ETH Week

2015 The Story of Food 2016 Challenging Water 2017 Manufacturing the Future 2018 Energy Matters

Collaborative learning
by design

Lex Schaul and
Christine Bratrich

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After having inherited the idea of an ETH Week from my predecessor, as a novel way of promoting a modern education with critical thinking at its core, I became the person (Rector) who was ultimately responsible for supporting all of the wonderful people you will read about in this book. It has been a great pleasure to join in with the opening events and lectures, to keep an eye on progress throughout the week, and to witness the results presented in such unique ways by the various teams. It has been an amazing and uplifting journey for many students, tutors, and facilitators, as sustainability marches alongside ETH’s engagement with society. I, too, have learnt from the successive weeks, which have confirmed the importance of such multidisciplinary education events in eliminating boundaries and helping our students to grow their abilities and achieve something special. All this said, one of my personal highlights was the traditional morning run, with as many students as possible – a healthy form of trying to keep up with the younger generation!

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Sarah M. Springman
Rector, ETH Zürich

Sarah M. Springman has been Professor for Geotechnical Engineering at ETH Zürich since 1997 and Rector of the university since 2015. Born in London, she studied engineering sciences at Cambridge University before embarking on a career in industry. She worked as an engineer in England, Fiji, and Australia before returning to Cambridge, where she earned her PhD in soil mechanics in 1989, and established an academic career there, firstly as research fellow, then as lecturer. As the Rector, she is responsible for education within the Executive Board and bears the overall responsibility for the programme.

ETH Week is the result of discussions, decisions, and opinions of many contributors who have shaped the programme over the years. The testimonials in the beginning of this book collect perspectives from across the diverse team that collaborated on this project.

Christine Bratrich is the Director of ETH Sustainability. She holds a doctorate in environmental science from ETH Zürich. Applied projects on sustainability and interactions with business, politics, and NGOs have characterised her career. **Lex Schaul** holds two Master's degrees, one in engineering from EPFL and one in architecture from ETH Zürich. He is interested in creative processes, especially at the intersection of design and technology within the built environment.

Christine brought ETH Week to life in 2014 and has set the cornerstones for what the programme is today. Since 2016, she has been part of the Steering Board overseeing the programme. Lex joined the ETH Week team in 2015 to co-create the programme of ETH Week. Between 2016–18, he took over the project lead.

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There are special moments in life: when a common project develops out of original thoughts and then begins to live, leaving positive traces on a variety of other people. It already started with the first prototype. Our initial ideas were visionary, but individual. The first discussions in the team were intense, controversial, and in part also exhausting. We succeeded in creating something bigger than ourselves, as a team and with a common vision, carried by mutual respect and a large amount of trust. ETH Week has now become much more than the sum of our individual contributions. It is precisely this magic that students feel, year after year, when they put their heart and soul into tackling a complex topic across disciplinary and cultural boundaries, trusting us to follow a challenging design process to invent parts of a possible future world.

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Christine Bratrich and Lex Schaul
Project initiator, 2014– and Project architect, 2015–18

Ulli Krantz has a background in business administration and holds a Master's degree in sustainable development from the University of Basel. She is a fan of interdisciplinary work and joined the ETH Week team in 2014 with an intention to transfer this enthusiasm to the ETH Week participants. From 2014–16, she was the project coordinator of ETH Week and responsible for organising the side programme, knowledge fair, and excursions.

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When the core group was formed to establish the ETH Week programme in 2014, we had to undergo a similar process to the ETH Week students. We were an interdisciplinary team from across ETH Zürich with (too) many different expectations of what objectives the week should fulfil. My role was to organise and coordinate the pilot programme. We iteratively redefined our focus and goals under similar time pressure to that of the ETH Week students and continued to design the programme well beyond the deadline to find participants. From my work on the ETH Week pilot project, I learned how to set cornerstones for a project of this size while keeping the design open so that a motivated team can bring their skills and experience together and gradually complete the puzzle.

