



NVMP – StEP E-waste Summer School 2009
Eindhoven + Davos

Brief Summary
October, 2009

Cover Photo: The NVMP – StEP Summer School visits the Philips Healthcare Refurbished Systems facility in Eindhoven

Sponsors and Organisers



<http://www.nvmp.nl>



<http://www.philips.com>



<http://www.unu.edu>



<http://ewasteguide.info>



<http://www.iwf.tu-bs.de>

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Executive Summary

The first NVMP – StEP E-waste Summer School took place from 7th – 16th September 2009. The aim of the summer school was to bring together young e-waste researchers from around the world, looking at solving the e-waste problem from different disciplinary perspectives. Among the main objectives of the summer school were to link the researchers to experts from industry, academia and policy makers and also to develop a sustainable, multidisciplinary network of young scholars who will function as multipliers in their respective academic and geographic areas.

On both these counts, and more, the summer school was a success and achieved its objectives.

The summer school started in Eindhoven, Netherlands and culminated at R'09 Congress in Davos, Switzerland where the students of the summer school conducted a workshop for delegates of the R'09 Congress on "E-waste in Developing Countries".

The 17 participants were a highly motivated, diverse and truly international group, between them representing 17 countries of origin, study or research. During the summer school, they looked at a wide variety of issues ranging from policy, technology and economics to the social challenges of reducing e-waste.

In order to continue and further the network of young e-waste researchers, one of the outcomes of the summer school, developed by the students, is a WEEE Space Blog¹, an online meeting point connecting the participants from around the world. Also, one of the project proposals taking shape is the future establishment of half or one-day E-waste Symposiums to discuss the e-waste topic in an interdisciplinary context, and provide more opportunities for interaction and collaboration between e-waste researchers.

The outstanding success of the summer school was in large part thanks to the support provided by the main sponsors, NVMP, Philips Consumer Lifestyle as well as the StEP members who supported the summer school through study tour visits (namely, SIMS Recycling and Umicore Precious Metals), as well as many other StEP members who generously contributed their time to review and evaluate the applications.

The venue of the High Tech Campus was highly appreciated as were also the other facilities in Eindhoven (not least of all the bicycles, which were hugely popular!), and of course, there was an element of good luck for the great summer weather during the entire duration of the summer school!

¹ WEEE Space Blog link (<http://sites.google.com/site/weeespace/weee-blog-1>)



1. Concept and Objectives

The vision driving the NVMP-StEP E-waste Summer School was to provide a forum to young scientists from all over the world involved in e-waste related research to share their knowledge, interact with experts and develop collaborative partnerships fostering high quality cutting-edge scientific research on all areas related to e-waste - from policy to technology to economics to social aspects. The aim was to nurture young scholars by providing a unique interdisciplinary learning experience and encourage further development of research in this field.

As a platform to provide impetus for research, the objectives of the summer school were to:

- Promote innovative and rigorous scientific research and establish an international research agenda related to e-waste
- Enable young scholars and academics to develop key skills for high quality research and also provide an opportunity to get their research reviewed by renowned experts in a neutral environment
- Develop a multidisciplinary network of young scholars who will function as multipliers in their respective academic and geographic areas
- Link young researchers to experts from industry, academia and policy makers which leads into concrete research collaboration and projects on the ground

2. Branding and Publicity

The summer school was branded as the **NVMP-StEP E-waste Summer School** to highlight the support provided by NVMP and to also identify it as a StEP project. Linking it closely with the United Nations University, EMPA and TU-Braunschweig, brought additional credibility and interest in the summer school.

Pre-event publicity

The pre-event publicity for the summer school included using various channels.

1. **Website:** The summer school has a dedicated website address at www.step-initiative.org/summerschool.
The website was developed using Google Sites (sites.google.com), an online content management and web-hosting service available for free from Google. Google Sites was chosen as it was easy to set up and update, available at no cost and had many useful features such as document storage for downloads of forms etc.
2. **StEP membership:** The StEP membership includes several top educational institutes around the world, as well as other stakeholders such as manufacturers, government and non-government organisations. The call for applications for the summer school was sent to all StEP members, who in turn circulated it within their organisations and networks.
3. **Online and social media:** The summer school was also announced prominently on www.unu.edu, www.step-initiative.org, www.ewasteguide.info, www.scidev.net, www.materialstechnology.tms.org, www.globalwatchonline.com, ELMAR community newsletter etc., targeting students who are interested in or involved in e-waste research, industrial ecology, international development, waste management, green



marketing etc. Additionally, announcements were also made on relevant groups on social networking site Facebook.com

4. **Direct emails and personal contacts:** A brief flyer announcing the call for application (see Annexe 4) and brief information on the summer school was sent by email to researchers with published papers on topics relevant to e-waste as well as research students having previously done or working on e-waste related dissertations. Additionally, department heads at relevant faculties of some prominent US universities were also contacted per email to disseminate information to their colleagues and students.

