FINAL CONCLUSION REPORT
WP3
(TUD, AEA, UPM, CRES, ADENE)
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1. Objectives and aims

10ACTION has taken on the task, to raise awareness in youth and young adults for the subject of natural and renewable resources. The future of our cities, especially in relation to sustainability and resource-conserving materials lies largely in the hands of coming generations. Therefore, it is important to integrate these subjects into learning curricula already in an early age, so conserving energy becomes the same self-evidence as brushing one’s teeth. The debates shall contribute to awaken the interest for energy and sustainability matters already in grade school and support awareness for one’s own actions. Only through early exposure and integration into the curriculum, long-term behavioural change concerning energy use and CO2-emissions can be achieved. Under the motto: "LEARN - debate and dream" activities for adolescents have been developed: Solar Design Competition, Solar Photo Competition and the debates.

The proposed actions were directed towards endowing educators from the participating educational institutions with the materials necessary to develop activities and debates targeted for adolescents, in order to evoke changes of habits and general sustainable behaviours, with great direct impact on their and their families’ lives. In each country, specialists with skills needed to address schools and to produce materials for adolescents were involved with the purpose to create quality material adapted to each country and to the target group

2. Strategies to reach the target group

For all activities in this target group of adolescents, the most important step was to reach teachers as multipliers and to get them involved in our objectives. To develop the best communication plan in their country, all 10Action partners sought collaboration partners such as their respective Ministries of Education. Unfortunately uncomplicated contact to schools in collaboration with the Ministries of Education was only possible in countries with a central system of government, like Greece. Consequently, organizers in other countries sought new collaboration partners such as special eco-school-networks. ADENE and AEA in their position as energy agencies used their existing networks. UPM and TUD in their role as universities needed a lot of effort to find new network systems in addition to their existing partners in order to enable and facilitate contact to the target group of adolescents.

10Action developed special leaflets and posters to advertise the activities of WP3. 410,835 issues of prepared print material were handed out directly to schools, teachers and
adolescents. In addition, 743,405 leaflets were sent with digital newsletters. Germany and Spain used big online platforms for teachers and adolescents and the social networking like Facebook, twitter and tuenti to announce the activities via RSS, news ticker, etc. (388,920 subscriptions and clicks).

UPM and TUD developed a Moodle registration platform for all activities in WP3. This platform provides all WP3 materials (teacher modules, competition rules and leaflets) for the users in English, Spanish, Portuguese, Greece and German language. (http://10action-teenagers.sdeurope.org). The online platform had 331,220 visits until 25th October 2012.

UPM, AEA and TUD focused on direct contact through trade fairs for schools, such as Dabadum (4,553 participants) in Spain, Hobit (ca. 1,000 participants) in Germany, RENExpo (1,300 participants) in Austria. In sum 6,853 visitors at trade fairs for schools.

3. Activities carried out

3.1 Debate “How we want our solar village”:

Left: Teacher training 29th October 2011 (Darmstadt, Germany) - Exercise “House with and without isolation”, measure of water temperature in time intervals
Activities at Villa Solar and 10Action international exhibition, Sept 2012: See and feel the energy | Create your city

The activities of the debate were implemented between May 2010 and 15th November 2012 in Greece, Spain and Germany reaching **4,912 adolescents and teachers**. Goal of the debates is to fortify awareness for the actor’s impact on nature and environment. Potentials in the tier of city and neighbourhood are explored and transformed in-depth. Through the means of a planning game, students can assume and put themselves into the positions of different participants and actors in urban planning.

In Greece at least one debate was executed in 63 schools. Spain implemented 158 debates while summer camps, Science week and Solar Decathlon Europe. In Germany the final number of debates in schools cannot be confirmed (At least one debate per delivered teacher modul = >172 debates). In Greece and Spain **221 debates** were implemented.

In Germany, 621 hours of training on carbon savings and solar energy were executed in 84 h teacher trainings, 251 h with guided tours through the Solar Decathlon House 2009 and 286 h with lectures in classes. Spain carried-out 2,291 hours of training on Carbon Saving and Solar Energy during the Solar Decathlon Europe, 558 hours Science week and 59 hours in summer camps. In sum **3,530 hours of training on carbon savings and solar energy** were implemented in Spain and Germany.

