Sustainability Report
2011 – 2012

Based on the guidelines of the Global Reporting Initiative (GRI) and the ISCN-GULF Sustainable Campus Charter
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President’s statement

Human health, the environment and social wellbeing exemplify the challenges of our time. In order to play a key role in addressing these challenges, ETH Zurich has focused its activities on finding solutions that will enable society to adapt to major shifts in the environment, economy, and social matters. ETH Zurich is well aware of the hurdles it must overcome to ensure the security of future generations. Hence, the concept of sustainable development has been integrated into education, research, knowledge transfer, and a role model for our campus. A diverse curriculum offers numerous opportunities for students to explore sustainability related topics, including energy science and technology, resource management, environmental science and engineering, world food systems, or urban planning.

Beyond the material covered in the classic disciplines, ETH Zurich’s philosophy promotes collaboration across disciplines and it fosters the entrepreneurial spirit of our students and their desire to lead global change. In addition to corporate engagements, ETH Zurich also regularly presents its findings in research to the public through designated forums where stakeholders are encouraged to openly discuss different opinions.

Finally, ETH Zurich works diligently to lead by example. Large-scale projects on campus reinforce sustainable objectives, such as the “Anergy” project on Campus Hönggerberg, which utilizes a geothermal system to regulate building temperatures and to make one of the University’s campuses virtually CO₂-free by 2025. Our support for education and student initiatives, such as the ETH Sustainability Summer School Program, Seed Sustainability, and Ecoworks, encourages students to learn more about sustainability and think critically about solutions. To exemplify the socially responsible aspect of sustainability, ETH Zurich has actively worked to narrow the gap between the number of males and females in faculty positions and ensure a highly diverse student body, faculty, and staff at the University.

Further demonstrating our commitment to sustainability and transparency, ETH Zurich has developed this report, our second integrated GRI/ISCN-GULF Sustainable Campus Charter report. We aspire to have our expanding University help shape a more sustainable future for the world.

Ralph Eichler
President of ETH Zurich
Introduction

This report is the second sustainability report published by ETH Zurich which fully integrates the requirements of the Global Reporting Initiative (GRI) B Level and the ISCN-GULF Sustainable Campus Charter reporting frameworks. As the previous report was released in the spring of 2010, this report adheres to the biennial reporting timeframe and covers the 2011 and 2012 calendar years.

The topics outlined in the GRI framework cover a broad range of sustainability metrics related to economic, environmental, and social (including labor practices and decent work, human rights, society, and product responsibility) performance which is applicable to various industry sectors. Conversely, the ISCN-GULF Sustainable Campus Charter reporting framework focuses on sustainability metrics specific to universities according to the three overarching ISCN principles.

Following the guidelines of both of these frameworks allows ETH Zurich to transparently disclose its most fundamental sustainability efforts at the campus level in addition to describing engagements with the public and private sectors.

This chapter covers 10 GRI Indicators and ISCN Principles 2, 2.2, and 3.

Profile

ETH Zurich is a leading international university for technology and natural sciences. It is well-known for its excellent education, groundbreaking basic research and applied results that are beneficial for society as a whole. Its faculty and graduates play an important role in the transfer of knowledge and technology into the economy. In this way, ETH Zurich makes impactful contributions to society.

Originally founded as the Federal Polytechnic School in 1855, ETH Zurich was given its present name, Swiss Federal Institute of Technology ( Eidgenössische Technische Hochschule Zürich ) in 1911. 21 Nobel Laureates have studied, taught, or conducted research at ETH Zurich. ETH Zurich regularly appears at the top of international rankings as one of the best universities in the world. With its competitive reputation, in 2012 ETH Zurich hosted more than 17,000 students from more than 100 countries, 3,800 of whom were doctoral students. More than 480 professors teach and conduct research in the areas of engineering, architecture, mathematics, natural sciences, system-oriented sciences, and management and social sciences.

The university is mainly located in Zurich with two campus sites: “Zentrum” and “Hönggerberg” and several smaller satellite locations throughout Switzerland. ETH Zurich is structured into 16 academic departments which are organized into five academic disciplines: architecture and civil engineering; engineering sciences; natural sciences and mathematics; system-oriented natural sciences; and management and social sciences. Strategic oversight of ETH Zurich is provided by the ETH Board, which fulfills this function for the entire ETH Domain including EPFL as a second technical university and four research institutes. Basic funding for ETH Zurich is predominantly (75%) from public sources. The remaining budget is sourced by competitive funds from private and industry contributions, donations and grants. The total expenditure for the 2011/2012 academic year was 1,455/1,467 million CHF.

Engaged in sustainability

Through attracting people from several disciplines and all regions of the world, ETH Zurich has enormous potential to develop sustainable solutions for the most critical problems facing our planet. With over 20 years of experience in research, education and knowledge transfer related to sustainability, ETH Zurich continues to deepen its commitment to sustainability in strategic planning for the future. The ETH Sustainability Office plays a major role in supporting the integration of sustainability into research, teaching, operations and campus life.

In an effort to ensure sustainability is integrated into all aspects of ETH Zurich, the “ETH Zurich Strategy and Development Plan 2012-2016” provides guidance on five major challenges: (1) future cities and sustainable design of living spaces; (2) natural resources and their protection; (3) food security; (4) energy supply; and (5) climate change. These challenges are further addressed by an interdisciplinary approach that encourages students and faculty from different disciplines to collaborate with one another. Several Competence Centers have been established to facilitate these collaborations and support related research projects. The results from these projects are also shared with the public and business sector through various events and programs. In this way, ETH Zurich serves as a “living laboratory”, utilizing its resources for academic and research advancements while engaging external stakeholders to be active participants in developing new solutions.

The ISCN-GULF Campus Charter

ETH Zurich has also demonstrated its commitment to supporting sustainability more broadly through its close involvement with the International Sustainable Campus Network (ISCN). Serving as one of the host organizations, ETH Zurich has played a major role in supporting this global forum of universities in the exchange of information, ideas, and best practices for achieving sustainable campus goals.

As part of the ISCN-GULF Sustainable Campus Charter, signatories are committed to uphold three overarching principles that guide sustainable developments on their campuses and develop Charter Reports that track progress against these principles. The first principle focuses on the campus infrastructure and addresses how sustainability considerations should be an integral part of the planning, construction, renovation and operation of buildings on campus. To ensure long-term sustainable campus development, the second principle considers the campus as a whole and encourages universities to develop campus-wide master planning and targets that include environmental and social goals. The final principle provides guidance on how universities should align their core mission with sustainable development, facilities, research, and education through an integrated approach. The objective is to support a “living laboratory” for sustainability.

For questions on this report, please contact Dr. Christine Bratrich, the Director of ETH Sustainability, or Dr. Dominik Brem, Deputy Head Safety, Security, Health, and Environment (ISSHE).

<table>
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<th>GRI Indicators</th>
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<tr>
<td>2.1 Name of the organization.</td>
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<tr>
<td>2.2 Primary brands, products, and/or services.</td>
</tr>
<tr>
<td>2.5 Number of countries where the organization operates.</td>
</tr>
<tr>
<td>2.7 Markets served.</td>
</tr>
<tr>
<td>3.1 Reporting period.</td>
</tr>
<tr>
<td>3.2 Date of most recent previous report.</td>
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<td>3.3 Reporting cycle.</td>
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<tr>
<td>3.4 Boundary of the report.</td>
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<tr>
<td>4.7 Process for determining the qualifications and expertise of the members of the highest governance body including the organization’s strategy on economic, environmental, and social topics.</td>
</tr>
</tbody>
</table>

Tables at the beginning of each chapter transparently refer to the relevant indicators of the reporting system. Specific goals and achievements are highlighted in grey boxes throughout the report.
ETH Zurich is renowned for the breadth and quality of its Research and has defended its title as the best university in Continental Europe in 2011 and 2012.

Over the last two years, its researchers published more than 9,600 scientific papers and have been successful in obtaining sought-after grants from the European Research Council (ERC). European funding programs contributed 85 million CHF to research activities at ETH Zurich in 2011 and 2012.

Complementing its disciplinary excellence, the school engages in 17 Competence Centers that transcend disciplines. ETH Zurich’s research cultivates innovation and economic development, and has resulted in 159 new patents filed and 44 spin-off companies formed over the last two years.

This chapter covers 5 GRI Indicators and ISCN Principle 3.
Research and knowledge transfer

A dynamic research environment

ETH Zurich has been ranked amongst the world’s top universities for years, both in the Times Higher Education Ranking (at present rank nr. 12) and the Shanghai Academic Ranking of World Universities (at present rank nr. 23). In 2012, ETH Zurich also proved its academic quality as the new number 13 in the QS World University Ranking list.

Another indication of ETH’s successful research activities is the number of grants from the European Research Council (ERC). Five professors in 2011 and eight professors in 2012 were awarded an ERC Starting Grant. Never before at ETH Zurich have so many talented young scientists received support from this source. In 2012, they were awarded the equivalent of about 14 million CHF for their projects. Scientists at ETH Zurich were also successful when it came to prestigious ERC Advanced Grants: seven ETH researchers in 2011 and 12 in 2012 were successful in their bids. In total, European funding programs contributed 85 million CHF.

However, ETH Zurich is not content with merely participating in solving already known problems. In the context of global civilization, it wants to respond to changing conditions, identify new problems as a kind of early warning system, and assume a leading role in seeking solutions. This mission is carried out through the innovative research projects conducted at ETH Zurich.

Applying resources to protect the environment

ETH Zurich’s leading role as a research institution sets an ideal platform for exploring topics related to environmental issues. The founding of the Environmental Sciences Department (D-UWIS) in 1987 commenced ETH Zurich’s commitment to understand and protect the natural environment. Since then, sustainability-related studies and research projects have spanned across numerous departments and institutes.

At the Department of Mechanical and Process Engineering (D-MAVT) research covers topics on robots, cars, nuclear plants, and wind turbines to address the social and economic challenges faced by Switzerland and the world through engineering innovation.

Research in the Department of Civil, Environmental and Geomatic Engineers (D-BAUG) is designed to build and operate systems of the urban and peri–urban infrastructure that are innovative, functionally reliable, and economical. Engineers in these fields monitor, model, and understand the relevant processes in order to protect the environment and its natural resources.

Research goals

**Strengthening ETH Zurich’s position as a research institution at the highest international level, particularly with regard to fundamental and engineering research, within the life sciences, the system oriented natural sciences and the design sciences.**

**Achieved.** ETH Zurich kept its high ranking position on the list of the world’s top universities and has defended its title as the best university in Continental Europe in 2011 and 2012. More than 19,000 scientific articles and contributed to about 5,000 conferences.

**Maintaining and extending a rigorous policy of excellence with regard to the appointment of professors.**

**Achieved.** ETH Zurich was successful in the period 2008-2012 in recruiting international top researchers. 69 professors were appointed from within Switzerland, 44 from the USA, 31 from Germany, 37 from the rest of Europe and eight from other countries.

**Solidifying the position as a leading global partner for technical and natural science problems.**

**Achieved.** In 2012, researchers from ETH Zurich actively participated in approx. 1,000 editorial or advisory boards, 700 evaluation teams, 500 program committees as well as 600 executive committees of professional associations and societies. These impressive numbers illustrate the strong support that representatives of ETH Zurich provide to external bodies, based on their expertise.

The interdisciplinary nature of architectural research at the Department of Architecture (D-ARCH) has lent to significant contributions in advanced designs. As an example, the increasing attention paid to the relationship between the built environment and natural environments along with growing economic constraints has inspired research to support the use of products, technologies and construction methods that are sustainable in terms of their material composition and energy use.

Taking energy research a step further, the Department of Mechanical and Process Engineering (D-MAVT) addresses the drive for efficient use of natural resources and improved efficacy through research projects in future power generation and air transportation systems.

Research related to sustainable development is also conducted within the Department of Humanities, Social, and Political Sciences (D-GESS) focusing on behavioral science, governance and political science, humanities and law, and economics.

The Department of Management, Technology and Economics (D-MTEC) conducts fundamental and applied research in management, economics, systems design and risk, with a focus on efficient and responsible business practices.

The underlying mission of this research is to understand, shape and teach the interactions between technology, society and organizations as well as the impact of these on a sustainable use of resources and manpower.

Some examples from various disciplines illustrate ETH Zurich’s sustainability-related research:

- ETH Zurich Assistant Professor Lian Pin Koh has built an autonomous drone that can be used for nature conservation purposes, such as surveying large mammals and monitoring the rainforest.
- ETH Zurich physicists, in collaboration with colleagues at universities in Switzerland and abroad, have made a breakthrough in the manufacture of monolithic semiconductor structures on silicon. The new structures are nearly perfect, and likely to revolutionize not only X-ray technology.

Inter- and transdisciplinary research goals

**Strengthening the collaboration between engineering and natural science disciplines with the humanities and social and management sciences.**

**Achieved.** 16 Competence Centers that provide platforms for ETH Zurich professors and institutes to engage in inter- and transdisciplinary projects and activities are in place.

**Achieved.** Under the slogan “Sustainable Worlds”, ETH Zurich expanded its collaborative research work with the founding of the World Food System Competence Center (WFSC). 31 chairs from 6 departments are involved in WFSC.

**Achieved.** As part of ETH Zurich’s internal research funding amounting to 2.4 million CHF over the the period of 2008-2012, collaborative projects between humanities, social and management sciences with other disciplines were supported.

It goes on a trailer and should supply remote areas in developing countries with electricity. The intelligent generator SMiG, which students from ETH Zurich developed within the scope of their Master’s project.

For the first time, ETH-Zurich researchers provided concrete data on how alternative forms of land use influence the carbon balance in tropical ecosystems. This information is not just interesting for climate researchers, the measures agreed in the Kyoto Protocol for the reduction of CO2 can be implemented more effectively armed with this knowledge.

Many developing countries should turn to wind power plants because of the lower costs, ETH-Zurich researchers have concluded in a new study on the use of climate protection funding from the north.