Press Release

A joint press release was issued by NVMP, Philips and UNU. The press release was picked up by Reuters and other major news wire and was covered in 24 countries, in 7 languages. The text of the press release can be found in Annex 6.

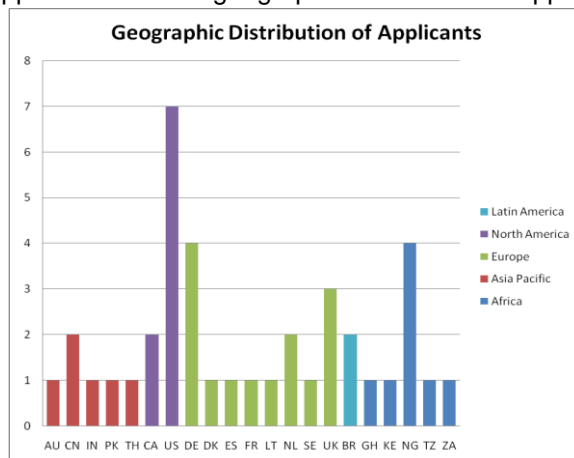
3. Applications and Selection

Application procedure

The call for applications was published on 1st April, 2009 and open until 30th May. An application pack comprised a 2-3 page research paper with a maximum 2000 words (not including references), very similar to an extended abstract, as well as a recent CV, and an application form which included questions on their research topics and interests, academic qualifications and experience as well as their motivation to participate in the summer school. The application form also requested for approximate costs of travel to participate in the summer school, which was useful in budgeting and awarding travel grants to selected participants. The travel grants were however, not a criterion for selection.

Applications received

During the two month period, we received 52 enquiries, of which 39 were complete applications². The geographic distribution of applicants is as below:



² Full list of applicants is attached as Annex 5



Selection Procedure

After a basic check whether an application fulfilled basic requirements on completeness and relevance of topic, each application was sent to two reviewers for comments and feedback regarding the suitability of the applicant for the summer school. The reviewers were chosen on the basis of their area of expertise from within and outside the StEP network. The evaluation form, sent together with the application documents, requested reviewers to evaluate on various aspects such as originality, importance of issue, content of the research paper as well as motivation and overall application and suitability for the summer school.

Selected Participants

The expected group size for the summer school was between 15-20 students. Therefore, from the 39 applications reviewed, 20 applicants were sent invitations to participate in the summer school. Of the 20 acceptance notifications sent, 3 applicants were unable to participate in the summer school, for various personal reasons. Therefore, the summer school had a participant group of 17 students. The applicants were shortlisted primarily on the basis of merit (as judged by the reviewers), as well as their motivation, their research interest and their ability to bring a unique perspective to the rest of the summer school students.

The notifications of acceptance were sent out to the students together with the travel grant provided to them. The travel grants ranged from full travel grants including airfare, train and visa expenses based on need and merit, to partial travel grants which covered up to a maximum of 50 % of the total travel cost, based primarily on merit.

The participants were from Europe, Asia, Africa, North America and South America, representing between them 17 countries of origin, education or research. The selected participants also brought together a wide range of specialisms from sociology to political science to metallurgy.

4. Summer School Program

The summer school duration was from 6-11 September 2006 in Eindhoven, Netherlands and continued further with a direct interlinkage with the R'09 Twin World Congress from 12-16 September in Davos, Switzerland. The summer school started with a welcome reception and dinner hosted by Philips at the High Tech Campus on Sunday 6th September, 2009.

The program was constituted of a mix of expert faculty lectures, student presentations, discussions, study tours and group work for which the Open Space methodology was used. Such a format allowed the students to gain and share knowledge as well as see first hand e-waste recycling in action, in a real rather than in a merely academic context. The schedule was structured in a way that reflected a product lifecycle – starting with the producer in the pre-consumer phase, and in the post-consumer phase, going through dismantling, recycling and material recovery.

Open Space Technology

Open Space Technology enables groups of any size to address complex, important issues and achieve meaningful results quickly. Given the diversity of students' research interests and geographical references, it provided a methodology to get the group to work together on a project they could jointly decide upon as interesting and thereafter self-organise themselves to deliver it.

Open Space is based on the premise that organizations and systems that have a clear purpose and a willingness to engage the new will automatically self-organize to achieve their



goals. There is little preparation required on behalf of the participants, as the technology is based on one simple law – “the Law of Two Feet”, and four elements, namely the circle, the breath, the bulletin board and the marketplace. Together, these elements create an environment conducive to multi-disciplinary activity³.

