THE AGS

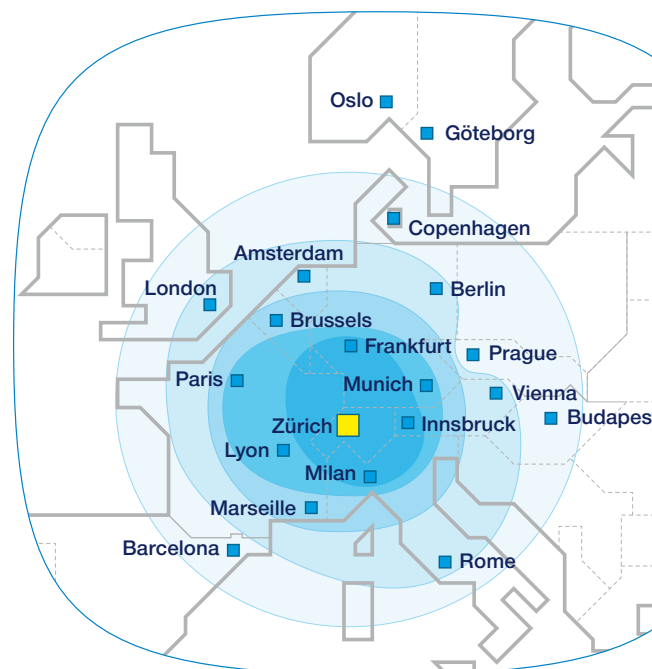**The Alliance for Global Sustainability**

Implementing Sustainability in Conferences

Recommendations

applied to the Alliance for Global Sustainability Annual Meeting 2009

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Peter Edwards, professor of Plant Ecology at ETH Zurich, has been AGS Faculty Coordinator at the ETH since 2002.

Introduction by the Alliance for Global Sustainability

The Alliance for Global Sustainability (AGS) is a partnership of four scientific and technological universities—MIT, The University of Tokyo, Chalmers University of Technology, and the ETH Zurich—and their associated partners. It was formed in 1997 in the conviction that closer collaboration amongst some of the world's leading research institutions would lead to faster progress towards sustainability (www.theags.org). We held our 2009 Annual Meeting from 26 to 29 January at the ETH in Zurich.

At the same time, the World Student Community for Sustainable Development (WSC-SD) met for their annual Student Summit for Sustainability (S3). The WSC-SD is a multidisciplinary network of motivated students with the ability to think and act both locally and globally, and who share the vision to make a difference. Their purpose is to be a leading international student organization that carries out meaningful projects which result in positive and enduring changes to improve lives and communities around the world (www.wscsd.org).

The AGS Annual Meeting and the S3 are distinguished by their commitment to sustainability values, and the conference organization set targets to minimize the sustainability footprint of the event. These were expressed in a sustainability pledge that was posted on the conference website.

Franziska and Annina dedicated their BSc term papers to helping implement this pledge and to investigating the impacts of the conference. The four day joint conference was attended by 356 participants from 32 countries, including 30 participants from developing countries who received grants to attend. The flights alone were responsible for 460 tons CO_2 eq., which made up 97% of the carbon emissions of the whole conference. We purchased carbon offset for the flights of the invited speakers, which cost us 1.45% of the total conference budget. In order to declare the conference as climate neutral, we would have needed about 13% of the budget of USD 170 000. The AGS is therefore increasing its use of video conferencing and webcasts in order to reduce the international travel associated with AGS activities.

Sustainable events at the ETH should not be limited to the AGS Annual Meeting. In this report Franziska and Annina have used their experience and feedback from the work for the AGS conference to develop some recommendations for future conference organizers. We highly recommend these guidelines for conference organizers at the ETH and the other AGS universities. The full account of Franziska and Annina's work can be found in their ETH Bachelor of Science term paper on the ETH Ecoworks website (www.ecoworks.ch).

Peter Edwards, AGS Faculty Coordinator at the ETH

Recommendations

Based on the experience from the Alliance for Global Sustainability Annual Meeting 2009 (www.theags.org), we can make the following recommendations for future conference organizers.

Sustainability pledge
- Declare your organisation's commitment to sustainability clearly in a pledge.

Travel
- Consider the option of video conferencing (VC), especially for regular meetings where people already know each other. Highlight the time and emissions saving to the participants. The VC service at your university can help you find an optimal solution (e.g. www.vc.ethz.ch).
- For annual or unique events, video streaming or webcasts will give some participants an alternative to travelling. You can also reach those who did not intend to attend in person in the first place. Streaming or webcasts need to be promoted and must be known to the participants before registration.
- At international events, inform participants about carbon offset possibilities. Recommend respected providers, explain their quality standards, and make it as easy as possible for participants to pay (e.g. myclimate.ch or sustainabletravelinternational.org).
- Inform participants about alternative travel options to reach the conference location, including timetables for train connections. Adapt the travel options to the different situations of your participants (e.g. schedule, budget, environmental awareness).
- Demonstrate to the participants what emission saving is possible with what travel options. When planning trips within Europe, consult online tools like ecopassenger.com or routerank.com to compare travel times and emissions.

Accommodation
- Choose hotels located near the conference venue and/or with good public transport between the hotel and the conference venue.
- Check whether these hotels have environmental or sustainability certification. Use the opportunity to conduct a survey of the hotels used by conferences at your university.
- Include the information sheet Be a sustainable hotel guest in the conference documentation for participants.

Catering
- Choose a catering company that is committed to sustainability - inform yourself by reading the company's environmental report and by talking directly to the caterer. Look for ISO 14001 certification. Choose a company close to the venue.
- Regional and seasonal products are most sustainable. Consider serving exclusively vegetarian meals at your conference. Ask the caterer what menus they can offer in this quality. Ask for organic production, fairtrade, and certified sustainable fisheries (MSC label).

- Clearly state your demands on food and drink to the caterer. Agree on a concept to reduce waste, e.g. by using reusable dishes. Write the agreed criteria and concept into the contract. Provide recycling bins.

Printing

- Most of the energy used in printed materials is used for the paper, therefore only the minimum of needed material should be printed.
- Carefully consider which materials the participants need in printed form and which can be sent only as a PDF. You could also ask participants to order printed copies when they register. Think about how you can advertise the conference without printing large quantities of posters and flyers.
- Use recycled paper and print double sided. Coated (glossy) paper should not be chosen, because the finishing it needs can consume as much energy as the printing itself.
- The printing company should publish an environmental report and take measures to be more sustainable.
- When you decide to print a large document such as an abstracts book consider informing the participants about options to compensate it.

Timetable for decision making

Conference planning starts
Decide which measures to increase sustainability are important for your conference.
Consider if your event can be held as a video conference.
Find a sustainable conference venue.
Find appropriate hotels following guidelines for sustainability: Ask the local tourist office or make own investigations.
Work out a travelling concept: Who should take the train instead of flying? How is CO_2 compensation organized?
Work out a printing concept: What will be printed? Will participants be asked if they want an abstracts book or not?
Decide if webcasts or similar communication techniques will be made available.
Clearly communicate the sustainability measures and important linked information to participants, for example on the registration website.
Registration opens
Find a suitable caterer. Clearly state your sustainability criteria for food and drink and agree on a waste concept.
Find a printing company that follows sustainability guidelines.
Plan how to communicate your sustainability measures during the conference.
Conference starts
Check if all measures are being implemented as planned and take immediate action if problems come up.
Evaluate the impact of the implemented sustainability measures and of the communication methods.