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Ulli Krantz
Core group and Organiser, 2014–16

Alan Cabello Llamas is a lecturer at ETH Zürich and founder of Spark Labs at the Department of Management, Technology and Economics of ETH Zürich that focuses on research and education of human-centred innovation. He holds a PhD from EPFL in strategy and innovation management and has been a visiting researcher at Stanford's d.school. Alan joined the ETH Week team in 2016 to co-design the programme. Since then, he has been a key part of the ETH Week team: He oversees the design process of the teams and coordinates the training of tutors and facilitators.

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I’ve designed and moderated a fair share of design thinking programs, but ETH Week is by far the one I am most proud of in my career. I joined the curriculum team in 2016 to help establish ETH Week as a series. I also ran the design thinking side of the tutor training and oversaw the tutors and facilitators during the programme. It is truly remarkable to design a programme that achieves a delicate balance between this many participants, limited time, a high workload, and a backbone of academic rigour. The challenge of executing such a program is no small feat in itself either. But to see every year the growth and empowerment of the students in such a short time frame, this is what reminds me of the beauty of being an educator and energises me to do it all over again.

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Alan Cabello Llamas
Core group and Organiser, 2016–

BinBin Pearce is a lecturer, co-curriculum developer, and pedagogical trainer at the Transdisciplinarity Lab (TdLab) of ETH Zürich. She holds a Master's degree in environmental studies from Yale University, and she studied urban metabolism and its impact on the phosphorus cycle for her PhD thesis at the Yale School of Forestry and Environmental Studies. Learning about and implementing innovative teaching is what BinBin is passionate about. In 2015, she was a member of the ETH Week core group who co-created the programme for the first ETH Week.

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The vision behind ETH Week was to foster critical thinking by creating a space for students to collaborate across disciplines. As a part of the curriculum team of the ETH Week pilot, I proposed to combine research principles and systems thinking with design thinking methods as a means to achieve this. Hence, the students are expected to both analyse and create original solutions for the systems under study. In this way, they grasp the complexity of the problem without being paralysed by information. They not only use reason to make decisions, but follow their curiosity and empathy to pinpoint the problems that matter. They also use their hands to build prototypes and make their ideas concrete. Through this process, I believe that students get an opportunity to think beyond the constraints of their discipline and can engage with the world with an open and critical mind.

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BinBin Pearce
Core group and Organiser, 2015

Stefano Brusoni is Professor for Technology and Innovation Management at ETH Zürich. He holds a DPhil in science and technology studies from SPRU at the University of Sussex. Earlier, he worked as a firefighter, which he enjoyed tremendously. His research interests include the emergence of alternative product architectures, firm dynamics, and modularity. Stefano has been part of the core group since the beginning and is active in overseeing the design process during each ETH Week. Since 2016, he has been part of the Steering Board overseeing the programme.

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For me, ETH Week is all about giving students an opportunity to experience the pain and excitement of defining their own problem. Since the beginning of the project, I was responsible for the process and its relationship to the content. While I believe that theory and knowledge remain very important, I have come to trust the strength of combining tangible outputs, real problems, and fast cycles. It pushes the students to engage in topics as non-experts, which is challenging. At one time, a student quite openly criticised the lack of time to think, to analyse, and to dive deeply into the content. We sat down and debated the reasons behind the approach and looked at papers of similar methodologies. We analysed the programme step by step. Not entirely convinced, he went back to his team and completed the programme. They ended up pursuing the project further and won an award in a follow-up initiative.

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Stefano Brusoni
Core group and Steering Board, 2014–

Elke Tomforde is an expert in curriculum development and in non-disciplinary competencies at the central unit of Educational Development and Technology (LET) at ETH Zürich. She studied educational sciences, anthropology, and social and preventive medicine at the University of Zürich and holds a Master of Advanced Studies (MAS) in work and health. Elke was part of the core group from the beginning. She played a key role in developing the tutor training, and she oversaw the social team process of the students until 2018.