The two deliverables set for the participants from their Open Space group work were:

- 1) to deliver a workshop on e-waste at the R’09 in Davos and
- 2) to come up with concepts and proposals for projects resulting in sustained and interdisciplinary co-operation.

Davos R’09 Interlinkage

EMPA, in cooperation Nagoya University Japan was the organizer of the R’09 Twin World Congress, a biannual event scheduled from 14th-16th September 2009 (Complete R’09 program available online at <http://www.r2009.org/Program.php>).

Given the close link between scarce materials and e-waste management, the Congress provided a synergistic opportunity to afford the summer school participants with a wider platform and also bring higher visibility and outreach of the NVMP-StEP E-waste Summer School initiative.

At the R’09 Congress, the students jointly delivered a 3 hour workshop, split over two 1.5 hour sessions, with the overall topic “E-waste in developing countries”. In the first session, they presented briefly on the following topics:

- Formalisation of e-waste informal sectors in developing countries
- Scarce resources used in electronics
- Design for Recycling (DfR): An effective solution?
- Implications of WEEE across the world

In the second session, the audience was split into 4 groups, each coordinated by the participants to discuss questions posed during the presentations. These discussions were then summarized and presented to the audience.

5. Feedback

The feedback on the summer school from both the students as well as faculty has been overwhelmingly positive. The feedback on key aspects of the summer school from the student perspective is shown below. The results are based on an online questionnaire⁴ completed by 16 of the 17 participants. The questionnaire was strategically created with both objective and subjective questions, in order to be able to quantitatively rate the various aspects as well as to gather valuable comments and suggestions from participants.

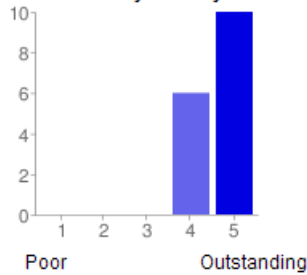
Overall experience of the summer school: The participants overwhelmingly considered the summer school experience as outstanding or very good.

³ For more information on Open Space Technology, visit <http://www.openspaceworld.org/tmnfiles/lindfield.htm>

⁴ Online questionnaire can be viewed at: <http://spreadsheets.google.com/viewform?hl=en&formkey=dEVXUS1qTI9jQkotVzBabTJadEhzMUE6MA>



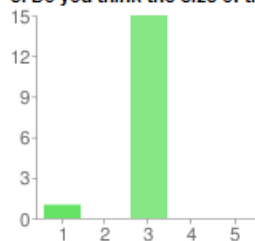
1. How would you rate your overall experience of the summer school?



1 - Poor	0	0%
2	0	0%
3	0	0%
4	6	38%
5 - Outstanding	10	63%

Class size: Almost all participants (94%) thought that the class size of 17 persons was just right.

5. Do you think the size of the class was suitable?



1 -Too few students - would have preferred a larger class	1	6%
2	0	0%
3	15	94%
4	0	0%
5 -Too many students - would have preferred a smaller class	0	0%

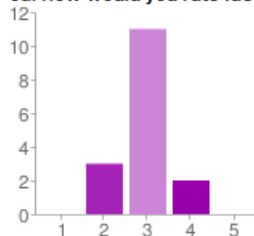
Comments:

- ➔ 15 – 20 is right for getting a good mix of disciplines, backgrounds and geographic distribution was good. Anything over 25 – 30 would probably be too much
- ➔ Was the right size to have closer interaction between participants. Larger group might dilute the deep-level communication among participants over specific topics

Faculty input: The faculty input was spilt evaluated on both the ‘number’ of faculty lectures as well as the quality of the lecturers. The number of faculty lectures was considered just about right by most of the participants, though some would have preferred fewer lectures, and others more.

In terms of the quality of faculty input, most students considered the quality outstanding or very good, with a few comments and suggestions for improvements for next time in terms of the lectures they might be more interested in.

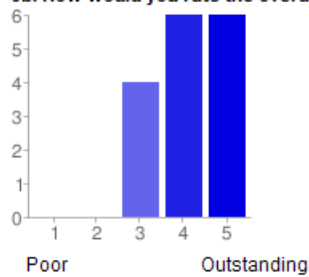
6a. How would you rate faculty input?



1 -Insufficient faculty input - would have liked more faculty lectures	0	0%
2	3	19%
3	11	69%
4	2	13%
5 -Too much faculty input - would have liked fewer faculty lectures	0	0%



6b. How would you rate the overall quality of faculty?