Abstract

How can the environmental impact of a conference be kept to a minimum? Parameters that could help in assessing this impact include energy use, travel, catering, accommodation, waste production, resource use, printing. Social aspects of sustainability could include the diversity of participants' backgrounds. For the AGS conference, we decided to focus on the following four areas:

Travel. This causes by far the highest greenhouse gas emissions, but is the most difficult to influence, as travel decisions are made by the participants.
The conference website recommended arriving by train and purchasing carbon offset, and recommended links to plan alternative travel options. A survey among participants showed that the advice we provided had little influence on travel decisions, and that little use was made of carbon offsetting. However, within Europe the majority of participants—especially the students—did use the train, even for journeys lasting 20 hours. Alternative strategies, such as video-conferencing, are discussed to identify their potential for future conferences. The AGS AM was recorded as webcasts, but these were not used much and would have needed more promotion.
Conference organizers should concentrate on maximizing use of virtual options such as video conferencing, and on influencing participants' choices with careful information.

Accommodation. Hotel nights represent the second largest source of CO_2 emissions for an international conference, but contribute to the economic sustainability of the local community. Conference organizers can influence the hotels used by their university.
We compared different ecolabels for hotels, and used them to design a survey to measure the sustainability of some of these hotels. The results showed that the hotels differ greatly in their commitment to sustainability. The results of the survey were not available in time for the AGS AM, which is why hotels were selected on the basis of proximity to the conference venue. A map on the website informed the participants about this. To inform the participants about their impact on a sustainable hotel stay an information sheet was designed. It was read by most participants and had an impact on their behavior.
Conference organizers should try to recommend hotels that show their commitment to sustainability, and remind participants of their impact as hotel guests by distributing the information sheet.

Catering. Food and drink production has considerable sustainability impacts, both globally and locally, and catering represents the biggest source of waste at a conference. The lunch and coffee breaks are a directly experienced and socially important part of the conference, so conference organizers can increase participants' awareness of sustainability through their measures. Through the choices they make, conference organizers can do a great deal to reduce the negative impacts of catering.
Based on a review of available labels for catering and food, and our own questions, we compared the three catering companies operating on the ETH and University of Zurich campuses. We negotiated criteria for more sustainable

catering with the chosen catering company. In order to evaluate the climate impact of the catering choices, we compared the greenhouse gas emissions of the selected menu with three other menu scenarios, and identified the choices that make the most difference to the overall emissions.

Conference organizers should choose a caterer who is willing to implement sustainability criteria, and focus on vegetarian menus made with local seasonal products.

Printing. The production of paper has substantial environmental impacts, and the process of printing uses energy and water. Once again, conference organizers have a big influence over the magnitude of these impacts through their choices. As for catering, printed materials are a visible part of the conference, and so are an important means of communicating sustainability.

In order to create a sustainability concept, we investigated the different stages of producing printed materials. This showed that the paper production uses most energy and resources. The companies who printed the conference material were selected using the criteria identified in this research. Paperless alternatives were considered, but as the poster abstracts book was printed for the AGS conference, we decided to add a page with recommendations on how the participants can compensate the CO_2 emissions, the energy and the resources used to print it. The participants liked this idea. Some participants would have preferred receiving the abstracts book as PDF download only.

Conference organizers should ask participants at registration whether they want printed materials, and then use recycled paper printed double sided.

Conclusions

Conference organizers have to take most decisions related to sustainability at an early stage in the planning process, long before registration starts. Travelling has by far the highest impact on the CO_2 emissions of a conference, and is therefore a very important parameter to consider. Of the parameters we considered, printing has the lowest impact on emissions. But more sustainable printing measures are easy to implement and very visual to the participants and should therefore not be neglected. Not all communication measures worked equally well. Participants paid more attention to information sheets included in the conference material than to information on the website. This suggests that improvements are needed in how information is presented on the website.

Sustainable events at the ETH should not be limited to the AGS Annual Meeting. In this report we have used our experience and feedback from the work for this conference to develop some recommendations for future conference organizers at the ETH and at other universities or institutions.

Sustainability pledge

The AGS Annual Meeting is distinguished by its commitment to sustainability values. The needs of the conference will be met in a way that does not impact the ability of future generations and other cultures to meet their needs. The conference organisation has set targets to minimize the environmental footprint of the event in the areas of transport, food, materials, and energy and water use of buildings. We will also measure the social equity and impact of the conference on participants. They will be involved in the process of making this meeting more sustainable and will also be informed about the actions taken by the conference organisation.

- We will take action to reduce the CO_2 emissions of participant's travel. We will enable participants coming from Central and Western Europe to travel by train, and we will encourage participants from farther away to compensate their air travel by accomplishing an act for a more sustainable world or through a payment to a carbon offset provider. During the meeting, travel will be by public transport or on foot.
- We will serve food and drink that is organically produced, fairly traded, and vegetarian and locally produced whenever possible.
- We will keep the use of materials and their impact on the environment to a minimum. Whenever possible we will economise on use of materials or we will choose those materials with the smallest harm to the environment, such as recycled products. Waste will be minimized by recycling and choosing products with a minimum of packaging. We will print only as many documents as we need to ensure that participants can fully follow the conference, and we will ensure that the impact of the paper use and printing process are minimized.
- We will select the conference rooms and hotels that are easily accessible by foot and by public transport, so that travel distances during the conference are minimized. The hotels will be asked for information on their measures for sustainability, and this information will be used to help the ETH make hotel recommendations based on sustainability criteria in future.
- It is important to the AGS that as far as possible people of all ages, gender and regions have the ability to attend the meeting or profit from the presentations and panels. Therefore the price for attending will be lower for students and all the presentations will be recorded and made available as webcasts after the conference.
- A conference can only contribute to global sustainability when the participants benefit from it. It should help them increase their efforts to a more sustainable world. To measure this outcome, a questionnaire will be sent to the participants a few weeks after the conference.
- We will publish and distribute a report with our experiences and recommendations. This will be used by the AGS for the organisation of future AGS events, and it will be a stimulus for the development of sustainability guidelines for the organisation of events at ETH Zurich.

Travel

Why did we look at the sustainability of travel?

At an international conference, the travel activities of participants can account for 97% of the total greenhouse gas emissions. Still, travel is necessary, as the benefit of a conference is to bring people together and enhance scientific exchange. Reducing travel emissions is not easy as participants arrange the journey to and from the conference venue on their own. With information on railway connections, travel emissions and carbon offset possibilities, the organization committee can guide them to travelling more sustainably. New technologies like video conferencing and webcasts may, to some extent, replace physical attendance and therefore avoid travelling.

What did we do?

Action: Ways to minimize local travel

We tried to influence local travel during the conference. The conference was held in the ETH main building, close to the main railway station and with frequent tramway connections. We recommended hotels in walking distance to the venue. As some participants stayed at guest homes, day tickets for Zurich's public transport system were distributed at the registration desk. By this, we tried to avoid taxi rides.