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What makes ETH Week unique for me is that students can combine the knowledge they have acquired in their studies and apply it to relevant questions together with students from other disciplines. They experience how problem-solving techniques can be applied, learn about team processes, and practice critical reflection. I was involved in the ETH Week programme from the start as a didactic expert. I provided methodological support for the programme of ETH Week and the tutor training with an interest in building capacities in the tutor group so that the tutors can transfer the acquired methods to the next generation. I am convinced that students and tutors who participate in ETH Week will continue their studies with a new attitude towards both the content of their studies and their work methods.

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Elke Tomforde
Core group and Organiser, 2014–

Bernhard Wehrli is Professor for Aquatic Chemistry at ETH Zürich and is affiliated with Eawag, the Swiss Federal Institute for Aquatic Science and Technology. His interdisciplinary research group analyses biogeochemical cycles in rivers and lakes with the goal of improving the sustainable management of water resources. Bernhard has been part of the core group since the beginning. Together with Darcy Molnar, he coordinated the conceptual framework and content of ETH Week 2016 on "Challenging Water" and remained an important conceptual sparring partner.

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Good ideas are powerful if we can translate them into the real world. The ETH Week project struck me as a good idea and I have fond memories of its startup phase, as a part of the core group, when we discussed the first edition for 2015 in a small enthusiastic team where we set the first cornerstones. I was also part of the curriculum team in 2016 when we designed how content and process would go hand in hand, with the knowledge fair and the way our scientists would bring the topic into the week. It was amazing to see how the students picked up our scientific water challenges, framed them in wildly different ways, and materialised a small zoo of prototypes for their final presentations. I learned at ETH Week how productive it can be to leave the disciplinary comfort zone.
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Bernhard Wehrli
Core group and Organiser, 2014–

Darcy Molnar has been working at ETH Zürich since 2005, when she joined the Institute of Environmental Engineering (IfU). Since 2009, she has been coordinating the Master of Advanced Studies (MAS) in sustainable water resources. Darcy holds a Master's degree and a PhD in civil engineering from Colorado State University. Having spent her childhood years in Africa, Darcy has a keen interest in development issues related to water. In this spirit, she coordinated the conceptual framework and content of ETH Week in 2016 on "Challenging Water", together with Bernhard Wehrli.

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A core goal of ETH Week for me is that students open up to other ways of thinking. Through a variety of inputs such as field trips, one-on-one interactions with professionals, and dialogues with students from other departments, they are challenged to consider topics from many different perspectives. These inputs provide a broad range of information that students need to synthesise together as an interdisciplinary team and translate, through a creative thinking process, into a unique solution. The experience of being part of a team further challenges the students to learn to work together towards a common goal. I believe that being part of ETH Week enriches the students in many ways, not only through the new knowledge that they acquire, but also through the communication and team-building skills that they gain.

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Darcy Molnar
Challenging Water, 2016

Kerrin Weiss is a doctoral candidate in the Human Behaviour Group. She holds a Master's degree in mechanical engineering from ETH Zürich and is the co-founder of teampact, a network of student coaches that facilitate innovation workshops.
Raphael Portmann studied environmental sciences at ETH Zürich. He holds a teaching certificate for environmental studies and is currently working on his doctorate, where he investigates the link between dynamical processes in the atmosphere and their impact on predictability.

Kerrin and Raphael took responsibility for the social team process of the tutor training in 2018. As former tutors, they supervised the tutors during ETH Week 2018 and 2019.

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ETH Week is about understanding a complex topic, but it also goes beyond. We are both especially interested in the personal growth and learning that is experienced as a team. As former tutors, we were responsible in 2018 for assisting and supervising the tutors in their role of fostering this learning process along the precisely planned design thinking process. As the groups move through the week, from getting to know each other and building trust, to the struggle of negotiating a common goal while critically rethinking various inputs, until finally performing, each student is pushed outside of their comfort zone. They experience new parts of themselves and how they are perceived by others. This is one important reason why ETH Week is adding a lot of value to the education of future leaders at ETH Zürich.