A collection of relevant ETH Life articles can be found here:
www.sustainability.ethz.ch/nachhaltigkeitsbericht/ethlife→
Research and knowledge transfer

Under the slogan “Sustainable Worlds”, ETH Zurich expanded its collaborative research work in the fields of energy, climate, sustainable building and global food supplies in 2012. In particular with the founding of the World Food System Center, ETH Zurich laid an important foundation for future research work. Thirty-one chairs from six departments at ETH Zurich and the Swiss Federal Institute of Aquatic Science and Technology (Eawag) have been involved in the World Food System Center program.

Furthermore, international collaborations on excellence in education and research are essential to ETH Zurich’s task of supporting the international reputation of Switzerland as a location for education, research and business. An outstanding example for this cooperation is “The Future Cities Laboratory” (FCL) in Singapore - a transdisciplinary research center focused on urban sustainability in a global frame. It is the first research program of the Singapore-ETH Center for Global Environmental Sustainability (SEC) and home to a community of over 100 PhD, postdoctoral and Professorial researchers working on diverse themes related to future cities and environmental sustainability.

ETH Global, the office for international relations is responsible for implementing the global strategy of ETH Zurich that defines three main goals for ETH Zurich’s international activities: (1) to educate future leaders and experts; (2) to address challenging and complex research topics; and (3) to position ETH Zurich as a forward-looking global research university.

Adding value through partnerships

The common belief that “two heads are better than one” is celebrated at ETH Zurich where partnerships are strongly encouraged so that multiple perspectives may drive innovation more effectively.

Strong domestic collaborations are key to realizing ETH Zurich’s responsibilities in securing the future of the Swiss higher education and research landscape, and thus of the welfare of the country. To accomplish this, ETH Zurich has a number of highly collaborative relationships with institutions of research and education within Switzerland. This includes ETH Zurich’s engagement in 17 Competence Centers that provide platforms for professors and ETH Zurich institutes to engage in inter- and transdisciplinary projects. These projects allow faculty and students to learn from one another and take advantage of resources most efficiently.

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Fulfilling a valuable mandate

Under the direction of the ETH Domain, ETH Zurich is responsible for fulfilling an important mandate to function as an institution of higher education and research, through which a greater understanding of the world around us is achieved. Subjects explored in this manner extend beyond the disciplinary studies to also address pressing topics including energy, climate change, and food systems; all of which must be carefully considered when preparing society and the economy for a sustainable future.

The importance of fulfilling the education and research mandate is compounded by the influence these aspects have on the Swiss economy. In 2012, 2,581 graduates left ETH Zurich to use their acquired knowledge to foster society and the economy. When looking back, graduates of ETH Zurich are very content with their education, according to a survey carried out by the Swiss Federal Statistical Office in 2011, 85% judge their education as “good” or “very good”. Furthermore, they are in great demand on the labor market: 95% were employed within less than one year of their graduation. Additional 3% were not searching for employment.

With innovation standing at the forefront of the Swiss economy, the transfer of knowledge and research from ETH Zurich directly and indirectly impacts the economy. ETH Zurich’s technology transfer office ‘ETH’ Transfer is responsible for supporting the streamlined knowledge- and technology-transfer, and to ensure that companies of any size have access to the technological expertise of ETH Zurich.

Also, ETH Zurich is helping to bridge the gap between academia and the private sector, having assisted the filing of 72 new patents in 2011 and a further 87 in 2012. In addition, ETH Zurich offers various opportunities that support students entrepreneurial development, such as the Pioneer Fellowships. Established in 2010, this program has funded graduate and PhD students interested in developing highly innovative products or services intended to benefit society and be sold commercially. Since 2011, 20 students have been awarded these fellowships.

Knowledge transfer goals

- Strengthening collaborations and partnerships with the private sector domestically and abroad. Achieved. 2012 ETH Zurich closed 718 research contracts with third parties (of which 268 with Swiss companies) with an overall contribution of 153 billion CHF (3% more than in 2011). In addition, in 2011-2012 demand for ETH Zurich technologies was constant at a high level with 80 license agreements and 73 technology transfers.

- Strengthening of entrepreneurial thinking and behavior of students and doctoral candidates. Achieved. A newly established Innovation and Entrepreneurship Lab (ieLab) is instrumental in supporting talented young students that have promising ideas.

- Active support of start-ups by students and faculty (spin-offs). Achieved. 259 spin-off companies have been established through ETH Zurich over the last 16 years. 44 were established in 2011 and 2012.

- Achieved. Pioneer Fellowships program established in 2010. Since 2011, 20 graduate and PhD students have been supported through a Pioneer Fellowship.

- Achieved. ETH Zurich’s services assisted the filing of 72 patents 2011 and 87 in 2012.

Stimulating the economy with spin-offs

Spin-off businesses have been one of the most direct ways for ETH Zurich students and faculty to expand research projects into successful entrepreneurial ventures. Since 1996, ETH Zurich has encouraged spin-offs by developing the Technopark Zurich which has hosted business courses to over 15,000 people. Since 1998, ETH Zurich has been partnering with McKinsey & Company to run Switzerland’s business plan competition, Venture. This environment for entrepreneurial students has resulted in 259 spin-off companies established through ETH Zurich over the last 16 years. The products and services of these businesses are far-reaching, and each year, there are a number of spin-offs that directly compliment ETH Zurich’s focus in sustainable developments, including offering new solutions in energy-efficiency, renewable energy, and environmental mitigation.

Demonstrating one of the ETH Zurich’s 2011 spin-offs which has driven improvements in energy efficiency is BEN Energy, which has developed a software solution to improve energy efficiency through data mining and recommending behavioral shifts. 2012 spin-offs that serve as environmentally responsible solutions include ElectricFeet, which developed an e-bike-sharing system that allows users to rent bicycles quickly and easily through a smartphone app. And Polyport also addressed challenges with emissions through two services: the Kartoffeltaxi offers climate friendly transportation through the use of biofuels and BringBee is a delivery service designed to maximize the transportation efficiency of smaller IKEA purchases.

In addition to fellowships, the newly established Innovation and Entrepreneurship Lab (ieLab) has been supporting talented young students with promising ideas. The ieLab offers a number of informational and coaching resources including a matching process for novice entrepreneurs to work with more experienced mentors and industry partners. As a valuable resource to students just getting started with their ventures, the ieLab also significantly benefits the local economy and community by supporting new startup businesses and encouraging continued scientific research.

Enhanced knowledge transfer (through publications) and influence on the private sector (through spin-offs, patents and cooperation agreements).
In the ETH Domain

Biomedical Imaging
Environment and Sustainability (CCES)
Energy and Mobility (CCEM-CH)
Materials Science (CICM)
Risk Center
World Food System Center

Active competence centers at ETH Zurich

Center for Imaging Science and Technology (CISM)
Social-Economic Crises (CCES)
Energy Science (ICES)
Education (EduETH)
Materials Research (MRC)
Micro and Nanos Sciences (MNES)

With other institutions

Climate Systems Modeling (CCSM)
Metabolic Diseases (CC-SPMD)
History of Knowledge (CC-HK)
Neurosciences (ZNZ)
Plant Sciences (PSC)

Insight

Safe and healthy food for all through sustainable production – The World Food System Center pursues worthy goals

It’s a sad realization: hunger and obesity coexist as burdens on today’s global society. This highlights many of the problems for feeding a growing world population. Currently, over 925 million people around the world already suffer from hunger and each year six million children die of malnutrition. ETH Zurich founded the World Food System Center (WFSC) in 2011 as a significant contribution to a more secure and sustainable food system.

The pursuit itself is ambitious. Through the WFSC, ETH Zurich wants to be an international leader in research, education and outreach in the field of healthy, safe and nutritious food at both the global and local levels. Motivating this is the vision of a healthy world that incorporates both people and the environment to achieve sustainable food systems. Apart from political, economic and social upheavals, the world food system is also impacted by environmental changes such as soil erosion, drought, plant disease and the effects of climate change. Facing these challenges is a central concern for ETH Zurich. As such, researching the world food system is one of the five paramount issues on the University’s agenda.

It’s about improving quality ensuring reliable access to food, “not just food for a few,” stresses Professor Nina Buchmann, head of the steering committee for the new competence center. Yet the structures, processes and interdependencies of the world food system are complex and non-transparent. “As such, it is imperative to begin with a strong focus and solid partnership,” noted Michelle Grant, Head of the WFSC executive office at ETH Zurich. To this end, the WFSC includes the expertise and technical facilities of 33 professors from six ETH departments as well as three groups from the Swiss Federal Institute of Aquatic Science and Technology (Eawag). This interdisciplinary competence is necessary to study complex systems and develop options for the future. Together with representatives from industry, politics and civic groups, ETH Zurich wants to translate the insights gained into concrete solutions.

As a result, the initial research projects of the WFSC were launched in partnership with the Mercator Foundation Switzerland and the Bühler Group in 2012. One of these involves sustainable coffee farming in India, another considers organic dairy farming in Switzerland and a third investigates global grain value chains.

In southern India, coffee is grown under shade. In recent years, farmers have been switching from multi-species shade tree systems to monoculture shade systems. Scientists from ETH Zurich are searching for alternatives that would encourage the retention of traditional, environmentally intelligent mixed coffee-and-tree farming. As part of the “Managing Trade-Offs in Coffee-Agroforests” project, traditional mixed farming will be aligned with the goals of small farmers to secure a long-term, stable production system. The key to this is identifying suitable types of shade trees, the focus of a research activity that is being carried out in cooperation with local farmers, international and national stakeholders.

Back in Switzerland, researchers are working to determine whether milk production systems can support the use of less concentrated feed and a longer productive lifetime for the cow. The project, entitled “Long-life Cow,” looks at milk production strategies that can increase the daily milk yield while keeping both economic and ecological replacement costs low. The findings could potentially contribute to establishing a profitable and environmentally friendly approach to producing milk that reduces the use of concentrated feed, thus liberating crops and land to produce food for direct human consumption.

The Mercator Foundation Switzerland has made five million Swiss francs available over a period of ten years in order to finance 15 carefully selected PhD research projects (similar to those outlined above) as well as education and outreach activities. In the process, emphasis will be placed on the WFSC’s pursuit of an interdisciplinary approach supported by networking and identifying synergies.

The “Perspectives of the Global Grain Value Chain” project was initiated by the WFSC in cooperation with the Bühler Group in autumn 2011. Grain provides most of the world’s important staple foods and today it is traded in large volumes worldwide. The value chain for grain is therefore subject to a variety of global processes. Knowing which factors will influence the future world-wide availability, distribution, processing and consumption of grain will be fundamental to understanding future food insecurity. Scientists at ETH Zurich are therefore developing scenarios and systems dynamics models for future development of the grain sector.

Yet researching the world food system is not the only core mandate of the WFSC. Training students, raising public awareness and establishing networks is just as important. The WFSC organizes regular education and outreach programs with these goals in mind.

www.worldfoodsystem.ethz.ch
The education ETH Zurich provides is in high demand. From 2010 to 2012, bachelor’s and master’s degrees awarded increased by 22%, and doctoral degrees by 15%.

The integration of sustainability-related topics throughout the curriculum exemplifies ETH Zurich’s holistic approach to education, as does the availability of degree programs and special initiatives focused on sustainability.

In addition to traditional classroom teaching, the educational experience at ETH Zurich is constantly invigorated by new, interactive technology and open dialogue. ETH Zurich is now using the open-course software Moodle for web-based learning and the document repository eDoz to provide students with quick and easy access to course materials. Surveys seek feedback from students not only on individual courses, but also on the overall learning experience.

This chapter covers 4 GRI Indicators and ISCN Principle 3.

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<th>GRI Indicators</th>
<th>Description</th>
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<tr>
<td>2.7</td>
<td>Markets served.</td>
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<tr>
<td>2.8</td>
<td>Scale of the reporting organization, including number of employees, net sales, total capitalization, quantity of products or services provided.</td>
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<tr>
<td>PR3</td>
<td>Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.</td>
</tr>
<tr>
<td>PR5</td>
<td>Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.</td>
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Academics at a glance

ETH Zurich is known for offering its students an excellent education. During the reporting years, this reputation continued to attract talented students from across the globe who sought prestigious degrees.

In 2011 and 2012, there were 17,187 and 17,781 students enrolled at ETH Zurich respectively and over the course of these years, a total of 2,751 bachelor and 3,156 master degrees were awarded. This translates to a 22% growth for these degrees from 2010 to 2012. Additionally, of the 3,699 and 3,807 doctoral candidates enrolled in 2011 and 2012 respectively, 696 and 747 were granted their PhD’s. Compared to 2010, when 650 Doctorate degrees were awarded, there was a 15% increase by 2012.

Education at ETH Zurich is predominantly focused on the areas of mathematics, natural sciences, engineering, and architecture, with strong contributions from humanities and social sciences. The goal of instruction at ETH Zurich is to enable students to harness mathematical and technical knowledge as well as practical skills and participate in interdisciplinary activities. In terms of the organizational structure, there are five broad academic disciplines: (1) Architecture and Civil Engineering including the Departments of Architecture (D-ARCH) and Civil, Environmental and Geomatic Engineering (D-BAUG), (2) Engineering Sciences consisting of the Departments of Biosystems Science and Engineering (D-BSE), Computer Science (D-INF), Information Technology and Electrical Engineering (D-ITET), Mechanical and Process Engineering (D-MAVT), and Materials Science (D-MATL), (3) Natural Sciences and Mathematics comprising the Departments of Biology (D-BIOL), Chemistry and Applied Biosciences (D-CHAB), Mathematics (D-MATH), and Physics (D-PHYS), (4) System-oriented Natural Sciences including the Departments of Earth Sciences (D-ERDW), Environmental Systems Sciences (D-USYS – previously D-UWIS) and Health Sciences and Technology (D-HEST), and (5) Management and Social Sciences including the Department of Humanities, Social and Political Sciences (D-GESS) and the Department of Management Technology and Economics (D-MTEC).

Specific programs related to sustainability goals

Develop an overview that describes sustainability-related lectures available at ETH Zurich.

Project delayed.

Initiate and run a specific ETH-Summer School program on sustainability.

Achieved. Two new summer school programs were successfully implemented: 2011: “All Just Rubbish?” on the subjects of waste, green product design and material cycles. 2012: “Eating Tomorrow” on rethinking the world food system.