Action: Travel information webpage

We created a webpage with travel information for the conference participants (for an example see page 10). The goal was to raise awareness of carbon emissions and show how to reduce them. Planning a sustainable journey should be as simple as possible. A link to the information was placed at the end of the registration process. Trains are by far the best means of transportation to reach Zurich. As travel times are no longer dependent on distance but on grid connection, a map was created to visualize the effective closeness of some cities (see cover). To highlight railway travel as an alternative to short distance flights, the respective emissions can be compared using online tools like Ecopassenger or RouteRank. RouteRank finds possible travel options and sorts them by emissions, travel time or price.

Air travel often cannot be avoided, but there is still potential to reduce its environmental impact. We recommended carbon offset (box 1.1) and presented respected providers. We encouraged participants to offset their emissions by personally doing something for the environment in their surroundings. Also, direct routes should be preferred, as take-off and landing are especially climate-intensive. Participants can improve their personal yield per emission by attending several appointments around the destination.

Findings:

- Travel to the conference released 460.3 t CO_2 eq. Half of the travellers arrived with intercontinental flights that are responsible for over 92% of the emissions. Another fifth came to Zurich by train, which caused only 0.15% of the travel emissions.

- Train travel was preferred in most of the cases it was reasonably possible, especially among students. Advice on travel behavior, e.g. combining several appointments with one journey, was considered by many participants. This might also be for time and money reasons.
- Very few participants used the possibility to offset their carbon emissions. Reasons might be the cost, especially for students, or that some do not know it or regard it as a selling of indulgences.
- Our survey showed no significant difference in the behavior of those who had or had not read the travel information webpage. Still, 24% of those who read it confirmed that it made them change their travel plans.

Action: Webcasts

The organization committee decided to make talks and discussions available to a broader audience by offering them as webcasts. This was announced in the sustainability pledge. The quality is better than with live video streaming. The webcasts address interested people that could not attend the conference and participants that have some questions or missed something. For those only interested in a few talks, webcasts are a good alternative to personally travelling to the conference.

Findings:

The webcasts were poorly used. Before the conference started, they were only mentioned in the sustainability pledge on the registration page, but not on the flyer. This made them invisible as an alternative to personally travelling to Zurich. Another reason might be that they were only available two weeks after the conference. By then, some of the immediately interested had already forgotten the webcasts.

Conclusions

- It is important to include participants in the emission reduction process. Showing them how much they can contribute is a great motivation. The travel information webpage should give detailed information adapted to the participants' background (schedule, budget, age, environmental awareness).
- The principle of carbon offset and its quality standards need to be explained on the travel information webpage to raise its acceptance. Integrating carbon offset into the registration process could increase payments, but would require early planning by participants and cause a lot of administrative effort.
- There was a high interest from participants in the webcasts, but there were only few actual downloads. If video conferencing, streaming or webcasts are available, this should be clearly advertised before registration, otherwise it will have no impact on travel emissions. The time and money saving can also be promoted. For those who abstain from travelling, partner universities could offer an auditorium for public viewing. Immediate questions could then be discussed in a small group.

Box 1.1: Carbon offset

Carbon offset providers enable individuals to compensate for their emissions on a voluntary basis. They initiate and support projects that directly reduce emissions. The market is growing fast and plays a significant role in reducing worldwide emissions by giving them a price.

The financed projects must quantify the amount of saved CO_2-equivalents. An independent organization has to control this process and verify the projects. The projects then get registered as verified emission reductions (VER), in order to make sure that a reduction cannot serve as offset more than once. As there is no international arrangement for VER, various standards were developed to guarantee their quality. The Gold Standard is one of the strictest, as it requires detailed research and monitoring. It fulfills the criteria of the Clean Development Mechanism (CDM) and has defined additional rules for its label:

- Projects must be additional, meaning the project would not have been realized without the payment for carbon offset.
- Projects have no adverse impact on the environment.
- They are consistent with the host country's plans for sustainable development.
- The benefits of the emission reduction are measurable.
- The project is financed without official development aid from industrialized countries.
- Only renewable energy and end-use efficiency projects are eligible. Sequestration projects are not accepted, as it is not yet exactly clear for how long the carbon will be in the storage.
- The project activities have a positive influence on the sustainability of the local community.

In Switzerland, myclimate is the best known carbon offset provider that applies the criteria of the Gold Standard label. The non-profit-organization is able to channel 80% of the carbon offset payments into reduction projects. To calculate the emissions of air travel, several factors are considered and detailed documentation is available on their website. There, they also offer tools to calculate emissions from car travel, housekeeping or events. To sell carbon offset in the US, myclimate is working together with Sustainable Travel International (STI).

myclimate: www.myclimate.org
Sustainable Travel International:www.sustainabletravelinternational.org

Example of a travel information webpage

The conference organization has set targets to make this Annual Meeting a sustainable event. At every international conference, the long distance travel is responsible for most of the carbon emissions. Participants can help reduce these emissions by following a few simple rules and considering the information below.

Arriving by train has by far the lowest environmental impact. Zurich lies in the heart of Central Europe, and there are numerous high-speed or over-night connections from most major cities.

Use online tools to visualize your contribution to emission reduction. For example, this figure shows the greenhouse gas emissions (in kg CO2 eq.) of a one-way trip from Vienna to Zurich. It compares travelling by train, by car or by air.

www.ecopassenger.org

www.routerank.org
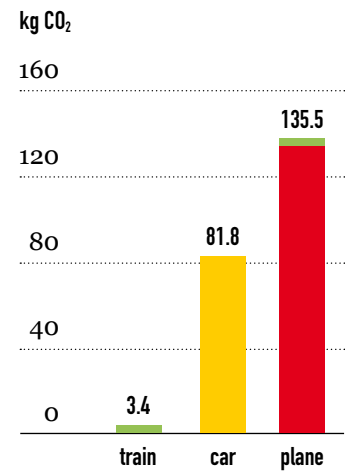
For this conference, we ask you to always take the train for travel times less than six hours. Remember that most high-speed trains offer a comfortable working environment. If you are willing to travel over night, always take the train for travel times less than 12 hours.

Look at the map for train travel times and see how fast you can reach Zurich. You can find the different companies offering international connections to Zurich at the SBB (Swiss Federal Railway) "Travel in Europe" by selecting your country.

