4 Gantt chart and Deliverable overview for WP10

MinWaterCSP Gantt chart		Project year / month																																	
		Year 1												Year 2												Y3											
WP		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
10	**Communication & Dissemination**																																				
10.1	**Corporate identity**			D10.1																																	
10.2	**MinWaterCSP Website**			D10.1			D10.2												D10.5																		
10.3	**Stakeholder identification**			D10.1																																	
10.4	**Printed & digital communication**			D10.1			D10.2							D10.3																							
	Project leaflets						D10.2												D10.5																		
	Press releases													D10.3												D10.6										D10.8
	Publications													D10.3												D10.6										D10.8
	Master PPT																																				
	eNewsletter													D10.3												D10.6										D10.8
	Roll-up Banner						D10.2																														
	Blogs / Articles													D10.3												D10.6										D10.8
	Social Media													D10.3												D10.6										D10.8
10.5	**Events**			D10.1										D10.4												D10.7										**D10.9**

Table 4: MinWaterCSP Gantt chart and Deliverable Report overview for WP10

5 ANNEX

5.1 Programme of MinWaterCSP Conference in Marrakech, MA

The Programme: https://www.minwatercsp.eu/programme/

Conference Programme

Venue: Hotel Kenzi Farah, 40 000 Marrakech, Morocco

Moderation:
El Ghali Bennouna, IRESEN, Morocco (MinWaterCSP project) /
Anna Heimsath, Fraunhofer ISE, Germany (MinWaterCSP project)

DAY 1 - 24th April 2018

08:30	*Registration and welcome coffee*
09:30	**Welcome** *Mr. Badr Ikken, General Director, IRESEN, Morocco (MinWaterCSP project)* *Dr. Falk Mohasseb, Kelvion Holding, Germany (Project coordinator MinWaterCSP project)*
10:00	**Key notes** *Mr. Ahmed Ghzaoui, Head of solar energy service* *Ministry of Energy, Mines and sustainable development, Morocco* *Mr. Karim Saoud, Director of Water and Energy* *Executive Direction of Industrial Operation - OCP Group, Morocco*
11:00	*Break*
11:15 - 12:15	***PLENARY SESSION (Room – Atlas 3)*** **Session 1: Introduction to MinWaterCSP – technology overview** The MinWaterCSP consortium addresses the challenge of significantly reducing the water consumption of CSP plants while maintaining the overall cycle efficiency. Its objective is to reduce evaporation losses and mirror cleaning water consumption for small- and large-scale CSP plants through a holistic combination of next generation technologies. This session will introduce the CSP technologies further developed in the project. Presentations: • **Water supply, treatment and reuse** *Ron Gerards, Waterleau, Belgium (MinWaterCSP project)* • **Direct hybrid cooling – a plausible cooling compromise for an arid world** *Dr. Francois Louw, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)* • **Water savings in mirror cleaning – strategies, monitoring and new procedures** *Javier Garcia, ECILIMP TERMOSOLAR S.L., Spain (MinWaterCSP project)* Session chairs: Dr. Falk Mohasseb, Kelvion Holding GmbH, Germany *(Project coordinator MinWaterCSP project)* Dr. Albert Zapke, ENEXIO Management GmbH, Germany *(Technical coordinator MinWaterCSP project)*

12:15 *Lunch break*

13:30 ***PARALLEL SESSIONS***

13:30 - 14:45	**Session 2a: Cleaning Activities and Cleaning Systems for Heliostats and Parabolic Troughs *(Atlas 3)***	**Session 2b: Innovative developments for Air Cooled Condensers and Cooling Towers (Atlas 2)**
	The session gives insights into advances and the current state of development in cleaning systems within the MinWaterCSP project. A special focus is placed on the on-site tests performed and the main results.	This session addresses innovations for cooling systems with compact heat exchanger concepts for air side heat transfer enhancement, the integration of deluge cooling into conventional air-cooled condensing systems, and a fundamental study on fouling experienced during deluge cooling.
	Presentations: • **Truck-based cleaning of Heliostats and Parabolic Trough** *Javier García, ECILIMP TERMOSOLAR S.L., Spain (MinWaterCSP project)* • **Robot-based cleaning of Linear Fresnel** *Vittorio Orioli, SOLTIGUA, Italy (MinWaterCSP project)* • **Mirror cleaning strategies in Morocco** *Dr. Ahmed Alami Merrouni, IRESEN, Morocco (MinWaterCSP project)*	Presentations: • **Wire structure heat exchangers: Compact designs for efficient heat transport** *Hannes Fugmann, Fraunhofer ISE, Germany (MinWaterCSP project)* • **Hybrid Cooling Systems for reduced water consumption in CSP applications** *Dr. Riaan Terblanche, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)* • **Fouling of condenser components – origin, behavior and impact** *Afaf Zaza, IRESEN, Morocco (MinWaterCSP project)*
	Session chair: *Javier García, ECILIMP TERMOSOLAR (MinWaterCSP project)*	Session chair: *Hannes Fugmann, Fraunhofer ISE, Germany (MinWaterCSP project)*