Improve capacity of PhD students to interact with non-academic stakeholders and provide recommendations for research topics.

Achieved. The program was initiated in 2009 and continued to support PhD students in 2011 and 2012.

Integrate “seed sustainability” into the management structure of ETH Sustainability: creating a project team, starting with marketing and internal PR activities and creating a new web-based information platform.

Achieved. The platform “seed sustainability” has been successfully integrated into the structure of ETH Sustainability. 22 new projects have been successfully finalized in 2011 and 2012.

Academic influence on a sustainable future

ETH Zurich’s commitment to sustainability has resulted in an infiltration of the topic into the University’s traditional disciplines of study. The growing number of sustainability-related courses and interest among students presents additional opportunities for ETH Zurich to overcome some of today’s most pressing challenges.

Through the Engineering Science discipline, students have the opportunity to take courses related to sustainability. These include Materials for Energy and Environmental Sustainability, a course showing how materials play a critical role in meeting the world’s energy demands, Energy Systems and Power Engineering, which provides an overall view of the energy field and pertinent global challenges, and Carbon Dioxide Capture and Storage (CCS), a course covering the different options for CO₂ storage and utilization.

Given that the built environment plays a major role in planning for the future and protecting the environment, the Architecture and Building Science discipline has a strong focus in sustainability. Complementing this focus, students explore a number of related topics including urban transformation, sustainable building technology and emerging cities.

Sustainability is also in close alignment with the objectives of the System-Oriented Natural Science discipline. Related courses include Water Supply, Water Resources and Aquatic Ecosystems, all of which focus on water quality and the range of sustainable approaches to water resource management. The course Environmental Behavior and Collective Decision-Making considers regulatory systems in the context of environmental management, while Global Biogeochemical Cycles and Climate similarly investigates the impact of humans on biogeochemical cycles with a focus on carbon.

In Management and Social Sciences, there is also consideration for sustainability through courses like Sustainability and Financial Markets, which addresses the challenges with investing in light of environmental, social and governance (ESG) measures. Moreover, Advanced Sustainability Economics covers current issues and economic methods in sustainability research.

Continuing to broaden its lectures, ETH Zurich underwent some organizational changes during the reporting years. The Department of Agricultural and Food Science (D-AGRL) officially closed at the end of 2011 and two new departments were founded: the Department of Environmental Science and Technology (D-USYS) and the Department of Health Science and Technology (D-HEST). Agricultural Science is now based in the Department of Environmental Systems Science, and the Department of Health Sciences and Technology is the new home of Food Science. In addition, the D-HEST Department will focus its research on improving diagnostic methods to enable better detection and treatment of age-related illnesses and ailments while developing a wide variety of treatments that combine modern technologies with bio-medical know-how. This new organizational structure will be beneficial to students by providing greater opportunities for more effective research and collaboration, including interdepartmental projects related to sustainability.

Of all the ETH Zurich disciplines, Engineering Sciences was the most popular among new students during the reporting years (new enrolments in 2011/2012: 2,012/1,193). However, Natural Sciences and Mathematics was slightly more popular than Engineering Sciences among new PhD students in 2011 and 2012 (348/328 new enrolments).

Degrees

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor degrees</td>
<td>1,306</td>
<td>1,677</td>
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</tr>
<tr>
<td>Architecture and Building Sciences</td>
<td>304</td>
<td>307</td>
<td></td>
</tr>
<tr>
<td>Engineering Sciences</td>
<td>411</td>
<td>475</td>
<td></td>
</tr>
<tr>
<td>Natural Sciences and Mathematics</td>
<td>383</td>
<td>377</td>
<td></td>
</tr>
<tr>
<td>System-oriented Natural Sciences</td>
<td>185</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Management and Social Sciences</td>
<td>21</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Master degrees and diplomas</td>
<td>1,361</td>
<td>1,506</td>
<td>1,650</td>
</tr>
<tr>
<td>Architecture and Building Sciences</td>
<td>322</td>
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<tr>
<td>Engineering Sciences</td>
<td>258</td>
<td>475</td>
<td>483</td>
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<tr>
<td>Natural Sciences and Mathematics</td>
<td>317</td>
<td>493</td>
<td>460</td>
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<tr>
<td>System-oriented Natural Sciences</td>
<td>231</td>
<td>207</td>
<td>292</td>
</tr>
<tr>
<td>Management and Social Sciences</td>
<td>213</td>
<td>93</td>
<td>85</td>
</tr>
<tr>
<td>Doctorates</td>
<td>923</td>
<td>996</td>
<td>767</td>
</tr>
</tbody>
</table>
The ETH Sustainability Summer School program “All Just Rubbish?” in 2011 really appealed to the participant Nicolas Nägeli. “It was my best experience at ETH so far,” he said enthusiastically. Nägeli was always a top student in school and today he is a member of the Swiss Study Foundation.

What makes the Summer Academy so attractive? It is the students that make the difference. “When 25 great people from Singapore, Switzerland or Boston work together on something at full steam, it just works.” During the first week together in Emmental, instructors from ETH Zurich and other universities, as well as experts from the professional world, offered their input. In 2011, for instance, it centered around the flow of materials and the throwaway society, the cradle-to-grave concept and the analysis of product life cycles.

“Discussions there were plentiful and open,” Nägeli said. Following a stay of nearly two weeks, the group then divided up into small teams for a case study providing time to compare notes, develop new ideas and also consider how to implement them in the real world. The learning environment, the composition of the groups and the contacts from business and research combined provide “a different learning setting.”

The ETH Sustainability Summer School program “SeedCity,” the community garden at the ETH Campus Hönggerberg.

The master’s Degree Program in Environmental Engineering addresses resource management. As the global population grows, there is an increasing strain on water, land and air. It is the role of environmental engineers to manage these vital resources in a sustainable manner and to remediate them as necessary. This master’s degree program expands students’ subject-specific knowledge in two concentrations selected from: ‘Water Resources Management’, ‘Urban Water Management’, ‘Ecological Systems Design, Waste Management and Air Pollution Control’, ‘Hydraulic Engineering’ and ‘Soil Protection’.

Students may also choose to focus on sustainability through the Master’s Degree Program in Environmental Sciences. As a highly scientific degree, this program offers students the ability to address complex issues through an interdisciplinary approach and to specialize in one of six concentrations: ‘Atmosphere and Climate’, ‘Biogeochemistry and Pollutant Dynamics’, ‘Ecology and Evolution; Human-Environment Systems’, ‘Forest and Landscape Management’, ‘Human Health’, and ‘Nutrition and Environment’. The skills harnessed through this program prepare students for professional roles as leaders in society, which they may practice through internships in Switzerland or abroad where they address environmental challenges in a non-academic setting.

In addition, ETH Zurich also hosts leading programs that take a detailed look at topics centered on sustainability. As an example, in the summer, there is an intensive three week “ETH Sustainability Summer School” session that focuses exclusively on a given theme around sustainability. The 2011 series was attended by 30 students from 18 countries and concentrated on green product designs, material life cycles and waste streams, while the 2012 session covered topics related to global food systems and had 35 participants from 16 countries. Sustainability was also the main focus at the CCES Winter School: “Sustainability Science Meets Practice”. This course was held for the first time in January 2011 and was successfully repeated in 2012. In both years it provided 17 doctoral students and post-docs an opportunity to make a real-world connection to their areas of study by meeting practitioners, stakeholders whilst the general public and taking a critical look at the social implications of their work.
At the annual “ETH Education Days”, high school students receive insights into current research and scientific work. Additionally, ETH Zurich offers a comprehensive overview of its study and research disciplines.

ETH Zurich supports particularly gifted master students by providing stipends to about 3% of incoming students in the ESOP program (around 50 students) per year.

Achieved. ETH Zurich uses various information channels for guidance on courses offered (e.g., the traveling exhibition, “ETH on the Road” that informed students at 50 high schools across Switzerland on study and research disciplines). At the annual “ETH Study Weeks”, high school students receive insights on current research and scientific work.

Increasing student exchanges with the new EU member states via the ERASMUS program

Achieved. The proportion of students enrolled at ETH Zurich from the new EU member states increased continuously over the last seven years from 0.9% to 1.8%.

Seed Sustainability

ETH Zurich set up the project platform Seed Sustainability as a service to coordinate and promote collaboration between society, industry and science, and student research. In addition to problems identified by students and faculty at ETH Zurich, academic programs at two “Study Information Days” which benefited approximately 5,000 people.

Achieved. ETH Zurich supports particularly gifted master students by providing stipends to about 3% of incoming students in the ESOP program (around 50 students) per year.

Supporting students’ initiatives

Ecoworks, founded in 2008 by two ETH students, Marc Vogt and Martin Räber, offers a project based platform for the students and staff of ETH Zurich to develop ideas for improved environmental performance. The combination of diverse viewpoints and experiences leads to creative solutions for the environment, with a special focus on CO2 reduction and increased energy efficiency at ETH Zurich.

After the project ideas are submitted, a jury assesses them based on financing, feasibility and the dedication of the candidates. In November 2010, three projects were awarded a total amount of 100,000 CHF earmarked funds, to ensure a feasible implementation of the projects.

Continuing education

ETH Zurich’s commitment to supporting life-long learning is reflected in its mission statement and considered a core task by the Swiss Federal Institutes of Technology. Extending degree programs through postgraduate and further education courses helps promote a more effective transfer of knowledge and technology between the university and society.

The Continuing Education program attracts specialists and executives with an academic background who work in private and public companies, in administration roles, or are engaged in research, teaching and consultancy. Through interdisciplinary courses focused on ETH Zurich’s core fields (architecture, mathematics, engineering sciences, natural sciences and economic sciences) students deepen their knowledge and refine their professional skills while exploring the interface between technology, law, management and social sciences. These courses are not only beneficial to the students who are developing their careers, but there is also an additional clear benefit to their workplaces and the economies these businesses touch.
Staying connected: from researcher to head of sustainability at Swiss Re

Combining theory and practice is core to the ETH Zurich in order to educate students in the field of sustainability. David Bresch, Director of Sustainability and Political Risk Management at Swiss Re, experienced this directly while he studied. He still stays connected as an ETH alumnus and lecturer.

Back when he was still a student at high school, David Bresch’s future career might have already been predicted. “I didn’t really like Latin and I wanted to do something in the natural sciences,” the 42-year-old recalls with a laugh. After his university qualification exam, he was finished with ancient languages. Bresch attended ETH Zurich and studied physics. He felt most at home there among the physicists who studied the atmosphere and environment. Since then the issue of climate change has followed him at every turn, although the focus has changed.

When Bresch completed his PhD in 1999 and took a post doctoral position at MIT in the Science and Policy of Climate Change program, he primarily wanted to deal with climate modeling. However, during these years in the United States, it wasn’t the ice models that occupied him most, as originally planned, but rather the question of how to convey scientific findings in a way that made them relevant to making decisions. "That was during the Clinton era; he impressed me," during the years that followed, he was more fascinated with the interdependency of ‘science and policy’ and the implementation of research findings than with pure science.

Bresch followed his instincts and in 2000, he set his sights anew and joined Swiss Re. As both chief modeler and in his later job as the head of sustainability and political risks, climate change continued to be the focus of his work. His advice has also been sought in political negotiations; during all of the UN climate change conferences, from Copenhagen in 2009 to Doha in 2012, David Bresch attended as a member of the Swiss delegation.

Nevertheless, he stays connected with ETH Zurich. Since 2010 he has been passing his knowledge to students at ETH Zurich by teaching them “Climate Change Uncertainty and Risk,” together with ETH professor Reto Knutti. The course introduces the concepts of predictability, probability and uncertainty. It also highlights probabilistic risk modeling, the application to climate modeling and the economics of climate adaptation. “I like working with students and I want to give something back to ETH in this way,” Bresch said, “I really like this approach of combining academic training and professional experience.” In the future he would like to reach even more students, such as those studying business administration. “Involving future managers – that would be even more sustainable.”

“Universities are sustainable to the extent that they create knowledge that is relevant to the future of a society. But what will be relevant in the future? Because the future is by nature only predictable to a very limited degree, universities must be positioned broadly with respect to their disciplines.”
As a publicly funded institution of research and education, ETH Zurich has a special responsibility to share its knowledge with society.

In its dialogues with decision makers and the public, the school acts as an “honest broker” and carefully communicates uncertainties and assumptions made in scientific findings. Public dialogues and scientific exhibitions in 2011 and 2012 brought in several thousand participants and included events that focused on sustainable energy and water use. Events were complemented by printed and online public communications, such as the ETH Life online and print magazine or the ETH Climate Blog.

ETH Zurich places a high value on being a responsible partner in society and constantly upholding ethical conduct. This applies to ETH Zurich’s internal business practices and research activities but also to collaborations with external partners and suppliers.

This chapter covers 10 GRI Indicators and ISCN Principle 3.

**Society and outreach**

GRI Indicators

- **3.5** Process for defining report content, including explanation of how the organization has applied the 'Guidance on Defining Report Content' and the associated Principles.
- **4.6** Processes in place for the highest governance body to ensure conflicts of interest are avoided.
- **4.8** Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.
- **4.14** Stakeholder groups engaged by the organization.
- **4.15** Basis for identification and selection of stakeholders with whom to engage.
- **4.16** Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.
- **4.17** Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to these key topics and concerns, including through its reporting.
- **EC8** Development and impact of infrastructure investments and services provided primarily for public benefit.
- **SO5** Public policy positions and participation in public policy development and lobbying.
- **SO3** Percentage of employees trained in organization’s anti-corruption policies and procedures.
Engaging the public, industry and society

ETH Zurich is not only active in the fields of education, research, and knowledge transfer, but it also works for the good of society on a number of different levels. It provides unique services, takes part in social debates and gives the public fascinating insights into the world of science. By engaging external stakeholders in this way, ETH Zurich enables politicians and society at large to make well-informed decisions. Through these engagements, it is imperative that ETH Zurich plays the role of an “Honest Broker”: an impartial mediator that carefully communicates levels of uncertainty and assumptions made in scientific findings.