If you have to arrive by air, please keep to the following guidelines:

- Try to combine your journey to this conference with other meetings or work in Zurich / Switzerland / Europe.
- Book direct flights and avoid unnecessary landings.
- Use public transport to get to and from the airport. For transport in Zurich, see www.zvv.ch or Zurich Airport.
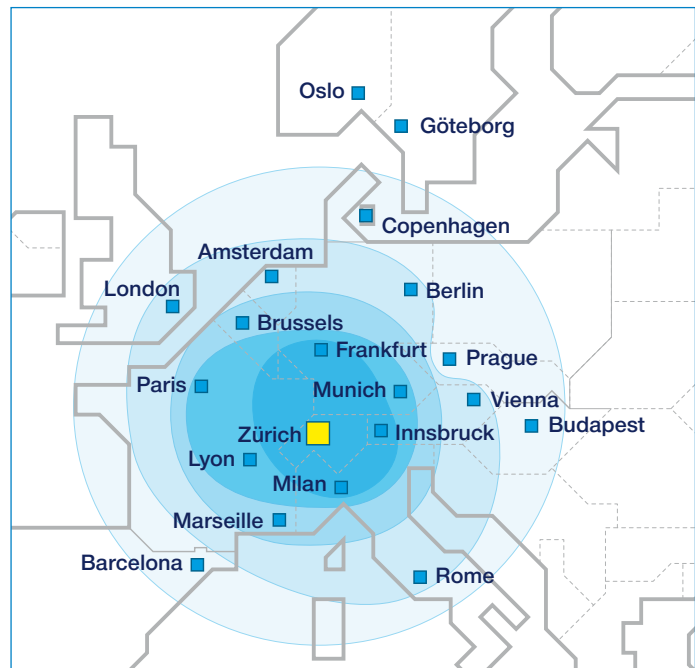
The conference organization would like you to compensate for some of the harmful effects of your flight on the climate by purchasing a carbon offset ticket. Carbon offset providers initiate and support projects that directly reduce emissions. They get controlled and registered, so that one project cannot used twice for compensation. There are various quality standards, and The Gold Standard is one of the strictest. The following providers have a very good reputation and support projects with the Gold Standard label:

www.myclimate.ch

www.sustainabletravelinternational.org

If you are short of money, it is better to offset fewer emissions but invest in high quality projects!

Accommodation

Why did we look at the sustainability of accommodation?

Hotel nights are the second largest source of CO_2 emissions of an international conference, but contribute to the economic sustainability of the local community. The sustainability of the conference accommodation can be influenced by the organizers by looking at the sustainability commitment of the hotels, their proximity to the conference venue, and through informing the participants about how to be a sustainable hotel guest.

What did we do?

Action: selection of hotels by location and communication to participants

We advised the organization committee of the AGS AM to select hotels near the conference venue. The participants were informed about the location of the hotels and their accessibility with public transport on the conference website (see page 13 for an example webpage about hotel locations).

Action: survey of sustainability commitment of selected hotels

We designed a survey to find out how committed these hotels are to sustainability and ranked the hotels based on the results. For this we compared three hotel eco labels (Green Globe, EU eco label, Steinbock label) to find out which is best suited to form the basis of our survey (see table 2.1). The survey used some of the Steinbock label questions and some we defined ourselves to test food, energy, heating and water use. Table 2.2 lists the questions, the answer format, and the way in which the responses were scored.

Findings:
- 6 of the 11 hotels completed the survey we sent out. The other 5 hotels either did not respond, or refused to take part.
- We scored the hotels for their eligibility for the Steinbock hotel sustainability certification, and also charted the results according to the sustainability categories management, ecology, regional focus & transport, and social aspects. With both evaluation techniques one hotel obtained the best rating, and two hotels were clearly worst in all categories. All the hotels except the best one were weakest in the category management.

Action: participant information sheet about being a sustainable hotel guest, and survey of participants responses
- We informed participants about how they can become a sustainable hotel guest on an information sheet in their conference materials (page 14).
- We evaluated the impact of our communications on participants behavior in a survey.

Finding:

Most of the people who answered the survey and stayed in a hotel did not change their behaviour in the hotel, because they already act as suggested. Still, about 5% behaved differently and maybe will do so at the next conference they attend as well. So an impact was achieved.

Conclusions

- The hotels that filled out the survey differ greatly in their commitment to sustainability. Therefore, the selection of hotels recommended as accommodation for a conference can have a significant influence on the sustainability of the conference. Most hotels already take action to be more sustainable but do not have a management tool to plan and coordinate those measurements, so this could be an area of major improvement.
- Giving the participants an information sheet about how to be a sustainable hotel guest is useful. Most people did read it and a few people changed their behaviour due to it. This is an easy way to make a conference a little bit more sustainable, especially if a sheet like this already exists.

Example webpage with information on hotel locations

The recommended hotels are within a few minutes on foot or by tram of the conference venue, the city centre, and the main train station. This reduces the environmental impact of participants' travel during the conference.

Travel from the airport:

People arriving from the airport are advised to take a train to the main train station, which takes about 10–15 minutes and leaves approximately every 10 minutes, or to take the tram no. 10, which stops at the ETH Zentrum, and arrives at the main train station in 30 minutes.

Map of hotel locations

Black Star: conference venue
Blue Star: main train station
Red Line: Polybahn (120 year old rack railway) which brings you in 2 minutes from the Central to the ETH

Green Star hotels:
Less than 5 minutes walking distance to conference venue
5 to 15 minutes walking distance to main trainstation

Yellow Star hotel:
About 7 minutes walking distance to conference venue
About 10 minutes walking distance to main train station

Orange Star hotels:
10 minutes travel distance to conference venue by tram
10 minutes travel distance to main train station by tram

Red Star hotels:
10 to 15 minutes travel distance to conference venue by tram
10 to 15 minutes travel distance to main train station by tram
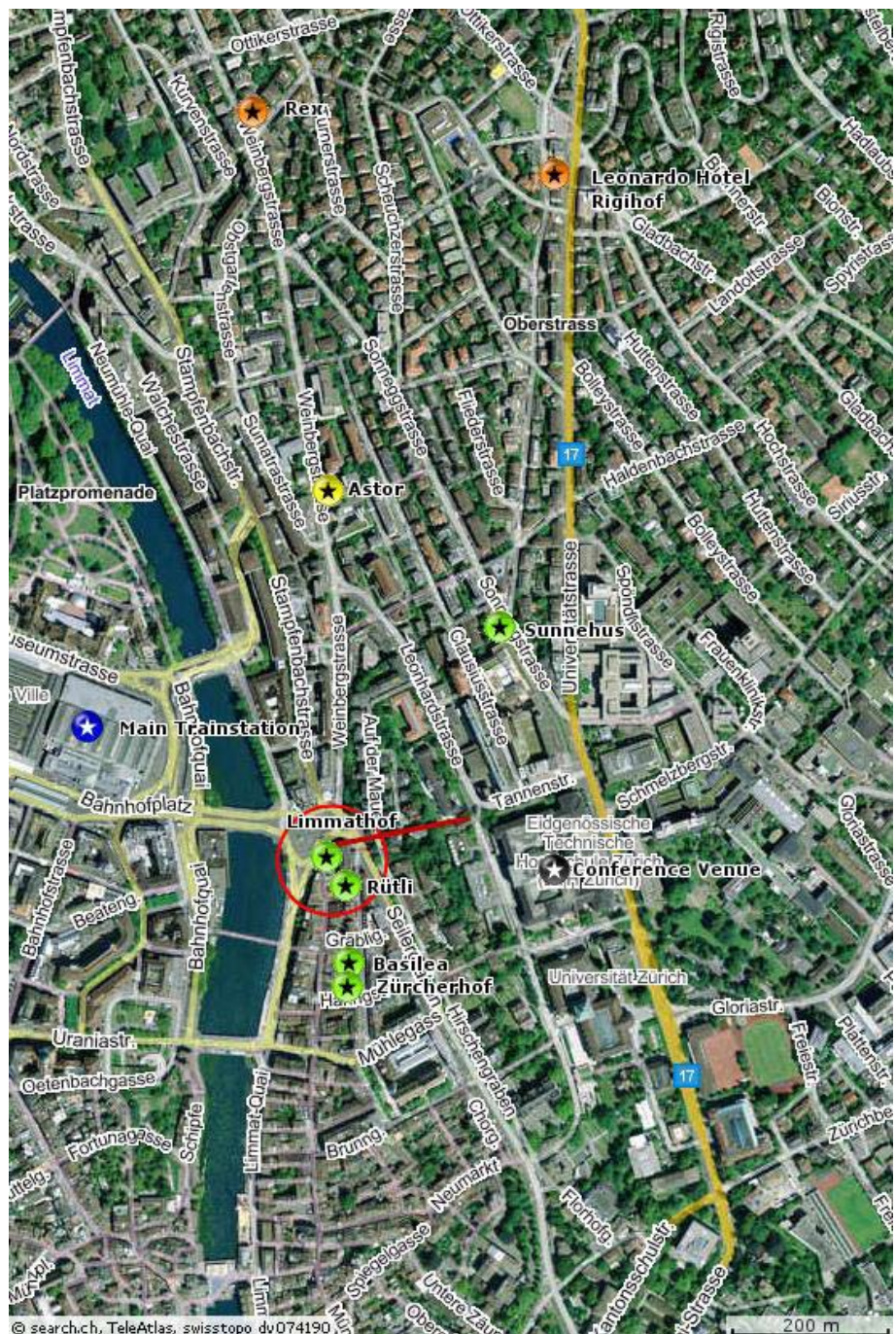
Be a sustainable hotel guest