14:45 *Break*

15:15 - 16:30	**Session 3a: Axial Flow Fan Development for MinWaterCSP project (Atlas 3)**	**Session 3b: Simulation-based Analysis of Water Consumption in CSP plants (Atlas 2)**
	This session addresses the axial flow fan development in MinWaterCSP with a special focus on the development process of large diameter fans, innovative fan drive aspects, fan noise and manufacturing.	This session deals with the simulation of water consumption during cooling and mirror cleaning as well as the evaluation of the water saving technologies. In addition, it illustrates the impact of the advanced methodologies on the annual performance of CSP plants.
	Presentations: • **Large diameter fan development process** *Prof. Johan van der Spuy, Stellenbosch University, South Africa (MinWaterCSP project)* • **Innovative fan drive aspects for large cooling fans** *Dr. Danie Els, Stellenbosch University, South Africa (MinWaterCSP project)*	Presentations: • **Evaluation of water saving technologies developed by the MinWaterCSP consortium** *Shahab Rohani, Fraunhofer ISE, Germany (MinWaterCSP project)* • **CSP plants combined with thermal desalination at inland locations** *Dr.-Ing. Joachim Went, Fraunhofer ISE, Germany (MinWaterCSP project)*

	• **Consideration of fan noise for large diameter fan development** *Dr. Giovanni Delibra, Sapienza University of Rome, Italy (MinWaterCSP project)* • **Fan manufacturing for the MinWaterCSP project** *Prof. Johan van der Spuy, Stellenbosch University on behalf of Notus Fan Engineering, South Africa (MinWaterCSP project)* Session chair: *Prof. Alessandro Corsini, Sapienza University of Rome, Italy (MinWaterCSP project)*	• **Simulation study of water saving potential of PV/CSP hybrid plants** *Lukas Haack, Suntrace GmbH, Germany* • **A toolbox to assess the economic and environmental impact of WASCOP solutions: Simulation of the water use of CSP plants** *Dr. Peter King, Cranfield University, United Kingdom (WASCOP project)* Session chair: *Anna Heimsath, Fraunhofer ISE, Germany (MinWaterCSP project)*
16:30	*Break*	
16:45 - 18:00	**Session 4a: Availability, Sources and Managing Strategies of Water (Atlas 3)** In this session, methods of assessing water availability are presented. Experiences with different water sources and with multi-source operation are shown. Efforts in the direction of a zero-liquid discharge operation, experiences with evaporation ponds and zero-blowdown cooling system operation are introduced. Presentations: • **The need for strategic management of CSP fleet development and water resources** *Frank Duvenhage, Stellenbosch University, South Africa* • **Water saving strategies and GIS analysis for CSP** *Julian Fleischmann, Fraunhofer ISE, Germany (MinWaterCSP project)* • **Water supply, treatment and reuse, by applying the technology train concept for near Zero Liquid Discharge** *Ron Gerards, Waterleau, Belgium (MinWaterCSP project)* Session chair: *Dr.-Ing. Joachim Went, Fraunhofer ISE, Germany (MinWaterCSP project)*	**Session 4b: Measurement and Analysis of Soiling and its Impact on Degradation (Atlas 2)** The session is about the characterisation and prediction of soiling and focuses mainly on the topics measurement and site assessment, degradation due to soiling and anti-soiling methods. Presentations: • **Soiling characterisation of solar mirrors - best practice for solar field and laboratory tests** *Anna Heimsath, Fraunhofer ISE, Germany (MinWaterCSP and Raiselife project)* • **Monitoring of soiling for site characterisation and plant operation** *Dr. Richard Meyer, CTO, Suntrace GmbH, Germany* • **Soiling dynamics and cleaning of CSP reflectors** *Dr. Sahar Bouaddi, Masen, Morocco (WASCOP project)* • **Soiling measurement campaign in Morocco – analysis and outcome** *Dr. Ahmed Alami Merrouni, IRESEN, Morocco (MinWaterCSP project)* Session chair: *Shahab Rohani, Fraunhofer ISE, Germany (MinWaterCSP project)*