Engaging representatives from the scientific community, industry, and society in a “trialogue” is especially important when tackling the complex problems related to sustainability. While science serves as a pioneering thinker, providing explanations and offering new solutions, industry puts science to practical use. To extend these trialogues to the public domain, ETH Zurich has organized a number of open platforms focused on sustainability. The latest scientific results designed to tackle the great challenges of our time are presented and discussed openly in various forums, venues and meetings.

Interacting with the interested public

**Scientifica:** Since 2011, ETH Zurich and the University of Zurich have been running “Scientifica” which is a program dedicated to relevant research topics being undertaken at the two universities. The program offers a number of events open to the general public and children. In 2012, 21,000 visitors attended Scientifica which focused on “Becoming Healthy – Staying Healthy”. The event featured more than 350 scientists presenting their work in 50 exhibition stands and in 40 short lectures.

**Meeting Place Science City (Treffpunkt Science City):**
First introduced in 2006, “Treffpunkt Science City” is a series held twice a year at the ETH campus Hönggerberg. It is open to the public and attracts multi-stakeholder interactions. Events organized through the series provide opportunities for participants to explore new ideas by attending lectures, demonstrations, exhibitions, laboratory visits and discussions. These include ones led by popular thought leaders and researchers through “Science Talks”.

**ETH Talks (ETH Gespräche):**
In dialogue with decision makers

**Sustainability Focus of the Year:** Through its “Focus of the Year”, ETH Zurich selects prevailing topics in sustainable development. It presents the latest scientific insights and discusses various options for action with decision-makers. In 2011, ETH Zurich placed its sustainability focus on Energy Supplies and explored topics addressing future energy sources and technologies. The 2012, focus was on World Food Systems, which was supported by ETH’s World Food Supplies and examined questions of how to feed the world, while considering human health, the environment, and social well-being.

**ETH Talks (ETH Gespräche):** On a regular basis, ETH Zurich invites thought leaders to “ETH Talks”. While these talks are open to the public, the primary objective is to foster a critical dialogue among Swiss decision-makers influencing economic, political and public matters.

In dialogue with decision makers

**Sustainability Focus of the Year:** Through its “Focus of the Year”, ETH Zurich selects prevailing topics in sustainable development. It presents the latest scientific insights and discusses various options for action with decision-makers. In 2011, ETH Zurich placed its sustainability focus on Energy Supplies and explored topics addressing future energy sources and technologies. The 2012, focus was on World Food Systems, which was supported by ETH’s World Food Supply Center (WFSC). This concentration dealt with the challenging question of how to feed the world, while considering human health, the environment, and social well-being.

**ETH Talks (ETH Gespräche):** On a regular basis, ETH Zurich invites thought leaders to "ETH Talks". While these talks are open to the public, the primary objective is to foster a critical dialogue among Swiss decision-makers influencing economic, political and public matters.

In 2011, the ETH Talk welcomed 1,000 participants and focused on “Designing the Future of Sustainable Energy – Challenges and Opportunities for Switzerland”. The global demand for, safe, affordable, and reliable energy sources continues to intensify. In light of this issue, research on the “Energy Future of Switzerland” was presented by three ETH professors who outlined possible scenarios and future options for sustainable energy in Switzerland. The ETH scientists were then challenged by influential Swiss decision makers.

With the cooperation of Eawag, the Swiss Federal Institute of Aquatic Science and Technology, the Talks of 2012 focused on pressing issues related to water. Growing demands for water required for agriculture, drinking supplies, industry, and energy, pose increasing pressure on existing water reserves. With 800 participants in attendance, the event addressed these issues in depth.
Society and outreach

ETH Zurich in Bundesbern: The “ETH Zurich in Bundesbern” event series serves as a platform for ETH Zurich to inform politicians, organizations, and business representatives about current scientific topics and allow debate within the parliament. Topics of the more recent ETH Zurich in Bundesbern gatherings included the release of innovative technology for weather forecasting and considerations for potential risks to public safety.

Lokalternin des Präsidenten: ETH Zurich uses the “Lokalternin des Präsidenten” as a platform for dialogues between selected corporate partners and donors. Organized with the support of the ETH Foundation, these events occur biannually and engage between 100 and 150 participants. In 2011, topics of discussion were in the fields of life sciences and sustainable building while in 2012, the focus was on medical technology and geothermal energy production.

Industry Dialogue on the Future: With support from the association Engineers Shape Our Future (INGCH) exclusive events are hosted by ETH Zurich and its counterpart Swiss university, EPFL, to open discussions about current issues that affect both universities. Representatives of science, the corporate sector and political decision makers are invited each year. In 2012, the dialogue focused on the main challenges facing the energy marketplace in Switzerland.

Partnership Councils: A unique aspect of the ETH competence centers are their Partnership Councils – a platform that brings together key players from academia, industry and philanthropy to work together to define challenges and develop and implement solutions. These groups support the work of ETH’s World Food System Center (WFSC), the Energy Science Center (ESC) and the ETH Risk Center by contributing resources, time and knowledge. They play an important role in integrating real world perspectives and in ensuring research findings are disseminated to decision makers and relevant stakeholders.

Sustainability Dialogues with Leaders and Pioneers: Jointly organized by The Sustainability Forum Zurich and ETH Sustainability, “Sustainability Dialogues with Leaders and Pioneers” is one of the most prestigious lecture series on sustainability in Switzerland. Since its establishment in 2004, numerous leading international personalities have shared their sustainability-related success stories and experiences with audiences of 100-400 people.

ETH Climate Blog (Klimablog): ETH Sustainability and an editorial team established the “ETH Climate Blog” in 2009. As a result of the initial success of the blog, the project continues to spread interest in science and topics related to sustainability. Professors at ETH Zurich write about different areas of research related to climate change, and draw connections to economic and social aspects. These ideas are further developed through prominent guests from politics, business and society, as well as students at ETH Zurich. Further media partnership relations were established with an online magazine (news.ch) and a free daily newspaper (20 Minuten).

Voice of Economists (Ökonomenstimme): The Internet platform “Voice of Economists”, which was launched in 2010 by the Swiss Institute for Business Cycle Research (KOF) at ETH Zurich, has become a highly regarded website. The “Ökonomenstimme” tackles all kinds of economic questions and is intended not only for economists but also for interested non-experts. With over 4,000 visitors a week, the “Ökonomenstimme” has become one of the leading platforms in this field.

Informing government support

In addition to reaching out to the public, ETH Zurich also directs its scientific and technical expertise to public service tasks on behalf of the federal government. The expertise of ETH Zurich scientists is called upon for natural disasters and international conflicts. For example, experts from the Swiss Seismological Service (SED) and the Laboratory for Nuclear Energy Systems regularly appeared in the media as informed experts following the devastating tsunami in Japan on 11 March 2011 and the subsequent nuclear disaster at Fukushima. The Swiss Economic Institute (KOF) is one of the leading economic “think tanks” in Switzerland. It aims to play two roles, one as a mediator between a broader public (politics, society) and the research community, and another as a leading platform for economists, especially within Switzerland. Expertise from ETH Zurich was also in demand during the Libyan crisis: during the war, scientists from the Center for Security Studies (CSS) gave a series of interviews in which they commented on the progress of the conflict and the role of western countries. With their expert knowledge, they were able to help the public gain an understanding of the complex events occurring in the region.

Ethics

As a publically funded institution with an excellent reputation to uphold, it is important that ETH Zurich operates under ethical standards.

In terms of internal business practices, ETH Zurich follows rules on secondary employment for staff which is laid out in its faculty regulations and personnel regulations guidelines. The latter also provides rules for avoiding conflicts of interest and on acceptable levels of gift receipt for all employees. In the event that ETH Zurich’s ethical code is breached, a directive ensures whistleblower protection for ETH Zurich employees who report conflicts of interest, misuse of funds or other breaches of internal regulations.

Research at ETH Zurich is also guided by ethical standards; for instance, all scientific programs or projects in which humans are the object of research need to be evaluated by the ETH Ethics Commission (Ethikkommission) before funding is provided or research activities can start. By proving the ethical quality of its research programs, ETH Zurich guarantees that these programs achieve legal compliance and ethical legitimacy.

The guidelines for research integrity and good scientific practice from 2007 (2nd edition 2011) help to ensure that research at ETH Zurich is undertaken in honesty. They also provide guidance on how to truthfully conduct peer review processes.

From a financial perspective, regulations have been in effect since 2006 that govern business conduct in terms of financial signatory policies and purchasing processes, as well as other aspects of financial competency and procedures.

While it is imperative that internal affairs are handled ethically, it is equally important for external engagements.

ETH Zurich has no formal policy on human rights protection in its external collaborations but it is aware of the importance of this topic in shared projects with international partners. Therefore, a working group was established in August 2012 to develop internal ethical standards for international cooperation.

Ethics goal

All scientific programs or projects in which humans are the object of research need to be evaluated to meet legal compliance and ethical legitimacy.

Achieved. In 2011 and 2012, 68/64 programs and projects have been evaluated by the ETH Ethics Commission (Ethikkommission).
### Dialogue Mechanism and Frequency
<table>
<thead>
<tr>
<th>Stakeholder Groups</th>
<th>Topics Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulatory based dialogue formats for internal and external stakeholders (not public)</strong></td>
<td></td>
</tr>
<tr>
<td>ETH Board Meetings (ETH Rat); frequency of meeting according to defined annual schedule and based on demand</td>
<td>The ETH Board is the strategic management and supervisory body of the ETH-Domain and responsible for fulfilling and implementing the science policy performance mandate set by the Federal Council and the Federal Parliament and for the four-year strategy for the ETH-Domain.</td>
</tr>
<tr>
<td>ETH-Board Dialogue; annually</td>
<td>ETH Board Members</td>
</tr>
<tr>
<td>Dialogue between Executive Board and departments; 16 meetings per year</td>
<td>Dialogue between ETH Board and ETH Zurich on strategic planning, reporting, and current issues.</td>
</tr>
<tr>
<td>Hochschulversammlung - The University Assembly of ETH Zürich; at least five plenary meetings per year</td>
<td>Members of faculty (KdL), scientific staff (AVETH), technical and administrative staff (P&amp;KdL) and students (VSETH)</td>
</tr>
<tr>
<td>Departementsvorstandskonferenz - Conference of the Heads of Department; at least one meeting per semester, additional meetings based on demand</td>
<td>Heads of the 16 ETH Departments, director CESC, delegate CICES, head strategy committee</td>
</tr>
<tr>
<td>Gesamtkonferenz - General Faculty Conference;</td>
<td>All lecturers. Advising the Board of ETH Zurich with regard to teaching, faculty issues, strategic and financial planning or organizational decisions.</td>
</tr>
<tr>
<td>Gesamtpressekonferenz - Professors’ Conference; Konferenz des Lehrkörpers incl. Ausschuss der Konferenz des Lehrkörpers - Lecturers’ Conference; annual meetings and based on demand</td>
<td></td>
</tr>
<tr>
<td>Studienkonferenz - Conference of the Direcors of Study; Three meetings per year and based on demand</td>
<td>Directors of Studies of all study programs. Discussion/decisions related to education programs, curriculum, and exam regulations.</td>
</tr>
<tr>
<td><strong>Additional dialogue formats for selected stakeholders</strong></td>
<td></td>
</tr>
<tr>
<td>Information Forum ETH in Bundesberbern; quarterly</td>
<td>Parliamentarians, decision makers; specific interest groups. Firsthand information/discussion panels on selected strategic topics.</td>
</tr>
<tr>
<td>Lokaltag der Präsidenten; biannually</td>
<td>Selected corporate partners, donors, and politicians. Firsthand information/discussion on selected strategic topics.</td>
</tr>
<tr>
<td>Partnership Councils; based on demand</td>
<td>Key players from academia, industry and philanthropy. Supporting some of ETH’s Competence Centers by integrating real world perspectives and ensuring research findings are disseminated to decision makers and relevant stakeholders.</td>
</tr>
<tr>
<td>ETH-Industry Dialogue of the Future; annually</td>
<td>Representatives from science, corporate sector and political decision makers. Topics of common interest for ETH Zurich and the corporate sector.</td>
</tr>
<tr>
<td>ETH Alumni specific activities such as ETH Alumni Presidential Lecture, Home Coming Day, Business Networking or Career Events, Homecoming Day; based on demand</td>
<td>Latest information related to ETH Zurich’s research, education, knowledge and campus life, networking, career support.</td>
</tr>
</tbody>
</table>

### Dialogue Mechanism and Frequency
<table>
<thead>
<tr>
<th>Stakeholder Groups</th>
<th>Topics Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public events</strong></td>
<td></td>
</tr>
<tr>
<td>ETH Gespräche; annually</td>
<td>Swiss decision makers, thought leaders, and the public - attracts up to 1,000 participants.</td>
</tr>
<tr>
<td>Sustainability dialogue with leaders and pioneers; annually</td>
<td>Leaders in business, science, and politics. Current sustainability topics are discussed to inform decision making.</td>
</tr>
<tr>
<td>Science City Talk; several times per year</td>
<td>Local public communities, interested public. Series of topics of general interest; issues to link science and society.</td>
</tr>
<tr>
<td>Scientifica; annually</td>
<td>Public community, decision makers in politics and business. Relevant research topics being undertaken at ETH Zurich and the University of Zurich are presented and discussed.</td>
</tr>
</tbody>
</table>

### Online communication tools
| ETH Life Online: daily                      | Faculty, students, Research highlights, campus news, strategic topics, events/news of public interest. |
| ETH Zurich on Twitter and YouTube:         | Media, decision-makers interested public Research highlights, strategic topics, events/news of public interest. |
| www.twitter.com/eth                         |                                                                                   |
| ETH Climate Blog - Klimablog; publication of new articles twice per week | Media, decision-makers, interested public. Latest research and news related to climate change. |
| Voice of Economists, Ökonomenstimme; several publications per month | German-speaking economists, interested public Articles and columns of the best German-speaking economists to nurture the exchange of knowledge and opinions on economic issues. |
| TechAlert e-mails to announce latest licensing opportunities; based on demand | Industry R&D managers, Innovation managers, Business Development managers, interested people, institutions, ETH transfer. Regular information from ETH transfer sent to several hundred interested people who are searching for new technologies. |
| LinkedIn community for ETH spin-offs; based on demand | ETH spin-offs, ETH transfer and people involved in supporting new businesses Updates on topics of relevance for ETH spin-offs. |
| Specific newsletters of competence centers or institutes; individual publication frequencies based on demand | Specific interest groups Regular updates on results or ongoing research, education, and events. |

### Printed communication tools
| The Annual Report of ETH Zurich: annually The public, decision makers, parliamentarian, corporate sector, alumni Overview of the most important topics and events at ETH in the previous year. |
| President’s Selection; twice per year Decision makers, parliamentarian corporate sector, alumni A small number of the manifold new findings and research results of ETH Zurich selected by the ETH-President including lighthouse results from ETH’s research, education and outreach activities. |
| ETH GLOBE Magazine; quarterly Decision makers, alumni, parliamentarians, corporate sector Selected focus themes, latest research findings, events/news of stakeholder interest. |
| ETH Life Print; nine times per year Faculty, staff, students Information about events, news of internal interest and campus life. |
Worldwide energy demand is growing and so is the demand for safe, affordable and reliable energy carriers. As a major site for innovation, research and technology, Switzerland is playing an important role in shaping a sustainable future for energy production. The opinion of science is therefore especially sought after.