Dear Conference Participant,

We tried to select sustainable hotels for you. But a hotel can only be as sustainable as its guests. We therefore would like to ask you to not only feel at home in your hotel but also act like it. Do not waste energy, food and resources.

Here are a few points you should follow:
(you are free to imagine your mom's voice while reading them)

Eat what is on your plate.
Take only the things you can eat.

Use your towels more than once to spare water, energy and detergents.

When leaving the room:
Turn off the lights.

Turn off any electronic devices like radios, televisions. Unplug any adapters (they also have a standby energy consumption).

Don't change your usual habits to less sustainable ones:
It is not necessary to shower longer in hotels than at home.
(the shower at home is mostly nicer anyway)

It is not necessary to heat your hotel room warmer than your home.

Table 2.1 Comparison of three eco labels for hotels

	Steinbock label	EU Ecolabel	Green Globe
Region in which it can be used	Switzerland	Europe	World
Categories of sustainability criteria	• Management • Ecology • Regional focus and transport • Social aspects • Financial and economy	• Energy consumption • Water consumption • Waste production • Renewable resources and use of substances which are less hazardous to the environment • Environmental education and communication	• Greenhouse gas emissions • Energy efficiency, conservation and management • Management of freshwater resources • Ecosystem conservation and management • Management of social and cultural issues • Land use planning and management • Air quality protection and noise control • Waste water management • Solid waste management • Storage of environmentally harmful substances
Differentiation within the label	Hotels can obtain between one and five Ibex depending on their performance	No	Hotels can obtain bronze, silver or gold label
Areas of sustainability covered	Economics Social aspects	Ecology	Ecology Economics Social aspects
Applicable in fields other than tourism	No	Yes	No
Year of introduction	1994	1992	1993
Further information	www.steinbock-label.ch	www.ecolabel.com	www.ec3global.com/products-programs/green-globe/

Table 2.2 Hotel sustainability survey questions and scoring

Categories of sustainability	Possible scores	Maximum possible score
Management (Steinbock label test)		**9**
Our company has a environmental and/or sustainability mission statement	no = 0 or yes = 1	
We want to continually improve our contribution to sustainability	no = 0 or yes = 1	
We have a responsible person for environment and sustainability in the management	no = 0 or yes = 1	
We conform with current environmental legislation	no = 0 or yes = 1	
We are ISO 9001 or 14001 certified	no = 0 or yes = 1	
We assess the material and energy flows	no = 0 or yes = 1	
We regularly inform staff about environmental and social aspects	no = 0 or yes = 1	
Our guests are informed about sustainability aspects in the hotel information	no = 0 or yes = 1	
We have environmental and social specifications for our suppliers	no = 0 or yes = 1	
Regional and transport (Steinbock label test)		**6**
We record, encourage, and evaluate the purchase of food and drink from the region	no = 0 or yes = 1	
Our furniture and appliances are mainly made out of regional materials from regional production	no = 0 or yes = 1	
We are involved in a local agenda 21 or a similar program (e.g. 2000W Gesellschaft)	no = 0 or yes = 1	
The share of propietary capital which is held in the region is over 50%	no = 0 or yes = 1	
We offer our guests special offers with travel by public transport	no = 0 or yes = 1	
We inform our guests about leisure activities that do not use motorised transport	no = 0 or yes = 1	
Social (Steinbock label test)		**8**
We offer apprenticeships	no = 0 or yes = 1	
We offer our staff several days of further training per year	no = 0 or yes = 1	
We integrate disabled people and socially disadvantaged people in our staff	no = 0 or yes = 1	
Our staff eat in a room with daylight, and receive raw vegetables/salad daily	no = 0 or yes = 1	
Our staff are offered sport and relaxation activities	no = 0 or yes = 1	
Our workspaces fulfill ergonomic criteria	no = 0 or yes = 1	
Over half of our staff has already worked for us for four years or more	no = 0 or yes = 1	
Our suppliers are chosen partly according to social criteria	no = 0 or yes = 1	

Social – Food (own questions)		3
What percentage of your imported food is certified fair trade? (coffee, tea, chocolate, rice, orange and fruit juices, bananas)	0% = 0.00 → 100% = 1.00	
Do you offer vegetarian menus?	no = 0 or yes = 1	
Do you offer vegan menus?	no = 0 or yes = 1	
Ecology (Steinbock label test)		**13**
We declare the origin of all our products in the menu	no = 0 or yes = 1	
The share of convenience food is not more than 20%	no = 0 or yes = 1	
We buy mainly bulk packaging	no = 0 or yes = 1	
We have a waste concept and dispose of four to six waste materials separately	no = 0 or yes = 1	
We use water saving flow restrictors on our taps	no = 0 or yes = 1	
We have a hygiene and cleaning concept and keep records	no = 0 or yes = 1	
We generate warm water and/or electricity from renewable energy sources	no = 0 or yes = 1	
We have automatic interval timing systems installed (light, heating etc.)	no = 0 or yes = 1	
We register energy use data and evaluate it	no = 0 or yes = 1	
We include clear environmental criteria when soliciting an offer	no = 0 or yes = 1	
We only use FSC certified wood	no = 0 or yes = 1	
Our furniture is mostly made out of solid wood	no = 0 or yes = 1	
Our bed linen and towels are made from natural materials (cotton, linen, silk, wool, etc.)	no = 0 or yes = 1	
Ecology – Food (own questions)		**2**
What percentage of your food is seasonal?	0% = 0.00 → 100% = 1.00	
What percentage of your food is from organic production?	0% = 0.00 → 100% = 1.00	
Ecology – Energy and heating (own questions)		**3**
How big is your heated area per hotel guest? (total heated area divided by the number of guestplaces)	rank responses and award points between 0 and 1, with the biggest heated area given 0 and the smallest area 1 point.	