The **lesson material for the debate „Energy + Architecture“** was developed in English, Spanish, Greek and German. It is structured in three modules and was the ideal basis to prepare for competition participation. Depending on knowledge level one to three modules could be executed in preparation, and be concluded with the competition. Thereby, participation in the competition functioned as incentive and, due to the basic knowledge of the students, could be conducted quickly and efficiently (**1,871 hand-outs and downloads**) until the end of the project 15th November 2012.

- Detailed informations in D3.1
- Download of teacher materials on 10Action.eu, D3.2
3.2 Solar Design competition “Ideas for the future”:

Left: National exhibition, Frankfurt, Germany- 1st prize winner (10-14) in front of their entry in DAM (30th March 2012)
Right: Award ceremony, Frankfurt, Germany, Final photo of all winners in DAM auditorium (30th March 2012)

3rd prize Austrian competition “renewable energies and controlling the grid”, 1st prize German competition (10-14 years) “Green corner”, 2nd prize Greek competition “Design and construction of parabolic reflector” 3rd prize Greek competition “the ecological house”

The activities of the Solar Design Competition were implemented between October 2011 and 15th of October 2012 in Greece, Austria and Germany reaching 752 adolescents (194 Devices). Spain implemented the action in addition to the contract without a winner’s choice,
because the most of the 686 participants (308 devices) did not take part in the official competition with their devices. Competition leaflets, posters and rules were prepared in English, Spanish, Greek and German. The aim of the Solar Design Competition "Ideas for the future" was, that students occupy themselves intensively with the societal important issues of construction, housing and energy.

We were looking for creative ideas and solutions that dealt with regionally varying problems and site conditions and solutions through efficient use of materials and use of sustainable resources and methods in architecture and application and integration of renewable energies in buildings. Participating students were asked to develop ideas for "The Town of the Future" (Age group 10-14 years) or "The Building of the Future" (15-19 years). Through observation and occupation with their individual built environment (school/home), problems and challenges were to be discovered and explored.

The competition was launched in October 2011, the entry deadline depended on the participating country (Germany: 29th of February 2012, Austria, Greece: 20th of May 2012, Spain: 15th of October 2012). The choice of the winners (1st, 2nd and 3rd Prize in each country and age group) was made by jury decision on 23rd of March 2012 (Germany) and June 2012 (Greece and Austria) by usually 4 judges from different specific disciplines (education, energy, architecture/design, 10Action).

In Germany the award ceremony was held in conjunction with the opening of the national exhibition (30th March-28th April 2012) at the German Architecture Museum (DAM), Schaumainkai 43, 60596 Frankfurt am Main (5.063 visitors). In Greece, a national exhibition for both competitions was presented between 24th and 29th of June 2012 (1.500 visitors), at the Technopolis area, Athens. In Austria a national exhibition was arranged on 24th May 2012 at the AEA in Vienna (94 visitors). All entries were shown internationally at the Solar Decathlon Europe 2012 in Madrid 14th – 30th September.

- Detailed informations in D3.3
- Download of winners on 10Action.eu, D.3.3
- Downloads of competition rules, leaflets on http://10action-teenagers.sdeurope.org
3.3 Solar Photo competition “Energy in Focus”

Left: National exhibition, Darmstadt, Germany (23rd July 2012)
Right: Award ceremony, Darmstadt, Germany, Final photo of all winners in Karo5 (23rd July 2012), Foto: Roman Grösser, Darmstädter Echo

International Award ceremony in front of their winning photos in the 10Action international exhibition at SDE, Madrid, Spain, September 2012

The activities of the Solar Photo Competition were implemented between October 2011 and 15th of October 2012 in Greece, Portugal, Spain, Austria and Germany (not in contract) reaching 1,303 adolescents (1,582 photos). Competition leaflets, posters and rules were prepared in English, Spanish, Portuguese, Greek and German.
The means of playful introduction to the subject of renewable energy through the creative medium of photography provoked direct examination and reflection of participants’ own behaviour. Thus, the student competition was aimed to awaken the interest for energy and sustainability matters and the consciousness of one’s personal contribution already in an early age; one small step on the way to achieve long term behavioural changes, concerning the use of energy and the source of CO2-emissions.