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Kerrin Weiss and Raphael Portmann
Tutors, Facilitators, and Tutor trainers, 2016–

Michelle Grant holds a Bachelor's degree with Honours in chemical and environmental engineering from the University of Queensland in Australia, along with a Master's degree in management, technology, and economics from ETH Zürich. Michelle worked as an engineer for several years before she joined the World Food System Centre of ETH Zürich in 2011 as the founding Executive Director, a position she held until 2017. In 2015, Michelle coordinated the conceptual framework and content of the first ETH Week on "The Story of Food".

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ETH Week offers value across the institution – to the participants, the tutors, and the faculty and staff who bring the vision to life. In the first ETH Week, when I provided thematic support, I really appreciated how the event created a platform to bring together a broad range of skills and expertise at ETH Zürich. It introduced me to new people to collaborate with and allowed me to work with others to explore how design, systems thinking, and research principles could be combined to engage the students and faculty. We integrated some of these education approaches back into our own programmes. For me, the initiative generates a shared identity and connectedness across a large and decentralised organisation. It demonstrates a joint commitment to the values of sustainable development and helps forge new collaborations and synergies across departments, disciplines, and functions.

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Michelle Grant
The Story of Food, 2015

Ann Van der Aa has a fascination for languages and started her career as a translator in Belgium. However, she soon moved to event organisation and has since travelled the world creating exhibitions as well as managing events in highly demanding circumstances. Ann has worked for the events team of ETH Zürich since 2014 and is now in charge of events operations at the Cybathlon. She was part of the ETH Week team from the beginning and took responsibility for the event logistics of the 2015 and 2017 editions.

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To work on ETH Week was very different from my usual projects. As a part of the events team at ETH Zürich, we rarely get to engage directly with the students and usually work as service providers. This project was more collaborative, giving us the opportunity to share our expertise in co-defining the concepts of the programme. Together we thought about how we could create a place which was exciting in terms of look and feel and functional at the same time. It was a complex process, as the responsibilities were intertwined and required good negotiation skills and the ability to listen. I really enjoyed the fact that everyone was interacting at the same level, learning with and from each other and above all, sharing knowledge. I think this was very much reflected in the commitment of the students during the week: They joined us in shaping something special together.

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Ann Van der Aa
Core group and Organiser, 2014–17

Larissa Schefer is managing the ETH Competence Center for Materials and Processes (MaP), combining her interest in advanced complex scientific and technological grand challenges with her passion for engaging people along a transdisciplinary approach. She studied food process engineering and holds a doctorate in soft materials from ETH Zürich. She also gained experience in applied R&D projects during her time spent in industry. Larissa was in charge of coordinating the topic for ETH Week on "Manufacturing the Future" in 2017.

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I embarked on the ETH Week journey in 2017’s ‘Manufacturing the Future’. The fundamental question of ‘how we make things’ was complex, bearing multi-dimensional challenges; the process was demanding and rewarding alike. It required an open mindset to dive deep into a complex problem in order to reveal ‘why’ something is the way it currently is. It is only then that it becomes possible to tackle ‘how’ solutions might be approached. During the programme, the students connected the perspectives of the different stakeholders and challenged our scientific community and partners from industry and society to develop their projects. Thus, ETH Week broadened the horizon of each and every one involved, sharing a learning experience that teaches us that solving complex problems will always require empathy, critical thinking, and even questioning our own values.

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Larissa Schefer
Manufacturing the Future, 2017

Fabio Bargardi holds a Master's degree in material science from ETH Zürich and is currently a doctoral candidate in the Complex Materials Group. He is a member of teampact, a network of student coaches focussing on ideation processes, project development, and team dynamics.
Fabio has been part of every ETH Week to date. During the first two editions, he joined as a student; afterwards, he became a tutor, and in 2019, he become a tutor trainer who was responsible for the social team process of the tutor training.