In particular, the study called "The future of energy in Switzerland," compiled by members of the Energy Science Center (ESC) at ETH Zurich, has helped make the energy debate more objective. The findings regarding the phaseout of nuclear energy showed that a gradual phaseout is in principle possible, but only under certain circumstances. Professor Konstantinos Boulouchos, coordinating author of the study, and his colleagues Göran Andersson and Lucas Bretschger presented the most important results of the study for critical discussion at the ETH Talk on Energy. It is indisputable for ETH Zurich professors that saying "no" to nuclear energy brings with it both opportunities and risks. Maintaining prosperity while meeting climate change goals, will impose severe challenges to the Swiss society during the phase-out period. According to the professors some essential underlying conditions are required to mitigate those challenges. They include breakthroughs in technological development and intelligent links between the supply and demand of electricity. Suitable instruments of economic policy are also required as well as major coordinated efforts on the part of the society as a whole.

Federal Councillor Doris Leuthard also addressed this issue in her keynote speech for the event. In her presentation, the head of the Federal Department of Environment, Transport, Energy and Communications presented the challenges for industry and policy makers, whilst also highlighting the opportunities for Switzerland in converging its energy supply and appealing for innovative capability through research.

In his speech, the President of ETH Zurich, Ralph Eichler, once again underscored the challenges transitioning from one stable system of energy use to another. The phaseout of nuclear energy is only possible if many parameters are changed at the same time and in the right proportions. "It's not enough to work on just one aspect."

www.ethz.ch/eth_talks

ETH Talk 2011: How science contributes to the energy debate

On May 25, 2011, the Swiss Federal Council passed a resolution to gradually phase out nuclear energy. In a subsequent study, ETH Zurich examined whether this phaseout was technically feasible and realistic from an economic and societal perspective. The results of the study were presented at the ETH Talk 2011 on Energy as part of the ETH Talks series and were discussed with Federal Councillor Doris Leuthard as well as with leading figures from industry and politics. There was a large response, with around 1,000 guests following the event in person or via the internet.

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The student body at ETH Zurich grew by about two-thirds between 2000 and 2012. This strong growth has taxed not only the school’s infrastructure, but also its employees. A robust training and development program has helped address this challenge. Over a thousand staff members participated in these courses in 2012.

ETH Zurich is a diverse community. Approximately half of the employees are of foreign origin and more than 100 nationalities are represented within the student body. While close to 30% of students are female, the gender mix in leadership positions is much less balanced. ETH Zurich’s equal opportunity programs also helped increase the proportion of female professors to more than 12% over the last year.

This chapter covers 8 GRI Indicators and ISCN Principle 2.

**GRI Indicators**

| LA1 | Total workforce by employment type, employment contract, and region. |
| LA2 | Total number and rate of employee turnover by age group, gender, and region. |
| LA10 | Average hours of training per year per employee by employee category. |
| LA11 | Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. |
| LA12 | Percentage of employees receiving regular performance and career development reviews. |
| LA13 | Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity. |
| PR8 | Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. |
Adapting to growth

In recent years, ETH Zurich has experienced significant growth in its student numbers. Now, the number of new admissions appears to have stabilized at a high level. In 2012, 6,305 students began their studies at ETH Zurich, approximately the same number as in the year before. The total number of students has therefore risen to 17,781. This means that 66% more young people are studying at ETH Zurich today than in 2000.

With its growth, ETH Zurich has been challenged with accommodating the larger student body in terms of its infrastructure and operations. Many of the lecture halls, laboratories and seminar rooms have been outgrown by the larger class sizes. As a result, a number of buildings have already undergone renovations and, over the next four years, approximately one billion CHF will be invested in updating and expanding the campus. With regards to longer-term planning (beyond 2016), ETH Zurich expects to invest about 15% of its budget in campus infrastructure. Employees have also responded to the growth of ETH Zurich by diligently working to uphold the high quality service, mentorship, instruction and teaching.

Students, faculty and staff

Supporting professional development

ETH Zurich is a competitive employer which is reflected in the highly skilled faculty and staff. Given the deep dependency the university has on its employees, ETH Zurich is committed to act as a supportive employer. As such, ETH Zurich offers a number of professional development opportunities to the faculty and staff including courses on Leadership Management, Project Management, and Professional Development and Working Techniques. In 2011 and 2012, 669/1,011 employees participated in at least one of these courses and a total of 1,659 participant days of internal trainings were conducted over the two reporting years. Of these courses, the most popular was the new short-term lunch-event series which was introduced in 2012 and focused on Promotion of Healthy Lifestyles. In its first year, the series attracted 376 participants.

For employees who are nearing the end of their career, ETH Zurich offers a three-day course to help prepare those employees who are nearing the end of their careers for retirement. This course addresses some of the most important aspects related to this life milestone including both administrative items and social matters. In 2011 and 2012, 62/39 people benefited from this course.

Over the recent years, employees have also shown a great deal of interest in external trainings. In response to this trend, the Human Resources Department has been allocating funds to provide external trainings to individuals within ETH Zurich. In 2011 and 2012, 247,000 /197,000 CHF was spent on external professional development offerings and 73/69 employees took part in these offerings.

Professional growth for all employees is supported by mandatory annual performance reviews through which employees may gain insight into their strengths and weaknesses.

Enriching leadership

In addition to enhancing professional skills, it is also strongly encouraged that ETH Zurich’s personnel seek leadership positions. Acting with the utmost integrity is expected of those assuming leadership roles. In practice, this means taking responsibility, using sound judgment, remaining goal-oriented and fostering the potential of other employees.

Leadership and personal development goals

Recruitment and support of the best scientists globally to ensure highest quality of research.

Achieved. Professors teaching and carrying out research at ETH Zurich: In 2011, 462 [428 FTE]; in 2012, 482 [449 FTE]. More than 65% were appointed to ETH from foreign universities, nearly half of which were from the USA, the UK and Canada.

Employee development by targeted selection and comprehensive personnel development measures.

Achieved. In 2011 and 2012, 669 and 1,011 employees participated in at least one course on Leadership Management, Project Management, and Professional Development and Working Techniques. These courses and a total of 1,659 participant days of internal trainings were conducted over the two reporting years.

Conducting mandatory annual performance reviews that include the topic of leadership behavior of superiors.

Achieved. Professional growth for all employees is supported by mandatory annual performance reviews through which employees may gain insight into their strengths and weaknesses.

Through these leadership positions, faculty and staff not only advance professionally on an individual level, but there is also development within departments and teams as fresh perspectives are introduced.

Professional growth for all employees is also supported by mandatory annual performance reviews through which employees may gain insight into their strengths and weaknesses. This allows employees to focus on specific areas for improvement. Supporting this effort are cooperative career planning sessions which help employees discuss future goals.
More long-term positions in mid-level academia

An interview with Franziska Aemisegger, PhD Student in the Atmospheric Dynamics group, ETH Zurich

What is the daily routine like for a woman in a research group?
There is a certain amount of competition; everyone wants to get ahead. But I’m lucky! With us, the proportion of men to women is balanced. That changes how we deal with each other. In a mixed group, women are less likely to feel intimidated. My professor intentionally promotes diversity in the team. Apart from gender diversity, we have co-workers from all parts of the world in the group.
To what extent do your male competitors differ?
In science, the path to the top gets narrower and narrower. Men can be more focused from the start, more self-confident, and keep their eyes on their goal. They often have a better command of self-marketing than women do. Many women are interested in a broader range of subjects and have a more holistic focus.

We need more female role models in science

An interview with Dr. Susanne Dribscher
Post-Doc in the Micro and Nanosystems Group, ETH Zurich

How does a woman need to assert herself in research?
There is a significant difference in the communication of men and women at a university. Women tend to downplay their strengths; men are usually much more self-confident, solve conflicts differently and promote themselves better. During my doctorate studies I had to adjust and learn how to differentiate myself. If the supervisor is only used to interact with men, women may be underestimated. Did that happen to you?
My supervisor was aware of the situation. We talked openly about it. It would be good if all professors were made aware of this issue. Women also need a lot more role models. In more than four years I’ve unfortunately only once experienced having a woman speak at our weekly physics colloquium. More could be invited there.

What is the main thing that discourages you from the track to becoming a professor?
I do not want to completely exclude a professorship at a later point. In any case, the frequently cited issue of child care is certainly not a primary argument in my case. I see instead another discouraging aspect: the heavy competitive pressure. Everyone – including men – has to use their elbows to force their way through to becoming a professor. What would be your wish for the future?
After my postdoc I would like to accept a position at the start-up company of our research project. Collaborating with a team in order to be successful in the market is a nice experience for me. I’ve learned a lot during my time at the university for this and would therefore encourage every woman to decide in favor of a doctorate.

Encouraging a diverse campus

Diversity is considered to be crucial to innovation, productivity and the satisfaction of students and employees. By the end of 2011 and 2012, there were 442/482 professors teaching and conducting research at ETH Zurich (424/445 FTE). More than 65% of whom were appointed to ETH Zurich from foreign universities and nearly half of these foreign appointments were from the USA, the UK and Canada. Over 30% were previously employed at Swiss institutions and, similarly, over 30% of the current chairs are held by people with Swiss nationality. Overall, approximately 50% of employees at ETH Zurich came from foreign countries. Within the student body, there are over 100 nationalities represented by 36%/37% of students in 2011 and 2012. With these numerous national and cultural backgrounds represented, there are greater opportunities to exchange new ideas and share different problem-solving approaches.

In addition to embracing the many nationalities represented at ETH Zurich, there is also a great deal of attention paid to finding a better balance of genders. As a technical institution, there has historically been an over-representation of male students, faculty and staff. However, ETH Zurich recognizes the need for a more balanced ratio of males and females and has been diligently working to resolve this issue.

The Equal! office is dedicated to securing equal opportunities for women and men. The earliest form of the program began in 1991 and has since been focusing on supporting women in academia and addressing the “leaky pipeline”. This concept symbolizes the academic career of women as a pipeline and describes it as “leaking” because the proportion of female students at ETH Zurich roughly 30% drops (to 10% or less) with more senior positions and professorships. The result is a loss of much potential for ETH Zurich and for science. The Equal! office has consequently worked to plug these leaks by supporting women in academic careers. As part of this effort, the Equal! office conducts annual gender monitoring analyses. Although there has been a significant increase in the absolute number of female students compared to previous years, the relative proportion remains stable and indicates that there is still additional work to be done to narrow this gap.

The doctor of physics is used to fighting her way through when necessary. There are not a lot of women in physics and she is the only one on her current research team. She works as a postdoctoral scholar today in a group research project of ETH Zurich and with a startup company.

Her thesis for her university entrance qualifications dealt with the theatre business in East Berlin before and after the fall of the Wall. Theater, opera, literature – they are all a big part of her life. Yet professionally, Franziska Aemisegger is in a completely different realm. The environmental engineer is now finishing her doctorate.

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### Employee turnover

At ETH Zurich, a significant part of mid-career research staff is employed in temporary positions related to a specific stage of their academic development path or a specific research grant. This is encouraged because of the dynamic nature of research institutions and the need to foster innovative research with a constant influx of fresh ideas and perspectives. For this reason, only permanent contract employees are considered when the turnover rate is calculated. From 2011 to 2012, the rate of turnover went from 6.2% to 6.6%. Of all the permanent employees at ETH Zurich, professors consistently show the highest retention rate in 2011 and 2012 (3.3%/2.1%). Conversely, Assistants have the highest turnover rate in 2011 (7.0%) and scientific staff in 2012 (8.2%).

#### Summary of employee retention rates

<table>
<thead>
<tr>
<th>Employee turnover</th>
<th>New entries from outside</th>
<th>Persons leaving</th>
<th>Notice given</th>
<th>Retirement</th>
<th>Turnover in percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ETH Zurich</td>
<td>4,690</td>
<td>4,200</td>
<td>1,533</td>
<td>553</td>
<td>82</td>
</tr>
<tr>
<td>Professors</td>
<td>16</td>
<td>17</td>
<td>3</td>
<td>9</td>
<td>3.3</td>
</tr>
<tr>
<td>Assistant professors</td>
<td>16</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>5.1</td>
</tr>
<tr>
<td>Assistants</td>
<td>1,124</td>
<td>1,171</td>
<td>966</td>
<td>316</td>
<td>2</td>
</tr>
<tr>
<td>Senior assistants</td>
<td>27</td>
<td>82</td>
<td>55</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Scientific staff</td>
<td>56</td>
<td>63</td>
<td>68</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Senior scientists and scientific staff on permanent contracts</td>
<td>2</td>
<td>18</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Scientific staff on hourly wages</td>
<td>2,336</td>
<td>2,273</td>
<td>2,213</td>
<td>59</td>
<td>0</td>
</tr>
<tr>
<td>Technical &amp; IT staff</td>
<td>219</td>
<td>280</td>
<td>171</td>
<td>68</td>
<td>35</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>300</td>
<td>288</td>
<td>192</td>
<td>67</td>
<td>20</td>
</tr>
</tbody>
</table>

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Total ETH Zurich</td>
<td>4,235</td>
<td>3,999</td>
<td>3,308</td>
<td>580</td>
<td>92</td>
</tr>
<tr>
<td>Professors</td>
<td>19</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>2.1</td>
</tr>
<tr>
<td>Assistant professors</td>
<td>13</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Assistants</td>
<td>1,438</td>
<td>1,209</td>
<td>875</td>
<td>324</td>
<td>0</td>
</tr>
<tr>
<td>Senior assistants</td>
<td>26</td>
<td>68</td>
<td>39</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Scientific staff</td>
<td>66</td>
<td>62</td>
<td>62</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Senior scientists and scientific staff on permanent contracts</td>
<td>6</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Scientific staff on hourly wages</td>
<td>2,162</td>
<td>2,102</td>
<td>2,024</td>
<td>83</td>
<td>0</td>
</tr>
<tr>
<td>Technical &amp; IT staff</td>
<td>235</td>
<td>217</td>
<td>126</td>
<td>48</td>
<td>41</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>299</td>
<td>304</td>
<td>199</td>
<td>72</td>
<td>29</td>
</tr>
</tbody>
</table>

1 Including deaths and dismissals; 2 by employee; 3 including contractual expiration of contract; 4 does not include externally employed dual professors.