Heating efficiency (I): What kind of heating system do you have?	Scored together with next question. Possible answers for this question: oil, natural gas, district heating, or other
Heating efficiency (II): What is the average temperature of the rooms in your hotel?	Score together with previous question. Calculation of energy use due to room temperature: 19°C = 100%, every degree higher increases by 6%[2]
Heating efficiency = I*II = carbon emissions of heating system [tCO_2eq. per TJ]*energy use due to room temperature	< 70 = 1 70−90 = 0.5 >90 = 0
To which energy efficiency class do most of your electrical appliances belong? (refrigerators, washing machines, dishwashers, office equipment, air conditioners etc.)	A = 0.5[3] A and B = 0.4 B = 0.3 C = 0.15 below C = 0
Do you pay attention to energy efficiency when buying electric appliances?	always = 0.5 sometimes = 0.25 never = 0
Ecology – Water (own questions)	**2**
How high is your water consumption in litres per guest night (yearly water consumption divided by number of guest nights per year)?	rank responses and award points between 0 and 1, with the highest water consumption given 0 and the smallest 1 point.[4]
Do you use environmentally friendly / easily biodegradable cleaning and washing agents?	always = 1 sometimes = 0.5 never = 0

[1] The carbon emissions of each type of heating service in Switzerland are: oil = 86.7 tCO_2eq. per TJ heating service, natural gas = 69 tCO_2eq., district heating = 57.8 tCO_2eq. (www.ecoinvent.ch).

[2] A temperature increase of 1° C inside a building is equivalent to 6% more energy use (Energieberatungszentrale der Nordwestschweizer Kantone, 2004. www.bfe.admin.ch).

[3] The electricity efficiency is only weighted with half the score compared to the heating question, as electricity in Switzerland comes mainly from hydropower, which is CO_2 poor, whereas heating is mainly with oil, which has high CO_2 emissions.

[3] Hot water in Switzerland is mainly heated with oil, therefore hot water use is comparable to the heating system question and is given the same amount of points.

Catering

Why did we look at the sustainability of catering?

Catering is the conference's biggest source of waste, from packaging, dishes and leftovers, and food and drink production have global and local sustainability impacts. Food production is directly linked to water use and soil degradation in arid areas, and the use of fertilizers and pesticides affect water quality and, in some cases, human health. The energy used in production and transport cause CO_2 emissions.

Conference organizers have a big influence over the sustainability impact through their choice of catering company and their selection of menus and other criteria for the catering service.

Catering is a directly experienced and socially important part of the conference, so conference organizers can increase participants' awareness of sustainability through communicating their sustainability criteria and the origin and production circumstances of the food.

What did we do?

Action: Define sustainability criteria for the AGS catering

To clarify the meaning of sustainability in catering, we listed some ecological, social and economic criteria in box 3.1. For the AGS catering in Zurich, we set up the following criteria in negotiation with the catering company ZFV. These are based on our sustainability criteria and the food labels described in box 3.2.

- Lunches should have only a small portion of meat, which should be produced in Switzerland.
- Vegetables and fruits should be chosen according to season and, if available, from organic production. Imported fruits, e.g. bananas, should be certified with the Fair Trade label.
- The croissants and bread rolls should be made of organically produced flour.
- The coffee should be certified Fair Trade.
- Water and orange juice should be served in glasses instead of PET bottles. For lunch, regional apple juice is served as an alternative to traditional soft drinks.
- The caterer takes care of waste recycling including collection of PET bottles. For lunch, washable plastic dishes are used. To reduce waste, small packages are avoided, e.g. for cream and sugar.

Box 3.1 Sustainability criteria for catering

Ecological criteria

1. Regional food and drink products generally have a significantly lower ecological footprint than imported products, due to much lower amounts of energy used for transport and cooling[1,2]. Regional products support local farms or companies.

2. The use of seasonal fruits and vegetables favors fresh products instead of frozen and conserved food, and avoids products from greenhouse production. Fresh products usually use less energy for processing and transport than frozen and conserved ones. Open field production needs less energy and materials than greenhouse production.

3. Labeled products from organic production guarantee an integral concept for ecologically sustainable farming. In particular, the use of fertilizers and pesticides is strictly controlled to protect groundwater and species diversity (www.bio-suisse.ch).

4. Food preparation involves an almost constant use of energy and water. A study by the Swiss catering group SV showed that, on average, 56% of the environmental impact of their canteens is caused by electricity use (www.sv-group.ch/Umweltbericht). Catering companies can easily reduce this through improved planning and staff behavior.

5. Any production process has hidden water inputs, or virtual water, e.g. the rainwater used to grow the maize to feed the cow for our beef steak. Virtual water is the volume of water required to produce a good. For one kilogram of beef, 15'497 liters of water are needed. One kilogram of rice needs only about 20% of this[3]. This is one reason why vegetarian catering should be considered.

6. Waste can be managed through recycling and avoiding extra packaging of tiny amounts. Throw-away dishes can be replaced by reusable ones. If washing up is not possible, disposable dishes from renewable raw materials are a good alternative.

Social and economic criteria

7. By purchasing imported products with fair trade labels, farmers from the south can develop under stable market conditions. They can sell their products for guaranteed minimum prices and get access to the world market. It allows them to start saving and reinvesting into their business. By this, they are given the chance to improve their social security and human health (www.maxhavelaar.ch).

8. Conference participants should learn about the environmental impacts of conference catering and the efforts made to reduce them. This will not only raise awareness but will also help to spread the ideas to their personal lives and other organization committees.

[1] Jungbluth, Niels (2000) Umweltfolgen des Nahrungsmittelkonsums. Beurteilung von Produktmerkmalen auf Grundlage einer modularen Ökobilanz. Dissertation. Technische Wissenschaften ETH Zürich, Nr. 13499. dissertation.de, Verlag im Internet. http://e-collection.ethbib.ethz.ch/view/eth:23317

[2] Collins, A. and Fairchild, R. (2007) Sustainable food consumption at a sub-national level: an ecological footprint, nutritional and economic analysis. Journal of Environmental Policy & Planning 9(1), 5-30.

[3] Hoekstra, A. & Chapagain, A. (2007) Water footprints of nations: Water use by people as a function of their consumption pattern. Water Resources Management, 21, 35-48.

Box 3.2 Sustainability labels for food and drink

For organically produced food, Bio Suisse is the most common and probably the most trusted label in Switzerland. It is based on very strict rules that cover all the processes on the farm and the subsequent processing, and an extensive documentation and control system. The Bio Suisse label can only be obtained for a whole farm or company. GMOs are completely prohibited. For crops, the label is focused on a sustainable use of the soil and regulates how soil should be treated. For example, synthetic chemical fertilizers are not allowed, and fertilization must be based upon a nutrient balance. Animals have to be kept in a near-natural environment. These practices also make Bio Suisse food healthier.