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I was part of ETH Week twice as a participant and twice as a tutor before becoming a tutor trainer. One key moment for me describes how the programme provides space for failure; just 24 hours before the presentation, my team received feedback that marked the end of their idea. They were devastated but, to everyone’s surprise, after applying the rehearsed reflection techniques, the team went back to a previously discarded problem and went through the process for an additional third time, self-moderating and almost intuitively, as they knew each other’s strengths and weaknesses. As a unit, the achievements of the individual no longer mattered. They even realised that they did not need to start from scratch, but that many learnings could be reused and that having detached from their old mediocre idea, they were now solving a much more challenging and interesting problem.

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Fabio Bargardi
Participant and Tutor, 2015–

Wilfred Elegba holds a doctorate in plant science and policy from ETH Zürich. Originally from Ghana, he came to Switzerland as a scholar of the Swiss Government Excellence Scholarship. Today, he is a research scientist with the Biotechnology and Nuclear Agriculture Research Institute (BNARI) in Ghana. He loves working with interdisciplinary teams to help tackle everyday problems of society and enjoys working on social innovation projects. Between 2015 and 2018, he participated four times in ETH Week, first as a tutor and, from 2017 onward, as a facilitator.

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For me, ETH Week equips students with skills that are complementary to the ones taught in the classroom. It empowers students to be open-minded and relate respectfully to people from different backgrounds even if they disagree, thus, strengthening interdisciplinary work. My biggest motivation to participate as a tutor and facilitator in the first four years was that I got to learn something new each time, from how to align the skills and personality traits in my team to the importance of giving the right amount of feedback. It is remarkable that none of the teams has quit so far, irrespective of their differences. Instead, the students actively participate in the decision-making process and put the team goal before their individual ones. I believe this is so because the programme prepares them mentally to build trust in the process.

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Wilfred Elegba
Tutor and Facilitator, 2015–18

Melanie Imfeld is an analyst and designer with a Master's degree in Architecture and Urban Planning from ETH Zürich and a Master's degree in Spatial Data Science and Visualisation from the Bartlett at University College London. As a former tutor in ETH Week 2015, she became a member of the organising team in 2016, providing plans of procedures, shift schedules, and workflows for over 200 students and professors. Melanie is convinced that creativity and critical thinking play a vital role in solving the pressing challenges of our time. She has a fondness for Russian writers and her vegetable garden.

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After participating in the first ETH Week as a tutor, I joined the organising team in 2016. For me, part of our success has to do with the fact that we dealt with the problem of creating a new learning format in a similar way to the students who had to define their own problem to solve. We found our own approach to project management and to the design of ETH Week itself by leveraging the same methods as the students. For example, we displayed information openly on the walls around us, showing timeline, deliverables, plans, concepts, and ideas. It allowed us to work iteratively and collaboratively. Key design thinking elements of creativity, collaboration, and iteration played an important role in all aspects of the process and it is fantastic to see that many of our ideas have become an integral part of ETH Zürich.

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Melanie Imfeld
Tutor and Organiser, 2015–16

Alexandra Waskow is a doctoral student in biotechnology and bioengineering at EPFL in Lausanne. She holds a Master's degree in microbiology and immunology from ETH Zürich and believes interdisciplinary teamwork is crucial for tackling challenges holistically. Alexandra was a participant and tutor in ETH Week, before joining the team as project coordinator in 2017.

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Self-awareness is the word that immediately comes to mind when I reflect on my ETH Week experience. I was fortunate enough to go through different magnitudes of the same process three times, as a participant, a tutor, and a project coordinator. I learned a lot about my personality, from overlooked strengths to my areas to improve, giving me clarity for future decision-making. Another invaluable life skill comes from engaging in real-life processes that are not always clear. It helped me develop trust in myself. Above all, what crystallised each time was that there was no need to compete. If we stay true to ourselves, remain vulnerable, listen to understand, support each other, and look for the value in each person – which we often overlook – we can achieve the unthinkable in a short amount of time.

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Alexandra Waskow
Participant, Tutor, and Organiser, 2015–17

Anita Buchli holds a doctorate in neuroscience from ETH Zürich and the University Hospital in Zürich. She is interested in methods and processes to foster creative thinking and responsible acting because she is convinced that these are important competences required for future leaders.
As part of the Rector's Staff, she was responsible for ETH Zürich's Critical Thinking Initiative.
Anita was a founding member of the ETH Week Team in 2014. She actively participated in the first two ETH Weeks to establish the format.