The competition was launched in October 2011, the entry deadline depended on the participating country (Germany, Austria, Greece: 20th of May 2012, Spain, Portugal: 15th of October 2012). The choice of the winners (1st, 2nd and 3rd Prize in each country and 1st, 2nd and 3rd international overall winners) was made in an international jury session on 12th of June 2012 (Germany), 29th of October 2012 (Portugal) and November 2012 (Spain) with usually 10 judges from different specific disciplines (education, energy, photography, 10Action).
In Germany the award ceremony was held in conjunction with the opening of the national exhibition (23\textsuperscript{rd} of July-14\textsuperscript{th} of September 2012) at the Karo5 building of TU Darmstadt, Karolinenplatz 5, 64289 Darmstadt (1.715 visitors). In Greece, a national exhibition for both competitions was presented between 24\textsuperscript{th} and 29\textsuperscript{th} of June 2012 (1.500 visitors), Technopolis area, Athens. In Austria a national exhibition was arranged on 24\textsuperscript{th} of May 2012 at AEA in Vienna (94 visitors). In Portugal the winning entries will be presented digitally in all winning schools in the beginning of 2013, expecting 3.000 visitors. In Spain, the international exhibition of WP3 and WP2 activities was executed during the Solar Decathlon Europe in Madrid (14\textsuperscript{th} of September – 30\textsuperscript{th} of September 2012 (52.500 visitors). There, on 28\textsuperscript{th} September 2012 the international award ceremony was celebrated with the invited international winners and their legal guardians.

- Detailed informations in D3.5
- Download of winners on 10Action.eu, D.3.5
- Downloads of competition rules, leaflets on http://10action-teenagers.sdeurope.org

4. Balance of the results

10Action has reached 1.552.427 adolescents with its communication plan for the targeted group of adolescents and exceeded its benchmark to reach more than 5% (587.585 adolescents) of the adolescent population in Spain, Portugal, Greece, Austria and Germany with 13%.

7.773 adolescents participated in the three activities of Debate, Solar Design and Solar Photo Competition in Spain, Portugal, Greece, Austria and Germany. 221 Debates and 3.530 hours of training on carbon savings and solar energy were implemented. 10Action exceeded its benchmark of more than 200 hours of training on Carbon Saving and Solar Energy more than tenfold (1.765 \%).

With 505 entries in the Solar Design Competition, 10Action exceeded its benchmark of >50 entries more than tenfold (1.010 \%). With 1.582 photographs the benchmark of the Solar Photo Competition was nearly fulfilled (1.500 photographs, 106\%).

In addition, 11.372 visitors of the general public were reached with 5 national exhibitions of WP3 in Germany, Greece, Austria and Portugal and 1.337.964 readers of newspapers were reached with press releases following the events of WP3. 52.500 members of the public attended the 10Action international exhibition at the Solar Decathlon Europe 2012 in Madrid, Spain (105 \% benchmark 50.000).

- Detailed informations in D3.1, D3.3, D3.5, D3.7
5. Success Stories of WP3

The biggest success of 10Action for the target group of adolescents was that the participants recognized that also small changes in their behaviour do have an impact on the future and climate change. They started reflecting and extended their knowledge on the topics of energy efficiency, energy resources and renewable energies and raised their energy-awareness in their daily lives. Adolescents seem especially motivated to change their habits in regards of finite resources and the threat of climate change. In their opinion polls they wrote, that the topic should be implemented and discussed in schools much earlier (and be included in their schools’ regular curricula).

10Action received excellent feedback to the teacher training staff. Especially the practical exercises were teachers’ favourites. In their opinion poll the teachers told us they would include the topics in their future curricula. Within the debates we recognized, that teachers and adolescents were really impressed by the buildings and design innovations of the Solar Decathlon (Europe). Thus, the combination of theoretical instruction and physical demonstration through prototypical building practice was a real success.