The IP-Suisse label is less strict, but also recommendable, especially for bakery products.
Bio Suisse: www.bio-suisse.ch
IP-Suisse (integrated production): www.ipsuisse.ch

For fish and seafood, the MSC (Marine Stewardship Council) label is the best available label for sustainably caught seafood. The label wants to recognize and award sustainable fishery and establish a market for it worldwide, so more fisheries can afford to work sustainably.
For unlabelled products, look at the WWF Sustainable Seafood Guide to find out which species are managed sustainably and which are endangered.
Marine Stewardship Council: www.msc.org
WWF Sustainable Seafood Guides: www.panda.org/what_we_do/how_we_work/conservation/marine/our_solutions/sustainable_fishing/sustainable_seafood/seafood_guides/

FTC, Max Havelaar and Gebana are the most recognized labels for social standards and fair trade for imported products, especially coffee, tea, or fruit such as bananas.
Max Havelaar: www.maxhavelaar.ch
Fairtrade Labeling Organizations International: www.fairtrade.net

Action: Compare caterers for sustainability commitment
We compared the three catering companies operating on the ETH and University of Zurich campuses with regard to sustainability (ZFV, SV Services and DSR). There is currently no established label for general sustainability in the catering area in Switzerland, but table 3.1 compares several labels that cover catering. Implementation of sustainability promises needs both clear management guidelines and the personal commitment of management and staff. We checked both aspects by looking at the companies' environmental reports and then interviewing the managers about their implementation in the university canteens. Our survey used some questions adapted from the Austrian Umweltzeichen (table 3.1) and some questions we defined ourselves, partly based on the food labels from box 3.2.

Findings: Caterer comparison

- The caterers had economic motives for reducing environmental impacts in the areas of waste, energy use and mobility. However, they were often unable to give information on water and energy use and kitchen equipment, partly because the kitchen facilities are managed by the universities rather than the catering companies and partly because the companies without ISO14001 certification did not prioritize environmental data collection. Environmental aspects were often determined by regulations, for example the treatment of organic waste.
- The quantity of labeled organic or fair trade products and vegetarian menus was determined largely by either the expressed preferences of the students or their lack of interest.
- All three companies are making efforts to improve their sustainability, but vary in their personal emphasis and in their management capacity to implement and measure specific targets.

Table 3.1 Comparison of labels for catering companies

	Goût Mieux	**Umweltzeichen**	**ISO 14001**
Region in which it can be used	Switzerland	Austria	global
Focus of criteria	• local, seasonal, organic origin of food in the labeled menu	• management • environment: energy, water, waste, noise, chemicals, grounds, mobility, food • guest well-being • social responsibility • reduction of operating costs	• environmental management
Differentiation within the label	no	yes	no
Areas of sustainability covered	ecology	ecology economics social aspects	ecology social aspects
Applicable in fields other than catering	no	yes	yes
Year of introduction	2002	2006	2004
Further information	www.goutmieux.ch	www.umweltzeichen.at	www.iso.org

**Action: Compare climate impact of different menu scenarios**

To evaluate the impact of the AGS catering choices, we compared the greenhouse gas emissions of our selected menu criteria with three other menu scenarios to see where there is room for improvement (www.myclimate.ch). See figure 3.1.

– The menu scenario "vegetarian" differed from the AGS menu in having no meat (but more vegetables).
– The menu scenario "local & seasonal" differed in having vegetables and fruit only from Swiss organic or open land production, and only apple juice and water as drinks.
– The menu scenario "imported" differed in having all products from their typical (cheapest) origin, water only in PET bottles, and no apple juice.

Findings: Climate impact of different menu scenarios

• The "local & seasonal" scenario has emissions that are 45% less than for the "imported" scenario and also significantly less than for the AGS menu, illustrating that transport is responsible for most of the environmental impact of food and drink products, particularly for menus in winter.
• The "vegetarian" scenario is only slightly lower than the AGS scenario, so the climate impact of leaving out meat at the AGS conference without considering local and seasonal production would have been relatively small. Meat production is much more climate intensive than its transport, but the quantity in the AGS menu was relatively small.
• With vegetarian menus consisting of fresh, local products, the AGS could have saved approximately 2000 kg CO_2eq from the total greenhouse gas emissions of the conference.
• The emissions of drink do not vary as strongly as those of food. That might be because over long distances, they are usually transported as concentrates or in their original state as coffee beans or tea leaves. The mass—water—is only added shortly before consumption.

Figure 3.1 Carbon emissions of different catering scenarios for a four day conference
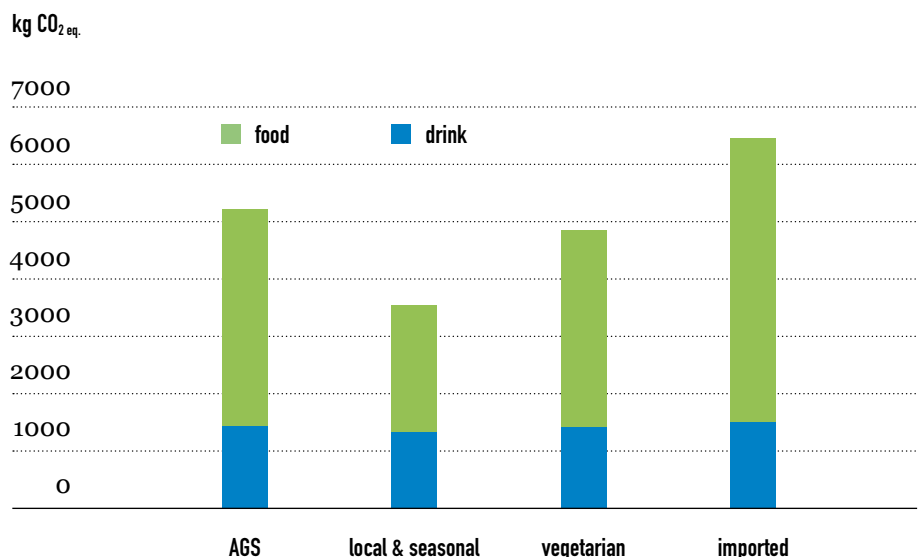
Conclusions

- Conference organizers have a big influence over the sustainability impact of catering through their choice of catering company and their selection of menus and other criteria for the catering service. The catering companies that serve the ETH and University of Zurich recognize sustainability as an important issue and are improving their practices, though they differ in their emphasis and in their management capacity. It is important to choose a company that is open to discussion and negotiation.
- It is important to clearly state your demands on food and drink quality to the caterer and to write the agreed criteria and concept into the contract. Not all the criteria for the AGS catering were fully implemented.
- Our survey of participants showed that the acceptability of a completely vegetarian menu would have been high. Conference organizers should be bolder and make clear commitments to sustainability in the choice of catering. Local, seasonal, vegetarian food is clearly most sustainable.

Printing

Why did we look at the sustainability of printing?

Though printing only contributes a small part of the CO_2 emissions of an international conference, paper production has significant environmental impacts and printing uses energy and water. Printed materials are a visible part of the conference, and so influence how participants judge its sustainability. It is also the easiest to influence.

What did we do?

Action: Decisions on what should be printed

Together with the organizers we had a long discussion on which material should be printed. To make a decision on this we asked a professor at ETH who organized a paperless conference to make a survey among his participants to see how much this concept is liked. At that conference, only the programme and venue information was printed for the participants - the poster and presentation abstracts were available only as pdf online.

Finding:

The participants of the paperless conference liked that concept a lot. Nevertheless the organizers of the AGS AM decided to print an abstracts book because they feared that without it, the poster session would be less well attended.