### Importance of health and safety

To ensure that all members of ETH Zurich are safe in their places of work and study, there are strict rules against threats and violence, sexual harassment, bullying and discrimination. Given the technical nature of much of the research carried out at ETH Zurich, there is also significant potential that students and staff may be subjected to dangerous situations. For instance, exposure to hazardous substances or injuries caused by misuse of equipment in laboratories may pose risks. Therefore, it is imperative that due precautions are taken and response procedures are prepared in advance. The Safety, Health, and Environment Department provides clear documentation on technical safety measures and personal safety equipment for these matters. Such measures are approved by the Vice President of Human Resources and Infrastructure or the Executive Board of ETH Zurich. These guidelines, along with training and education for all students and staff who work in potentially dangerous environments, help to minimize the risk of accidents.

### Diversity goals

**Strengthening diversity among the students and staff of ETH Zurich**

- Achieved. About 50% of employees at ETH Zurich came from foreign countries. Within the student body, there are over 100 nationalities represented: 36.1% (2011) and 36.9% (2012) from foreign countries.

- The performance agreement between ETH Zurich and the ETH Board for the years 2008-2011/2012 defines the following targets for increasing the number of females by 2015:
  - Achieved. Target of 10% female professors, 2011: 11.9%; 2012: 12.5%. Numbers include the proportion of all female professors (full professors 2011: 8.5%; 2012: 8.9%; assistant professors 2011: 28.2%; 2012: 28.9%).
  - In Progress. Target of 30% women among scientific staff members, 2011: 27.1%; 2012: 27.0%.
  - In Progress. Target of 35% female students (incl. PhD students), 2011: 30.8%; 2012: 30.6%.

- In Progress. Target of 25% female technical and IT Staff (function level >10), 2011: 24.1%; 2012: 23.4%.

### Employee training

#### Internal trainings for employees

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of trainings</th>
<th>Leadership Management</th>
<th>Career</th>
<th>Communication &amp; Methods</th>
<th>Project Management</th>
<th>Getting Acquainted with ETH</th>
<th>Orientation Event</th>
<th>Lunch Events on Promotion of Healthy Lifestyles</th>
<th>Total amount spent in CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>669</td>
<td>63</td>
<td>59</td>
<td>78</td>
<td>67</td>
<td>181</td>
<td>248</td>
<td>374</td>
<td>247,000</td>
</tr>
<tr>
<td>2012</td>
<td>1011</td>
<td>67</td>
<td>58</td>
<td>79</td>
<td>70</td>
<td>181</td>
<td>248</td>
<td>374</td>
<td>197,000</td>
</tr>
</tbody>
</table>

#### External trainings for employees

- **Total amount spent in CHF:** 247,000 (2011) 197,000 (2012).
The proportion of female students at ETH Zurich has remained more or less constant at 30 per cent for several years. The further up you look at the academic career ladder, the lower the percentage of women. Among full professors, the representation of women in 2012 was at only 9 per cent. Hence, as most other technical universities, ETH Zurich is characterized by a "leaky pipeline" (see box). Since 2010, the underlying figures of the leaky pipeline have been documented within ETH Zurich’s “gender monitoring”, conducted by ETH Zurich’s Office of Equal Opportunities (Equal!), under the direction of Professor Renate Schubert, the ETH President’s Delegate for Equal Opportunities.

According to Schubert, three primary factors are responsible for the low percentage of women among students. First, societal expectations and stereotypes – for instance that mathematics, science, and technology are not for girls or women – play an important role. This mindset often leads to reason number two; that girls who are interested in these subjects in school feel themselves pushed into an unpleasant role as outsiders. Lastly, Schubert says, women are generally much more interested than men in using science and technology to solve important social problems and less interested in making models and technologies more elegant or parsimonious. “So, women are rather choosing fields apt for application,” the professor of economics explains. ETH Zurich is working to give greater attention to this last aspect in particular by adapting both the curricula of individual courses as well as whole study programs. The new degree program of the Department of Health Sciences and Technology (D-HEST) is designed in this way and has a high percentage of female enrollments.

“Many young female scientists leave ETH Zurich after getting their doctorate,” Schubert says. A variety of reasons are responsible for this. Women are typically more risk-averse than men, Schubert declares, and seek greater long-term security in their careers. In addition, the fact that making a career in research means working 60 to 80 hours per week does not match up with the aspirations of many women. As a result, women who are interested in science frequently move from actual research into research administration, research networks, the education sector outside of universities or government jobs at the federal or cantonal level. “We therefore need to reconsider whom we view as ‘good scientists’, Schubert emphasizes.

The proportion of female assistant professors at ETH Zurich was nearly 30 per cent in 2012. These positions typically have terms of about six years and are intended to serve as a bridge between a post-doctoral position and a tenured professorship. ETH Zurich wants to use these positions to retain female researchers in academia and to increase the proportion of women among full and assistant professors in the long term. ETH Zurich will also be selectively and systematically inviting women to apply for advertised professorships. According to Schubert, there are often highly qualified female researchers not applying for professorships because they think they don’t precisely fulfill the advertised profile.

Renate Schubert sees increasing diversity on the campus as one of the key challenges for the next decade. Not only are more women needed, but also more international students and a broader range of the social classes. Greater diversity promotes excellence.

www.equal.ethz.ch
As ETH Zurich’s research and education activities grow, its facilities will also have to grow by an expected 10–15% in floor space by 2020 to ease the increasing strain on the university’s infrastructure.

In order to balance growth and sustainability, ETH Zurich has managed to significantly reduce environmental resource use in normalized terms with a 7% decrease in energy consumption by area, or a 22% decrease per person, over the last five years.

The school has also embarked on an ambitious program to reduce CO₂ emissions. A key component is the construction of a massive, dynamic underground energy storage system, which will make one of the university’s campuses virtually CO₂-free by 2025.

This chapter covers 12 GRI Indicators and ISCN Principles 1 and 2.

**GRI Indicators**

| EN1 | Materials used by weight or volume.                           |
| EN2 | Percentage of materials used that are recycled input materials. |
| EN3 | Direct energy consumption by primary energy source.          |
| EN4 | Indirect energy consumption by primary source.               |
| EN5 | Energy saved due to conservation and efficiency improvements. |
| EN6 | Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. |
| EN16| Total direct and indirect greenhouse gas emissions by weight. |
| EN17| Other relevant indirect greenhouse gas emissions by weight.   |
| EN18| Initiatives to reduce greenhouse gas emissions and reductions achieved. |
| EN20| NOx, SOx, and other significant air emissions by type and weight. |
| EN21| Total weight of waste by type and disposal method.           |
| EN27| Significant environmental impacts of transporting products and other goods and materials used for the organization’s operations, and transporting members of the workforce. |
Campus footprint

Centrally located in downtown Zurich, the main campus of ETH Zurich is an ideal location to take advantage of the City’s many attributes. Not far from this campus is a second campus referred to as ETH Campus Hönggerberg, located in the Zurich suburb of Hönggerberg. There are also satellite facilities in other locations in Switzerland which ETH Zurich manages for use in experimental work. These campuses offer a significant amount of space for ETH Zurich’s various needs in the form of laboratories, lecture halls, office spaces and service areas such as cafeterias. However, as the Institution grows, an increasing strain on this infrastructure will require ETH Zurich to expand even further. In 2012, the area heated or cooled (energy reference area [ERA]) was 632,349 m² at the main campus, 324,970 m² for ETH Zurich, Hönggerberg, and total of about 26,000 m² for the satellite facilities. It is expected that the total floor space of all ETH Zurich buildings will increase by 10-15% by 2020.

The ETH Campus Hönggerberg in particular has played an integral role in ETH Zurich’s more recent expansion. Since 2003, ETH Zurich has been continually developing its campus in Hönggerberg as a model university of the 21st century. It is based on the vision of a city district catered to a thinker’s culture, connecting science, the economy and the public. As the largest sustainability project at ETH Zurich, it was awarded a coveted European Culture Award for Science in 2010.

Also exemplifying ETH Zurich’s commitment to sustainable development is its involvement with the RUMBA (resource and environmental management in the federal government) program which was established by the Federal Authorities of the Swiss Confederation for managing resources and environmental issues. Adhering to the guidelines of RUMBA, ETH Zurich has committed ETH Zurich to continuous improvement in its environmental performance.

Buildings and operations

Operating buildings for a large institution like ETH Zurich is resource intensive. For this reason, ETH Zurich has gone to great lengths to optimize the efficiency of its buildings. As part of this effort, the strict standard for energy efficient and ecologically designed buildings, MINERGIE®-ECO, was first applied to the Information and Science Laboratory of the campus Hönggerberg in 2008. Moving forward, ETH Zurich aims to meet the certification of MINERGIE®-ECO for all new buildings and MINERGIE® certification for renovations. In addition, energy efficiency in buildings is linked to its ISO 14001 certified management system which is led by the Safety, Security Health and Environment (SSHE) unit. As ETH Zurich continues to expand, major construction projects will be assessed based on the energy costs, energy usage and emissions produced over the entire lifecycle of the investment. In newly constructed buildings, only state-of-the-art construction standards and energy-efficient construction methods are applied.

Improving the efficiency of the Hönggerberg campus has been a major focus in recent years with a goal of reducing direct CO₂ emissions by 50% by 2020. To meet this target, a project involving the installation of geothermal storage systems beneath the campus, referred to as an “Anergy Grid”, was initiated in 2008. With an investment of about 37 million CHF, the first phase of the project was completed in 2012 and four buildings have already been connected to the system.

Environmental statistics

Even though electricity demand on the Hönggerberg campus increased slightly in 2012, overall electricity demand across all premises in the canton of Zurich remained constant (111.8 GWh). The fact that the weather was significantly colder than in the previous year was largely responsible for the increased heat demand, which was up by 12% compared to 2011. Once again, the amount of heat recovered from the cooling systems increased in 2012 by one gigawatt hour to 8.9 GWh. This means that around 11% of ETH Zurich's heating requirement is met by using waste heat from cooling systems.

Building efficiency goals

Implement MINERGIE®-ECO standard (or similar) in new buildings and MINERGIE® standard (or similar) for total refurbishments. Achieved. For new building HPL (Life Science Platform), opening 2012, for building LEE, which is under construction and opening 2014, and for CSCS (Office building of “Swiss Center for Scientific Computing”). Also achieved for the refurbishment of HPP and HP2 buildings. Although, the HP2 refurbishment follows the Low-Ex strategy to energy efficiency it will nonetheless get the Minergie label.

In major investment projects, ETH Zurich assesses costs, energy usage, and emissions over the entire life cycle of the investment. In newly constructed buildings, only state-of-the-art construction standards and energy-efficient construction types are used.

In Progress. New Life Cycle Costing tool is under evaluation by the real estate department.
Energy goals

Reduce direct and indirect energy consumption in certain building complexes by 10% by 2012 through energy projects that optimize operational efficiency

Achieved. HPM building: 35 energy saving measures have been implemented since 2009, resulting in a reduction of 700kWh/year of heating energy by 2012.


In Progress. SLA building: Savings of 3MWh of electricity in 2012.

In Progress. FEL buildings in Lindau-Eschikon (mainly greenhouses): No savings but new energy monitoring tool implemented.

For operation of the new energy supply system at Hönggerberg (Anergy Grid) specifically, ETH Zurich will only use power consisting of a mix of energy sources that complies with high ecological standards.

Achieved. More than 4 GWh/year of "nature made Star" labeled electricity is purchased for the supply of the "Anergy Grid".

Continue energy projects, establish a new and more focused strategy to increase energy efficiency of buildings and facilities.

In Progress. Overall strategy for improving energy efficiency is under development. The main focus has been defined by the facility department in 2012.

Reduce electricity consumption of facilities systems through their optimization (implementation of measures if pay-back is 3–4 years).

In Progress. Chiller plants: There have been in depth discussions on the potential optimization and implementation of saving measures. The energy efficiency of the chillers systems in the process of being stabilized to an overall COP (Coefficient of performance) of 3.90.

In Progress. Meters: Exchange of two motor systems in HP and ML building with favorable paybacks (3–4 years). It is expected that there will be an electricity savings of approximately 240 MWh/year.

Optimize reuse of waste heat from chiller systems and implement a waste heat recovery system for the largest datacenter in the city campus "RZ".

Achieved. In 2012, 8900 MWh of waste heat could be reused - an increase of 26% compared to 2011 (4,600MWh).

Achieved. The new waste heat recovery system is integrated in the datacenter and running since end of 2012.

Increase the percentage of electricity that comes from renewable energy sources. From 2013 onwards, the share of power from renewable sources at ETH Zurich will be at least equal to or greater than its share in the total mix of electricity in Switzerland (production mix). The share of power from renewable sources will be continuously increased. The target is 100% by 2035.

In Progress. Electricity from renewable sources decreased from 9% in 2010 to 23% in 2012. Heating energy from renewable sources decreased from 55% to 44%, mainly due to the electricity-mix used in the heating pump "Limmattal".