DAY 2 - 25th April 2018

09:00	*Registration and welcome coffee*
10:00	**Welcome and Introduction to the Day** **Summaries of Parallel Sessions of Day 1**
10:30 - 12:00	***PLENARY SESSION (Atlas 3)*** **Session 5: Best Practice towards Water Consumption Reduction in CSP plants** In this panel, industry partners from different CSP projects funded under the EU Horizon 2020 framework programme present and discuss about their best practices with a special focus on different aspects of water saving in CSP plants. Panel discussion: • **Water saving potential in cooling** *Dr. Riaan Terblanche, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)* • **Water saving by water treatment in CSP plants** *Ron Gerards, Waterleau, Belgium (MinWaterCSP project)* • **Cleaning practices and water reduction, specialisation of cleaning services** *Javier García, ECILIMP TERMOSOLAR, Spain (MinWaterCSP project)* • **Water savings by antisoiling coatings** *Gema Pérez, Rioglass Solar S.A, Spain (WASCOP project)* • **Lessons learned in commercial plant mirrors cleaning** *Juan Ignacio Burgaleta, ABACO Estudios y Proyectos, Spain (Advisory Board Member MinWaterCSP project)* Session chair: *Anna Heimsath, Fraunhofer ISE, Germany (MinWaterCSP project)*
12:00	**Conclusions of overall conference**
12:10	*Lunch break*
13:00 - 17:00	**Site visit at Green Energy Park** Meeting point for bus transfer: entrance Hotel Kenzi Farah (at 13:00)
17:00	*End of conference*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654443

Minimized water consumption in CSP plants
MinWaterCSP

Table 5: Programme of MinWaterCSP conference and site visit (04/2018), Marrakech, MA

5.2 Programme of MinWaterCSP Conference in Stellenbosch, South Africa

Website: https://www.minwatercsp.eu/programme-stellenbosch-conference/

The programm hand-out consisted out of a progamm overview part showing the structure of the different sessions and a detailed part including all the speakers and different topics in the sessions.

In the following, the detailed part is enclosed:

Detailed Programme

Venue: Protea Hotel, Techno Park, Stellenbosch 7600, South Africa

Moderation: Prof. Johan van der Spuy, Stellenbosch University, South Africa

DAY 1 | 7th November 2018

08:30 *Registration and welcome coffee*

09:00 **Welcome**
Dr. Albert Zapke, ENEXIO Management GmbH, Germany
(Technical coordinator MinWaterCSP project)

Prof Wikus van Niekerk, Dean of Engineering, Stellenbosch University, South Africa

09:30 **Key note**
Prof. Eugene Cloete, Vice-Rector for Research, Innovation and Postgraduate Studies, Stellenbosch University, South Africa

10:00 - 11:00 **Session 1: Introduction to MinWaterCSP & technology challenges**

Water footprints of current CSP plants in South Africa
Pancho Ndebele, SASTELA, South Africa

MinWaterCSP solutions and services at a glance
Dr. Albert Zapke, ENEXIO Management GmbH, Germany
(Technical coordinator MinWaterCSP project)

Session chair:
Dr. Albert Zapke, ENEXIO Management GmbH, Germany
(Technical coordinator MinWaterCSP project)

13:00 – 14:30 *Lunch break | **Exhibition***

16:30 - 17:00 *Networking at **Exhibition***

19:00 *Joint Dinner*

DAY 2 | 8th November 2018

09:00 *Registration and welcome coffee*

09:30 **Welcome and Introduction to the Day**
Dr. Albert Zapke, ENEXIO Management GmbH, Germany
(Technical coordinator MinWaterCSP project)

09:45 **Key note**
Dr. Matti Lubkoll, STERG Research Group Coordinator, Stellenbosch University

10:15 - 10:30 *Break | opportunity to visit the **Exhibition***

10:30 - 12:15 **Session 4: Novel cooling system technologies for CSP plants**

Challenges related to operating large scale cooling systems in South Africa
Ockert Augustyn, Eskom, South Africa

- Compact Heat Exchanger Designs in Air-Cooled Condensers: Advantages and Drawbacks
  Hannes Fugmann, Fraunhofer ISE, Germany (MinWaterCSP project)
- Deluge condenser system for reduced water consumption in CSP applications: Thermodynamic and cost analyses
  Dr. Riaan Terblanche, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)
- Large diameter fan developments
  Anro Olivier representing Prof. Johan van der Spuy and Dr. Danie Els, Stellenbosch University, South Africa (MinWaterCSP project)
- Deluge condenser and fan system testing: Preliminary results from the MinWaterCSP cooling test facilities
  Dr. Francois Louw, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)

Session chair:
Dr. Francois Louw, Kelvion Thermal Solutions (Pty) Ltd., South Africa (MinWaterCSP project)

12:15	**Conclusions of overall conference** *Prof. Johan van der Spuy, Stellenbosch University, South Africa (MinWaterCSP project)*
12:30 - 14:00	*Lunch break and opportunity to visit **Exhibition***
14:00 - 17:00	**Site visit to the full-scale fan test facility and ACC integrated Deluge Cooling functional testing facility at Stellenbosch University** Meeting point for bus transfer: entrance at 14:00
17:00	*End of conference*

Table 6: Programme of MinWaterCSP conference and site visit (11/2018), Stellenbosch, ZA