Action: Create a information page on how to compensate the abstracts book

As the abstracts book was printed, we decided to design a page on which the participants can see how they can compensate the CO_2 emissions and resources used due to the production of their abstracts book. The formulas to calculate these can be found on pages 26 and 27. We evaluated the impact of this information in a survey.

Finding:

55 out of 104 people who filled out the survey read the compensation recommendations and all of them were planning on doing at least one of the compensations. This shows that everybody was willing to make a small contribution to offset the environmental impact of the abstracts book.

Action: Find sustainable printing companies

Based on our research on sustainable printing we identified four sustainability criteria to select printing companies:

- Promotes use of recycled and FSC (Forest Stewardship Council) certified paper, and does not promote energy intensive finishings such as gloss
- Publishes environmental report and takes measures to be more sustainable, e.g. minimising waste and energy use
- For offset printing, waterless printing with computer to press transfer is the most sustainable method
- No use of ink jet printers, because the printed paper needs more energy to recycle

Conclusions

- The most important decision is what should be printed. The printed material should be kept to a minimum. Paperless conferences are a good alternative as they are environmentally friendlier and accepted by participants.
- It is very important to print double sided on recycled paper, since the paper uses 90% of the energy of the whole printing process. In Switzerland, Rebello or Refutura recycled paper (www.fischerpapier.ch) are recommendable. Printing companies should be selected using sustainability criteria.
- Giving the participants options for how to compensate the impacts of a printed product is a good communication measure. The participants liked it and are willing to do some of the compensations.

Step 1: Formulas to calculate four environmental impacts of a printed product

NB: The formulas are only applicable for print products which are printed double sided on recycled paper.

1. Printing produces 5.1 g CO_2 per printed page

CO_2 emissions/printed product = 0.0051kg CO_2/ page* # pages

Example calculation for AGS conference poster abstracts book:
no of pages in AGS abstracts book = 138 pages
CO_2 emissions/abstract book = 0.0051kg CO_2 * 138 pages = 0.704 kg CO_2

2. One g of recycled paper is made from 1.15 g of recovered paper

Recovered paper consumption/printed product = 1.15 g recycled paper/g paper*weight

Example:
weight of one A4 cover sheet = paper weight (160 g/m2) * A4 paper size (area of one A4 sheet: 0.297m * 0.210m = 0.06237 m2) = 9.9792 g
weight of one A4 inside sheet = paper weight (100g/m2) * A4 paper size (0.06237 m2) = 6.237 g
weight of paper in AGS abstracts book = weight of 1 cover sheet (2 pages) + weight of 68 inside sheets (136 pages) = 9.9792g + (6.237*68) = 434.1 g paper
Recovered paper consumption in the AGS abstract book = 1.15 g recovered paper * weight of paper in abstracts book (434.1 g) = 499.2 g = 0.5 kg recovered paper

3. 1.5 kWh energy are needed to produce 1 kg of recycled paper

Energy consumption/printed product = 0.0015 kWh/g paper*weight

Example: Energy consumption/abstract book = 0.0015 kWh/g paper* weight of paper in abstracts book (434.1 g) = 0.651 kWh energy

4. To produce 1 g of recycled paper 15 ml of water are needed

Water consumption/printed product = 0.015 l/g paper*weight

Example: Water consumption/abstract book = 0.015 l/g paper * weight of paper in abstracts book (434.1 g) = 6.51 l water

Step 2: Formulas to calculate four compensation options for the environmental impacts of a printed product (using the example of the AGS abstracts book)

Four ways to compensate for the environmental impacts of your abstracts book
= insert results from environmental impact calculations (see Step 1)

1. Use bicycle instead of car

To compensate the ____ kg CO_2 of the abstract book you can bike ..... km instead of using the car.
Distance [km] = "CO_2 emissions/printed product"/ 0.112 kg CO_2

2. Collect waste paper

To compensate the ____ g recycled paper used to produce the abstracts book you can collect ..... A4 pages of 80g/m2 paper.

Number of A4 pages of 80g/m2 paper =
"Recovered paper consumption/printed product"/4.9896 g/A4 sheet.

3. Reduce standby of desktop computers

Turning off the desktop computer including the monitor for ..... hours instead of leaving it in standby mode compensates for the ____ kWh used for the production of the paper for the abstracts book. This is equivalent to turning off the computer totally after work for ..... days.

Duration of turn off [h] = "Energy consumption/printed product"/0.00497 kW

Days of turn off [d] = "Duration of turn off"/16 h/d

4. Use water saving button for toilet flushing

To compensate the ____ liters of water used for the paper production of the abstracts book you can use the water saving button ..... times while flushing.

Number of flushings = "Water consumption/printed product"/ 6l

The authors

Franziska Elmer and Annina Brunner used their term paper to design and implement a sustainability strategy for the AGS Annual Meeting. They wrote the sustainability pledge and contributed to the conference planning. Based on the experience from the AGS Annual Meeting, they made recommendations to reduce the environmental impacts of big conferences at the ETH and other universities.

Franziska and Annina are both 6th semester environmental sciences students at the ETH Zurich and are now finishing their Bachelor. Annina is leaving for Bogotá, Colombia, for an internship on soil bioremediation. Franziska will do a 6 month marine park internship at STENAPA, the national park of St.Eustatius, Caribbean, before starting a masters at York University, UK.

Franziska: "I am very interested in sustainable development, and have learned a lot about it through my studies and my work for [project 21]. I enjoy large events, especially those where I can meet people from all around the world, and I am very interested in organizing such events in a sustainable way. That is why I chose to help design and implement the sustainability pledge of the AGS Annual Meeting 2009."

Annina: "I am interested in ways to reduce emissions in all parts of life, especially travel was exciting to work on. With this term paper, I had the possibility to contribute to a more sustainable event and get an insight into conference organization."

The Alliance for Global Sustainability (AGS) is a partnership of four scientific and technological universities – MIT, The University of Tokyo, Chalmers University of Technology, and the ETH Zurich - and their associated partners. It was formed in 1997 in the conviction that closer collaboration amongst some of the world's leading research institutions would lead to faster progress towards sustainability (www.theags.org).

The World Student Community for Sustainable Development (WSC-SD) is a multidisciplinary network of motivated students with the ability to think and act both locally and globally, and who share the vision to make a difference. Their purpose is to be a leading international student organization that carries out meaningful projects which result in positive and enduring changes that improve lives and communities around the world (www.wscsd.org).

Ecoworks supports ideas and projects at the ETH Zurich dealing with a reduction of CO_2 or an increase of ETH Zurich's energy efficiency (www.ecoworks.ch).

Four steps to compensate for your sustainable conference report

This report contains 32 pages printed on recycled paper.
Its production and printing emitted
0.163 kg CO_2
Producing this paper used
60.23 kg paper collected for recycling
0.30 kWh energy
2.95 l water

You can compensate for these impacts by doing this:

1. Go 1.45 km by bike instead of by car.
   This saves the same quantity of CO_2 emissions.
2. Collect 46 A4 sheets of paper for recycling.
   This is equivalent to the paper that was needed to produce the recycled paper for this report.
3. Turn off your desktop computer and monitor completely 4 times instead of leaving it in standby overnight.
   This saves 0.32 kWh electricity.
4. Use the water saving button once while flushing the toilet.
   This saves 6 l of water.