In Progress. The mix of energy sources for the electricity used at ETH Zurich is entered into a balance sheet for annual book-keeping and is offset by purchasing guarantees of origin (GOs).

Continue to encourage energy related dialogues with the public and student groups, establish working group for revising outdated energy mission statement and define new targets as part of a revised ETH Zurich energy policy.

Achieved. A working group developed the energy concept in 2012. This working group included students, professors, administrative and operational representatives. The new energy concept is the compass of ETH Zurich on its way into the energy future. ETH Zurich commits itself to sustainable energy solutions through its teaching, its basic research for a sustainable energy supply or its own infrastructure, where efficiency, sustainability and profitability are reconciled.

Optimize waste heat from refrigeration. From 2010 to 2012 an extra gigawatt hour was recovered each year.

Energy consumption

The total direct energy used by ETH Zurich (defined as fuels like natural gas, oil and woodchips burned in own facilities) was 31.3 GWh in 2011 and 31.9 GWh in 2012. Indirect energy use (mainly electricity and district heating from outside providers) was 121.1 GWh in 2011 and 133.2 GWh in 2012. Of this energy, 25.4 GWh in 2011 and 27.2 GWh in 2012 were sold as heating energy to third parties. Although the electric power consumption at the Hönggerberg campus increased slightly in 2012, the overall electric power consumption of the properties in the canton of Zurich has remained constant (111.8 GWh). The especially cooler weather in 2012 translated to a 12% increase in heat consumption compared to 2011. The normalized energy consumption (by energy-consuming area) in 2011 was 233.9 kWh/m² and 241.1 kWh/m² in 2012, and (by fulltime employees and students) in 2011 was 8,554.9 kWh/FTE and 8,732.5 kWh/FTE in 2012. These normalized values show a significant improvement over previous years with a 7% decrease in energy consumption by area and a 22% decrease by FTE since 2008. Additionally, improvements continue to be made with the heat recovery systems from refrigeration. From 2010 to 2012 an extra gigawatt hour was recovered each year.

This downward trend in energy consumption demonstrates the success of ETH Zurich’s energy efficiency efforts, including the requirement for building constructions to adhere to strict energy efficiency standards. Additionally, there has been an increase in the amount of waste heat recovered from ETH Zurich’s seven large cooling plants. In 2012, 8,900 MWh of waste heat could be reused from this process, equating to an increase of 19% compared to 2010.

Conserving energy

Reduce direct CO₂ emissions of the Science City campus by 50% by 2020 (4,000t/year) through the implementation of the energy concept based on geothermal storage systems.

Achieved. Construction of Phase 1 including two storage fields, 300 geothermal probes, and main piping loop was completed in 2011/2012.

Completion of phase 1 (Construction of two storage fields, total of 300 geothermal probes, and main piping loop).

Achieved. Phase 1 was completed in 2012.

Reduce VOC emissions by 15% by 2012 (base year 2008).

In Progress. In 2011, 60 boxes for collecting solvents in the lab buildings were replaced with newer versions with better seals.

In Progress. VOC emissions were reduced from 29.8 tonnes/year (2008) to 23.9 tonnes/year (2010) and 18.3 tonnes/year (2011) and an awareness campaign was initiated to educate students and staff on avoiding VOC releases.
Reducing carbon emissions

In 2011 and 2012, direct Scope 1 emissions (mainly from fossil fuels like natural gas burned in own facilities) were 6,108/6,805 t CO₂eq. Indirect Scope 2 emissions (mainly from electricity consumption) were 1,609/1,406 t CO₂eq. Additional indirect emissions, referred to as Scope 3, account for emissions caused by activities outside ETH Zurich’s control. In order to capture ETH Zurich’s overall carbon footprint, Scope 3 accounted for the commuting of students and faculty as well as business travel which, together, contributed to more than 15,935/17,362 t CO₂eq in 2011 and 2012. The data collected over the last years with respect to greenhouse gas emissions has equipped ETH Zurich to properly set emission reduction targets. The overarching goal to reduce CO₂ emissions by 50% by 2020 and consume 100% of electricity from renewable sources by 2035 are facilitated by the guidelines of the “Energy Concept”, which directly addresses energy by way of research, education, increasing awareness among ETH Zurich staff, construction and refurbishment of buildings, operation of infrastructure, mobility, reporting and communication. Other measures include limiting the emissions generated by business travel where possible and replacing district heating with heat generated by heat pumps (e.g. heat pump in the River Limmat).

ETH Zurich also closely monitors NOₓ emissions from its heating plants and volatile organic compound (VOC) emissions from laboratory activities. In 2011 and 2012, 74/42 mg/m³ of NOₓ was emitted while VOC emissions amounted to 23.9/18.3 tonnes.

Cut average fuel consumption to 9.5 liters/100 km by 2013 for the entire ETH vehicle fleet (including utility vehicles, vans and field-work vehicles).

Not yet begun. Total fuels used in 2012 for own car fleet: 98,376 liters (total), 44,258 liters (Diesel), 34,118 liters (Fuel).

Increase number of students travelling between the two campus sites using non-motorized traffic.

Achieved. E-bike charging station installed as part of the “E-VeloLink” project.

Optimize public transportation between the main campus and Science City.

Achieved. Permanent shuttle service established between the two campus sites serves approximately 400 people per day and travels approximately 2,800 km each day.

Transportation goals

Define strategy to reduce emissions from business travel.

In Progress. Results of the initial TripDrop analysis are being interpreted.

Utilize alternatives to international networking (e.g. videoconferencing) and limit air travel.

In Progress. New setup of the “landing page” of internal Videoconferencing services unit.

Cut paper consumption per FTE by 5% per year by 2012.

Achieved. An action plan was developed to outline steps for consolidating printing services. This included restricting free printing for students. Paper consumption per FTE dropped significantly from 4,472 sheets A4/year (2008) to 2,603 sheets A4/year (2012).

Increase the proportion of recycled paper to 50% by 2012.

In Progress. The percentage of recycling paper decreased slightly - 62.8% in 2011 compared to 64.3% in 2010.

Increase efficiency (use of toner, electricity and paper) of ETH Zurich printing services.

In Progress. Initial concept is divided into “sub-projects”. The first pilot is expected to be launched in late 2013 in one of the research departments.

Develop guidelines for sustainable purchasing of consumables at ETH Zurich.

Achieved. In 2012, ETH Zurich published a new Procurement Policy. This includes guidelines and principles regarding sustainable procurement.

Develop guidelines for sustainable purchasing of computers and small electronic devices at ETH Zurich with a focus energy efficiency.

In Progress. Working group starts in 2013.

Cutting use of paper

The use of large quantities of paper is a traditional practice for universities like ETH Zurich. However, there is a significant environmental impact associated with this consumption and ETH Zurich has therefore focused on lowering the environmental impact of the paper that is used and reducing the overall quantity of paper consumed. In 2011 and 2012, 52.6/45.4 million pages were used. This shows a significant decrease of about 25% since 2010. ETH Zurich encourages the use of electronic documents whenever possible and appropriate. In addition, the print quota for students has been reduced in order to dissuade the unnecessary use of paper. Whenever paper is required, ETH Zurich promotes the use of recycled fibres. Indeed, recycled paper accounted for over half of all paper consumed in 2011 and 2012. When it is necessary to use higher quality, virgin paper, ETH Zurich preferentially sources paper that meets the standards of the Forest Stewardship Council for Responsible Forest Management (FSC) label.

Material consumption goals

Cut paper consumption per FTE by 5% per year by 2012.

Achieved. An action plan was developed to outline steps for consolidating printing services. This included restricting free printing for students. Paper consumption per FTE dropped significantly from 4,472 sheets A4/year (2008) to 2,603 sheets A4/year (2012).

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Cutting use of paper
Redirecting waste stream

ETH Zurich generates a significant volume of waste each day from its various facilities, such as its student housing, cafeterias and laboratories. Recognizing the impact this has on the environment, ETH Zurich is committed to diverting as much of this waste as possible away from mainstream disposal into recycling streams. This is achieved, in part, by reusing chemicals in laboratories, recycling solvents, and recycling electronic waste. It is essential that these efforts are aided by further measures which reinforce the importance of recycling and encourage the student body to adopt it as part of their normal behavior. The goal is to direct 50% of the overall waste volume into recycling streams by 2013.

Additional attention is paid to hazardous materials which are part of the waste stream. ETH Zurich takes strict safety precautions when handling these potentially dangerous substances. Staff and students are trained to ensure that they clearly understand safe disposal practices. In 2011 and 2012, 91.1/106.0 t of hazardous waste was disposed of from the campus. Of this weight, 54.5/58.7 t were solvents.

### Waste goals

**Direct half of the total waste materials to a recycling stream by 2013 (including recycling Nespresso caps).**

**In Progress.** The percentage of recyclable waste material decreased to 43% (47% in 2010). A new tool to assess the waste streams and amounts of waste will be implemented in 2013.

**Analyze all buildings for their potential to improve waste sorting. Host a “Recycling Day” in the city campus.**

**Achieved.** Recycling day was organized in the central campus in 2012.

**Establish new targets for reducing and handling hazardous waste.**

**In Progress.** New Hazardous waste collecting logistics in the central Campus until end of 2013.

### More sustainable campus lifestyles

Awareness of environmental impacts is not limited to activities directly related to ETH Zurich’s operations. Rather, the students, faculty and staff are also asked to partake in the wider sustainability efforts. An awareness campaign was initiated in 2011 which encouraged individuals to drink tap water rather than bottled water. ETH Zurich provided over 4,000 carafes for free drinking water to support this cause. There has also been a shift to waterless urinals in all new ETH Zurich buildings in an effort to use water resources more cautiously.

There is also a campaign underway, similar to the one used for bottled water, which educates students and staff on the CO₂ impacts linked to certain foods. To help students and staff make environmentally responsible decisions without sacrificing their favorite foods, there is currently an investigation to understand what opportunities may exist to exchange ingredients that have high embedded carbon with low embedded carbon alternatives.

Given the volume of students and faculty members who must commute either to or between ETH Zurich’s several campuses, the university encourages commuters to utilize public transport and bicycles. As incentives, employees are offered free travel-cards for 50% reduction on regular fares for the Swiss Federal Railways (SBB), the “Science City Link” provides public transport between ETH Zurich’s campuses as an alternative to using a car, and an annual “Bike-to-Work” campaign encourages over 800 participants to commute by bicycle.

### Water goals

**Reduce drinking water consumption at ETH Zurich.**

**Achieved.** Through a variety of measures (including increased use of rainwater), the overall drinking water consumption decreased to 291,069 m³/year (2012) - a reduction of 10% compared to 2010.

**Make waterless urinals and more efficient faucets standard in new ETH buildings.**

**Achieved.** In the new LEE building, only waterless urinals are installed.

**Increase the use of grey-water on the ETH Zurich campus.**

**In Progress.** Rainwater tanks have been installed and a program for rainwater use is being developed.

**Sensitize and motivate students and staff to reduce consumption of bottled water and to drink more tap water.**

**In Progress.** Through an awareness campaign and the distribution of over 4,500 free ETH carafes to all ETH employees students and staff were encouraged to drink more tap water. Monitoring of effects is not yet available.

### Food goals

**Increase awareness of embedded carbon in food and offer at least one cheaper vegetarian meal at every campus restaurant.**

Design and implement an accompanying study to investigate the impact of climate friendly menus on the CO₂ balance of ETH Zurich.

**In Progress.** An awareness campaign was launched in 2009. In addition, a concept for a pilot study has been developed to provide the necessary baseline information on how to implement a climate-friendly and sustainable food program at ETH Zurich. The pilot study will start in 2013.

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**Waste in metric tonnes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Operational waste</th>
<th>Recyclable waste</th>
<th>Percentage of Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>200</td>
<td>100</td>
<td>50%</td>
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<td>2007</td>
<td>200</td>
<td>100</td>
<td>50%</td>
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<td>2011</td>
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<tr>
<td>2012</td>
<td>200</td>
<td>100</td>
<td>50%</td>
</tr>
</tbody>
</table>

**Hazardous Waste in metric tonnes**

<table>
<thead>
<tr>
<th>Year</th>
<th>Waste</th>
<th>Cadaver</th>
<th>Lab chemicals</th>
<th>Other hazardous waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>50</td>
<td>10</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>2007</td>
<td>50</td>
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<td>2012</td>
<td>50</td>
<td>10</td>
<td>30</td>
<td>10</td>
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</tbody>
</table>

**Water Consumption in 1000 m³ per year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Bottled Water</th>
<th>Tap Water</th>
<th>Rainwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>200</td>
<td>800</td>
<td>0</td>
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<tr>
<td>2007</td>
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Moving toward a carbon neutral campus: An energy grid replaces fossil fuels

While the technology is by no means new, the project size and complexity are unparalleled. ETH Zurich is building a dynamic underground storage system at ETH Hönggerberg in an effort to achieve virtually CO₂-free heating and cooling for the campus by 2025. This innovative construction project was acclaimed in 2012 as “exemplary” by the International Sustainable Campus Network (ISCN).

Only a few meters below the surface, one is able to traverse the Hönggerberg Campus in a multitude of seemingly endless corridors. Along the walls and above one’s head hang hefty, synthetic water pipes, arranged side by side or, in some places, on top of each other. With space being scarce, every meter is thoughtfully utilized and planned with painstaking precision. “The mere configuration of this system posed a formidable challenge,” recalled Reto Hassler-Pause during a tour through the project. “Something of this scale and complexity is not to be found elsewhere in Switzerland.” Hassler-Pause is the ETH project coordinator responsible for planning and operation of the dynamic underground storage system, also referred to as the “energy grid”. An energy is a term to describe low-grade energy. The new ETH Zurich energy concept includes plans for deploying as much energy for heating and cooling purposes as possible through the use of geothermal energy and waste heat.