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In 2013, the newly elected Rector, Lino Guzzella, mentioned that he wanted to foster a culture of questioning our approaches while encouraging more creativity and responsibility in thinking. I agreed to investigate and started to engage a core group of courageous thinkers for a field that is more art than science. Thus, the ‘Critical Thinking Initiative’ was born. One of its key intentions was to bring new cultures of thinking to the study programmes. But how could that be achieved when there was already too little time to convey an ever-increasing amount of knowledge? The original idea came from the Rector himself; let’s free up time during the semester for all our students to work on a societal challenge across degree programmes together. ETH Week is now established. It has become an inspiring and memorable week for students, lecturers, and guests, all belonging to a special community, myself included.

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Anita Buchli
Core group and Organiser, 2014–16

Andreas Vaterlaus is Professor for Physics and Education at ETH Zürich. In October 2012, he was appointed as Vice-Rector for Curriculum Development. In this role, he assists the Rector in matters related to curriculum development and innovation processes. Andreas has been part of the ETH Week team since the beginning and has been on the Steering Board from 2016, responsible for overseeing the programme.

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For me, the challenge of ETH Week was to strike the right balance between depth and breadth, between the overarching questions inherent to the topic and the individual projects of the students, and also between the fun of coming together and the seriousness of the task. While one cannot expect complete solutions in just six days, I have learned how such a short programme can influence students in the long term. Currently, there is even a student-led proposal to expand a similar programme into the semester, reserving time slots across the year for project-based work that responds to a societal challenge, guided by experienced tutors. Originally, our idea was to grow ETH Week to become a programme that engages all students. Although we cannot be sure if the initiatives are directly related, it seems quite fitting that the students themselves provide us with an elegant method for scaling up.

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Andreas Vaterlaus
Core group and Steering Board, 2014–

Anna Maria Stallmann is a cabinetmaker and architect. After finishing her Master's degree at ETH Zürich, she joined the ETH Week team as project coordinator in 2017, contributing a passion for problem-solving as well as crafts and design. From 2017–19, she was responsible for preparing the workbooks, for designing ETH Week Hall, and for organising the student management, side programme, knowledge fair, and excursions. She also set up the first silent disco of ETH Week.

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ETH Week is an opportunity for encounters between people who have never met before. I am always impressed by how the teams work together. The mutual trust within the teams, but also the trust we were able to experience in the organisation team, is the most valuable experience I gained from ETH Week. When developing the workbooks or planning ETH Week Hall, we spent days and nights working together to create the best learning environment for the students. During this time, and together with Lex and Lukas, I also gained more confidence in my own work. We managed to pull many strings at the same time, to keep track of everything, and to set priorities. It was a very special moment when ETH Week finally began, and I was filled with gratitude as I witnessed all the dedicated students, teachers, and guests and saw that our efforts were finally paying off.

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Anna Maria Stallmann
Organiser, 2017–

Lukas Bühler holds a Master's degree in Atmospheric and Climate Science from ETH Zürich. He founded the zero-waste catering start-up "Zum guten Heinrich". In 2018, Lukas returned to his Alma Mater and joined the ETH Week team. From 2018–19, he was the project leader and co-creator of the follow-up programme "The Hatchery".

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It was truly amazing to work at ETH Week with highly motivated students and a fabulous team! My personal highlights were the Early Bird run with the students, professors, and our Rector Sarah Springman, and of course the opportunity to share the stage with my childhood hero, the first Swiss astronaut, Claude Nicollier. ETH Week creates an exceptional atmosphere and experience for everyone involved. I sincerely hope that all (ETH) students will someday have the opportunity to experience such a week full of creativity and inspiration. I would like to thank everybody for making this great experience possible – my last ETH Week is over, but I carry many unforgettable memories in my heart.