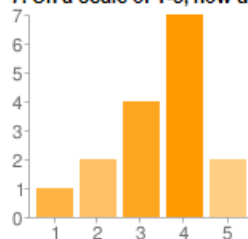
1 - Poor	0	0%
2	0	0%
3	4	25%
4	6	38%
5 - Outstanding	6	38%

Comments:

- ➔ Many faculty presented on euro-centric issues which are not fully relevant in their detail for all participants/ faculty also too ‘Europe heavy’
- ➔ Suggestions for lecture topics for future summer schools: informal market sectors, development projects, waste management in developing countries, governance structures as well as faculty from other regions and organisations such as NGOs, consumer organisations
- ➔ Would like to have faculty who challenge students more
- ➔ Opinion is spilt of having lecture on research skills – some thought it very useful, others found it less relevant as they already had previous experience of such lectures
- ➔ Liked the mix between academic, business and research experts.

Open Space: The feedback regarding the Open Space sessions shows a varied range of responses. Though the majority found it useful, there were many who considered it to be less productive than expected or only marginally useful. The main comment about the Open Space was that there was not sufficient clarity in the objectives and the process and therefore it took time for the participants to really understand it. Interestingly, some of the participants did not feel that the ‘Open Space’ was really open, instead mentioning that it was quite structured and rigid, with a pre-determined outcome in mind! Lots of comments and suggestions!

7. On a scale of 1-5, how useful did you find the Open Space session?



1 - Was not useful at all	1	6%
2	2	13%
3	4	25%
4	7	44%
5 - Was very useful	2	13%

Comments:

- ➔ Wonderful opportunity to unify the participants into one project; fresh new concept
- ➔ Would have preferred to have the Open Space sessions later – once the participants had presented themselves and got to know each other better.
- ➔ Goals of the Open Space were unclear in the beginning, made it difficult to start/ made it confusing – would be more helpful to demonstrate clear objectives at the very beginning
- ➔ The language barrier made it more difficult (perhaps was also responsible for the lack of common understanding of the process and goals), therefore the group facilitator needs to be clearer
- ➔ Would have liked to contribute more to Open Space but could not due to lack of time (and initial confusion)



- ➔ Would prefer the faculty to not be present beyond the introduction of the concept/ process/ goals
- ➔ Timing of the Open Space should be morning, or later in the evening, having dinner earlier, and then Open Space after dinner

Study tours: The study tours were hugely popular with all the participants, and the overwhelming majority found the study tours very relevant and interesting.

8. How relevant did you find the study tours?



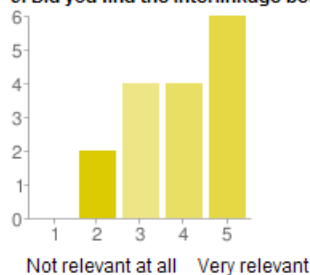
1 -Not relevant at all	0	0%
2	1	6%
3	0	0%
4	3	19%
5 -Very relevant	12	75%

Comments:

- ➔ Was a great opportunity to see first hand e-waste on an industrial scale, how complex the process is, see the practical side of e-waste recycling and ask questions directly to the experts
- ➔ Study tours were the favourite part of the summer school
- ➔ Other interesting study tours in the future might be to collection points, eco-design departments of producers, informal recycling facilities in developing countries
- ➔ Study tours on the first day might be a bit much as the students might feel a bit tired and jet lagged. May be better to have student presentations here instead

Davos R'09 Interlinkage: Most students found the interlinkage with the Davos R'09 very useful and relevant.

9. Did you find the interlinkage between the R09 and World Resource Forum relevant?



1 -Not relevant at all	0	0%
2	2	13%
3	4	25%
4	4	25%
5 -Very relevant	6	38%

Comments:

- ➔ Length of the summer school meant not enough energy for R'09
- ➔ Would have liked to participate in the sessions more, but could not due to preparations for the workshop
- ➔ Interlinkage between summer school and R'09 was very relevant, with the WRF, less so.

Three best features of the summer school

- Open Space
- Presentation by students/ Networking with other students/ Meeting other participants/New friends from different disciplines and cultural backgrounds/ Links with other students/



- Sharing of ideas/ Fresh thinking from different views about e-waste research and management/ Discussions about social problems/ discussions with people from different cultures and research background
- Interdisciplinarity/ Diversity of participant backgrounds
- Study tours/ Tours of SIMS & Umicore/ Site visits
- Dinner discussions
- Potential chances for international e-waste research
- Sponsor of great partners
- Staff/ Friendliness and professionalism of the organisation team
- Delivery of the workshop in Davos
- Relaxing and pleasant process
- Faculty lectures
- Interlinkage to Davos R'09
- Travel through 4 countries in Europe
- Making contacts
- Discovering new resources
- Access to high profile experts

6. Conclusion

The NVMP-StEP E-waste Summer School 2009 was the start of a unique initiative to bring young e-waste researchers together, and hopefully the next NVMP-StEP E-waste Summer School 2010 is as successful and more in meeting its aims and objectives!