What, however, makes this dynamic underground storage system – which is essentially based on conventional technologies such as heat pumps – a flagship project? The principle behind the dynamic underground storage system is as simple as it is ingenious: the subterranean storage fields function like a battery which, depending on the season and building use, is either charged or discharged. While some buildings are heated during winter others, such as those housing servers, tend to emit heat throughout the year. To date, the heat generated by the latter type of buildings simply vanished. However, with the implementation of the underground dynamic storage system along with the water-filled earth probe fields, this otherwise wasted heat is stored 150-200 meters below ground level for the purpose of heating in the winter. As buildings are heated during the cold months, heat is extracted from the storage and the temperature of the water drops. The process subsequently provides cool water to buildings in the summer.

The system is thus considered a “dynamic” system because it provides both heating and cooling. Jeanette Maurer-Hartmann, acting on behalf of the ETH Building and Constructions Infrastructure Division as the Building Owners’ Representative, explains the exact function of the underground storage system: “The heart of the underground energy storage system is the vast energy channel – a central circuit ring. Attached to this are substations enabling the ‘refinement’ of the low-grade energy. In other words, the water temperature is altered in such a way that it may be used directly for heating or cooling. The energy is directed from the substations either to connected buildings, or back into the circuit ring. The substations as well as the earth probe fields are interconnected via this ring.”

At this point in time, the project is in the process of being deployed and optimized. Project coordinator, Reto Hassler-Pause, is under significant pressure: “The underground energy storage system must function as an interlocking whole.” In particular the hydraulics of the many pumps in this complex system poses a major challenge.

Final completion of the circuit ring, substations and earth probes will, for the most part, likely occur prior to 2025. However, the campus is growing and, as such, each substation is designed to service several buildings (called clusters) some of which have yet to be built or still require renovations. For example, in the short term, new student residential buildings are expected to be connected to the energy grid. The primary challenge of the project lies in ensuring a synchronized expansion of the subterranean energy storage system with the aboveground campus.

The underground energy storage project will cost 37 million CHF, spread over 15 years. Thereof, only approximately 17 million CHF is considered an additional investment resulting for the energy project. This is due to the fact that ETH Zurich would have needed to renovate the existing heating system regardless of the approach. Anticipated energy cost savings due to the innovative underground storage system are estimated at 1 million CHF annually. Hence, the additional costs are likely to be amortized by approximately 2030. It is also anticipated that CO₂ emissions will be reduced by half by 2020.
Approximately 75% of ETH Zurich’s annual 1.4 billion CHF budget is basic funding from the federal government. The remaining sources include third-party funding from Swiss and European research programs, industry, endowments, and legacies.

The receipt of public funds implies responsibilities for public accountability. As the largest of six institutions making up the ETH Domain, ETH Zurich is required to honor the objectives laid down in the performance mandate of the domain. This mandate is issued every four years by the Swiss Federal Council, and is reviewed by the Swiss parliament.

This chapter covers 12 GRI Indicators and ISCN Principle 3.

<table>
<thead>
<tr>
<th>GRI Indicators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td>Operational structure of the organization.</td>
</tr>
<tr>
<td>2.6</td>
<td>Nature of ownership and legal form.</td>
</tr>
<tr>
<td>2.8</td>
<td>Scale of the reporting organization, including number of employees, net sales, total capitalization, quantity of products or services provided.</td>
</tr>
<tr>
<td>4.1</td>
<td>Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.</td>
</tr>
<tr>
<td>4.4</td>
<td>Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.</td>
</tr>
<tr>
<td>4.5</td>
<td>Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization’s performance (including social and environmental performance).</td>
</tr>
<tr>
<td>4.7</td>
<td>Process for determining the qualifications and expertise of the members of the highest governance body for guiding the organization’s strategy on economic, environmental, and social topics.</td>
</tr>
<tr>
<td>4.9</td>
<td>Procedures of the highest governance body for overseeing the organization’s identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.</td>
</tr>
<tr>
<td>4.10</td>
<td>Processes for evaluating the highest governance body’s own performance, particularly with respect to economic, environmental, and social performance.</td>
</tr>
<tr>
<td>4.11</td>
<td>Explanation of whether and how the precautionary approach or principle is addressed by the organization.</td>
</tr>
<tr>
<td>EC1</td>
<td>Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.</td>
</tr>
<tr>
<td>EC4</td>
<td>Significant financial assistance received from government.</td>
</tr>
</tbody>
</table>

The Campus Hönggerberg offers room for further development, with new teaching and research buildings as well as student housing.
Funding and governance

Funding sources

Given that ETH Zurich operates under a federal mandate for research, education, and knowledge and technology transfer, the majority of its funding comes from the Swiss Federal Government. In both reporting years (2011 and 2012), 1,101 million CHF was provided basic funding from the Federal Government. This amounts to 76% of the total budget in 2011 (1,455 million CHF) and 75% of the total budget in 2012 (1,447 million CHF). Each year, new funding is allocated to ETH Zurich under the terms of a performance mandate imposed by the Federal Council and on the basis of targets set by the ETH Board.

In addition to basic federal funding, third-party contributions play a significant role in fulfilling ETH Zurich’s financial needs. About one quarter of the budget was attributed to these funds (24% in 2011; 25% in 2012). Nearly half of this third-party funding came from Swiss national research organizations, research contracts with federal offices, or from European research programs (46% in 2011; 49% in 2012). The remaining contributions resulted from cooperation agreements with industry and other third-party funding (47% in 2011 and 44% in 2012), and endowments and legacies (7% in 2011; 5% in 2012).

Funding goals

Ensuring excellent conditions and competitive benefits for professorships to maintain a competitive edge internationally.

Achieved. The majority of ETH Zurich’s funding is basic funding from the Swiss Federal government. In 2011: 1,089 million CHF (76% of the total budget); in 2012: 1,101 million CHF (75% of the total budget).

Increasing the funding proportion of second- and third-party funding, and development of new funding sources at the institutional level through the ETH Zurich Foundation.

Achieved. Third-party contributions played a significant role in fulfilling ETH Zurich’s financial needs: 24% (2011); 25% (2012).

Primary expenditures

One of ETH Zurich’s greatest expenses is the cost of personnel. In 2011 and 2012, about 61% of expenditures was spent on wages (891 million CHF/ 923 million CHF). Purchasing materials also accounted for a significant amount of the overall expenditure (290 million CHF/ 326 million CHF) while 105 million CHF/85 million CHF worth of investments were made in buildings and 169 million CHF/152 million CHF for movables.

As the number of students and staff at ETH Zurich continues to grow, so does the pressure to adequately fund the dynamic needs of the university. In 2010, a budget reduction was imposed to help address this issue. These measures, coupled with a maximized efficiency of the space and media used on campus, have allowed ETH Zurich to handle financial hurdles. However, demand for funding continues to grow and the university has exhausted its cost cutting options. Indeed, the budget requires about one billion CHF by 2016 simply for investing in buildings.

Careful management of finances

To ensure the needs of ETH Zurich’s education, research, and infrastructure are met, great care is taken in the management of its finances. Using an integrated approach, financial planning and resource management are closely monitored, taking into account specific matters of different institutional areas including strategic planning with regard to scientific strategy, human resources planning, and infrastructure planning. To aid this effort, ETH Zurich uses tools like ETHIS, an information and support system, and an Internal Control System (IKS).

The risks faced by ETH Zurich are numerous and varied. They include potential financial uncertainties, threats to property and assets from natural hazards and damages to its reputation. ETH Zurich must mitigate these risks as much as possible and, to this end, it utilizes a comprehensive risk management system. In addition, workshops are held to identify risks and response strategies. These are attended by key personnel from different ETH Zurich functional divisions and departments.

Expenditures and origins of third-party funds in 2012

Adhering to the Swiss federal mandate

ETH Zurich is fully accountable to the government as a result of the federal mandate under which it functions. ETH Zurich forms part of the ETH Domain, a body which also incorporates a second technical university, EPFL, and four national research institutes. It is the responsibility of the ETH Board, elected by the Swiss Federal Council, to provide leadership for the ETH Domain. The Board of the ETH Domain consists of Presidents from ETH Zurich and EPFL, the director of one of the research institutes, one member nominated by the university assemblies, and up to seven other members with competence in scientific or economic issues, including the board’s President and Vice President. In 2012, two women and one man were inducted onto the board making the current gender composition, four women and seven men.

Political management of the ETH Domain is the responsibility of the Federal Parliament and the Federal Council. Every four years, the Swiss Federal Council issues performance mandates to the ETH Domain, which are reviewed by the Swiss Parliament. The annual credit allocation from Parliament is provided in light of the ETH Domain’s performance. Based on this decision, the ETH Board agrees upon objectives and funding allocations across the six institutions, prepares an annual budget and accounts for approval by Swiss Parliament. At the end of the four years reporting period, the ETH Board submits a final performance report to the Swiss Federal Council using also the results of a midterm peer review. Both, the midterm peer review and the final performance report serve as basis for the next performance mandate.

Governance structure

The highest body of management within ETH Zurich is the Executive Board. It is responsible for the areas of education, research, and administration. The Executive Board ensures that the University assumes its social, cultural, and economic responsibilities. It is responsible for the development of the long-term academic strategy and management of ETH Zurich. To ensure decisions are based on mutual trust it regularly interacts with the University Assembly (which represents faculty, students, and administrative and technical staff) and the Conference of the Directors of Study. Concerning specific issues, the Executive Board also consults with six committees and commissions which represent the different internal stakeholder groups within ETH Zurich: The Strategy Committee, Study Committee, Research Commission, ICT Commission, Risk Management Committee, and Asset Commission. These committees and commissions are essential for pooling knowledge distributed in the large organization of ETH Zurich, and making it available for coordinated decisions. A central mechanism for decision making at ETH Zurich is the exchange between the Assembly of Department Heads and the Executive Board.

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Funding and governance

Organizational structure

The Executive Board of ETH Zurich is composed of the University’s President, the Rector (Vice President of Education), the Vice President of Research and Corporate Relations, the Vice President of Finance and Controlling, and the Vice President of Human Resources and Infrastructure.

Following the principle of collective responsibility, the whole of the Executive Board decides on the organizational structure of the university, particularly with regards to either founding or closing departments and staff units. The Executive Board is also responsible for regulating the curriculum and advanced study programs, and for maintaining the university’s overall quality control.

The President bears legal and political responsibility for the University and is held accountable to the ETH Board. As the face of the University, the President upholds relationships with public authorities, political bodies and the general public. He is responsible for a broad range of tasks including the management of all financial matters including fundraising, budgeting and determining the allocation of funds to the departments and domains, supporting outreach to international markets and building strategic alliances with global partners, and overseeing alumni relations. As the Chair of the Executive Board, the President consults with the other Board Members when developing strategic plans for the University. While the President requests the heads of department in line with the recommendations of the departmental conferences.

The Vice President of Human Resources and Infrastructure is responsible for personnel policy, development, and management, the oversight of construction projects, including correspondence with the public and political authorities, as well as management of the real estate portfolio, safety and environmental protection, ICT management, and finally, the information and knowledge management library. He also allocates space necessary for education, research and administration.

With the President, the Rector (Vice President of Education), and the three other Vice Presidents of the Executive Board at ETH Zurich, the current composition is entirely male.

Managing sustainability at ETH Zurich

Sustainability is integrated in the research, teaching and campus life at ETH Zurich. Since its establishment in 2008, “ETH Sustainability” has been supporting initiatives, projects and individuals who contribute to enhancing sustainability at ETH Zurich. It is integrated into the organizational structure of ETH Zurich as an extension of the Presidential Office. The ETH Sustainability Office reports directly to the President of ETH Zurich and is led by a Steering Committee comprised of the Chair, Associate Vice President for Sustainability, Vice President for Research and Corporate Relations, and six ETH professors who are currently conducting research in sustainability-related fields. Final decisions and approval of sustainability strategies and policies are made by the President, the Steering Board, and the Executive Board. The Safety, Security, Health and Environment department (SSHE) is responsible for environmental aspects of ETH Zurich’s operations. It consults with the Environmental Commission, which consists of the ETH Zurich Vice President of Human Resources and Infrastructure, its Environmental Officer, and Environmental Delegates for the Departments and Infrastructure groups. An Environmental Principles Statement has been defined for ETH Zurich and guides the school’s related initiatives.

The Executive Board

The Executive Board of ETH Zurich is composed of the University’s President, the Rector (Vice President of Education), the Vice President of Research and Corporate Relations, the Vice President of Finance and Controlling, and the Vice President of Human Resources and Infrastructure.

The Vice President of Research and Corporate Relations is in charge of the Executive Board domain for Research and Corporate Relations. In this capacity, he is essentially responsible for strategic research planning and funding, as well as for the application of research results (technology transfer) and partnerships with industry representatives. He approves research contracts agreed between ETH Zurich (e.g. departments, institutes, laboratories, professors or other representatives) and third parties, and represents the Executive Board on research policy committees.

The Vice President of Finance & Controlling is in charge of the Executive Board domain for Finance and Controlling. He is essentially responsible for financial strategy and planning, the budgeting process, financial management (including cash management), as well as controlling and risk management.

As of December 2012
Statement
GRI Application Level Check

GRI hereby states that ETH Zurich has presented its report “ETH Zurich Sustainability Report 2011-2012” to GRI’s Report Services which have concluded that the report fulfills the requirement of Application Level B.

GRI Application Levels communicate the extent to which the content of the G3 Guidelines has been used in the submitted sustainability reporting. The Check confirms that the required set and number of disclosures for that Application Level have been addressed in the reporting and that the GRI Content Index demonstrates a valid representation of the required disclosures, as described in the GRI G3 Guidelines. For methodology, see www.globalreporting.org/SiteCollectionDocuments/ALC-Methodology.pdf

Application Levels do not provide an opinion on the sustainability performance of the reporter nor the quality of the information in the report.

Amsterdam, 11 July 2013

Nelma Arbeia
Deputy Chief Executive
Global Reporting Initiative

The Global Reporting Initiative (GRI) is a network-based organization that has pioneered the development of the world's most widely used sustainability reporting framework and is committed to its continuous improvement and application worldwide. The GRI Guidelines set out the principles and indicators that organizations can use to measure and report their economic, environmental, and social performance.

www.globalreporting.org

Disclaimer: Where the relevant sustainability reporting includes external links, including to audio visual material, this statement only concerns material submitted to GRI at the time of the Check on 29 June 2011. GRI explicitly excludes the statement being applied to any later changes to such material.