The transfer of knowledge through the Solar Design Competition to adolescents was a very good experience, because they were working together in groups under teachers’ instruction with assistance by the teacher training staff. Participants did concentrate on their respective environments of buildings and towns, reflected on the problems in their neighbourhoods and tried to find new and better solutions for the future. The quality of entries was excellent. As a result, TUD was able to show all projects in an exhibition at the German Architecture Museum (DAM) for one month (> 5.063 visitors). TUD is really proud, that the German Architecture Museum (DAM) included two scale models of the Solar Design Competition in their following exhibition with the topic “The Architecture Scale Model” (25th May – 16th September 2012, 20.000 visitors).

The best entries were the ones in which the teachers were really involved. For example, the first prize winner (10-14 years old) project “Route de Sol” from students of the Gymnasium Oldenburg in Germany was developed further after the competition, using the prize money.

- Booklet of “Route de sol” in attachment

The film by the 2nd prize winner (10-14 years old) from Diltheyschule, Wiesbaden, “Energy Dream Homes”, featuring a celebration of renewable energy sources, proved to 10Action that even young adolescents can motivate adults.

- Film of “Energy dream houses” in attachment
The task of the **Solar Photo Competition** was simple enough, that 10Action could involve teenagers directly in the topic. Participating adolescents did concentrate on their surroundings, finding examples of energy use, reflected on problems in their neighbourhood and tried to find new and better solutions for the future. The implementation in more than 5 countries enabled international knowledge transfer. In addition, TUD reached the general public (> 1,715 visitors) with its national exhibition, showing the topic of worldwide and European climate targets in connection.

The most personally impressive experience for the international winners (2 x Greek, 1 x German) was the visit of the Solar Decathlon Europe 2012 during the international building exhibition in Madrid. The winners were really impressed and 10Action is sure, that they will transfer their positive experiences to their friends and family!

**6. Lessons Learned and Recommendations for Future Action**

**Motivation of teachers** makes all the difference for adolescents. Most of the teachers are extremely busy, struggling to implement their normal required curriculum and feel unable to acquire new knowledge in addition. *The integration of the topic in mandatory curricula* or making continuing education on the topic compulsory is necessary to achieve continuing impact on the target group. To discuss the topic regularly in adolescents’ daily lives, it seems to be a good idea to *integrate their parents in the actions*. The *collaboration with the Ministries of Education is necessary* to get the topics of renewable energies and finite resources included in the mandatory grade school curriculum. A lot of effort and time was necessary to achieve collaboration with the Ministries of Education, especially in countries where education is subject of individual federal states. Unfortunately most of them did not agree to transfer information on 10Action to their school contacts.

Existing *connections to eco-schools*, e.g. in Portugal, are another key to reach the schools. For project partners, such as UPM and TUD in their role as Graduate Universities, these did not exist. A lot of effort and time was necessary there to find and collaborate with new networks.

Due to the change in the communication plan for most of the partners, there was no time to research the best time to implement the competition during the school year. For this reason the *defined dates of the competitions were not optimal*. In some countries, a lot of well-respected competitions already exist (Jugend Forscht, NaturPur Award, etc.), which are primarily on teachers’ radar and interest. The assistance of experts from the field of media management and communication seems necessary to make the *10Action competitions more attractive* for the target group.
A lot of effort was necessary to implement the competitions internationally. For example, some countries had to delay their individual competitions several times. As a result, their participants could not take part in the international winners’ choice of the Solar Photo Competition and the registration platform was completed too late for the launch of the competition in some countries. On the other hand, synergy effects from joint preparation of materials such as leaflets and competition rules helped to accelerate the implementation of the competitions. The results in WP3 show the good team work within the 10Action team. Based on early feedback and the success of the project so far, 10Action will extend its effort to keep the teacher training staff available for additional two years following the end of the project in order to facilitate the continued successful implementation of the created teaching materials (10Action.eu).
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