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Lukas Bühler
Organiser, 2018–2019

Marco Mazzotti is Professor for Process Engineering at ETH Zürich. His research activity deals with CO_2 capture and storage systems, sustainable energy, and crystallisation processes. Since 2011, he has been a board member of the Energy Science Centre (ESC) of ETH Zürich. **Christian Schaffner** is the Executive Director of the Energy Science Centre (ESC) of ETH Zürich. The ESC is an interdisciplinary competence centre to promote energy research and teaching at ETH Zürich. He received his doctorate in Electric Power Systems from ETH Zürich in 2004.

In 2018, Marco and Christian were in charge of coordinating the conceptual framework and content of the fourth edition of the ETH Week on "Energy Matters".

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In 2018, we provided the participants with a framework centred on the relationship between us as individuals and energy in its different forms. From the start, we highlighted how such a relationship is crucially influenced by our own value system. At the same time, we addressed the technical, economic, social, and political aspects of energy and engaged the participants in a conversation with experts about perspectives, challenges, and opportunities in energy. After establishing this common ground, a shared understanding accompanied the different teams when they chose their own angle for how to tackle energy challenges in their projects, when they took decisions as a team, and when they defended them in front of experts. For all of us, ‘Energy Matters’ was an incredibly intense and rewarding experience, because of the motivation, commitment, creativity, and energy of all the participants.

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Marco Mazzotti and Christian Schaffner
Energy Matters, 2018

Reto Knutti is the Associate Vice President for Sustainability and Professor for Climate Physics at the Institute for Atmospheric and Climate Science at the Department of Environmental Systems Science. His research focuses on changes in the global climate system caused by anthropogenic greenhouse gases, like carbon dioxide. He is also a member of the Intergovernmental Panel on Climate Change (IPCC). Reto was part of the core group of ETH Week from the start and has been part of each edition. Since 2016, he has been part of the Steering Board overseeing the programme.

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Every year, I am thrilled to be part of ETH Week again to witness how the energy of the original core group is still being picked up by the students many years later. I believe that in our world today, we need to connect the dots across different fields. It is time to embrace concepts, dimensions, methodologies, and world-views beyond our own disciplines so that we can close the gap between knowledge and action. What fascinates me about the programme is that, instead of having to push students to learn something through assignments, they are effectively learning together because they are truly fascinated with the problems that they define themselves. In addition, they do so across disciplines and integrate the views of different stake-holder needs. I believe that these ideals are key to embracing the multidimensional nature of sustainable development.

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Reto Knutti
Core group and Steering Board, 2014–

Dear Reader

The major global challenges of our time are highly complex. Solutions for the climate crisis, the loss of biodiversity, or fair and sustainable development each require close cooperation between science and society. Just as important is the exchange between different disciplines and cultures to make our world sustainable for the future.

This means that besides teaching our students excellent technical and academic basics, which is our primary mission, we must also convey to them important competences in inter- and transdisciplinary skills. It is equally important that we support our students in critically questioning previous concepts in order to develop new and creative solutions for the problems of our time.

In our regular curricula, the focus of learning today is often on disciplinary work, and rightly so. However, the timetables are tightly packed, so that our students have little leeway to discuss socially relevant topics critically and beyond their own subject boundaries. The Executive Board of ETH Zürich recognised this task and therefore established the "Critical Thinking Initiative" ten years ago. One of the lighthouse projects of this initiative is ETH Week.

Up to 200 students from all disciplines work together during ETH Week to tackle a major societal problem of our time. All students and lecturers have experienced the stimulating and positive energy during the ETH Weeks so far, and the excellent evaluation has exceeded our expectations.

After five successfully implemented programmes, we would like to share our experience with you and draw a conclusion based on the first four ETH Weeks. On the following pages you will find information on the motivation and objectives of ETH Week (Chapter 1), an insight into the concept and methodology (Chapter 2), and a detailed description of the specific learning objectives (Chapter 3). An important element of ETH Week is its specially developed learning environment, which is presented in Chapter 4. This chapter deals with the design of classrooms and the role of tutors and facilitators. You will also find the framework programme of ETH Week and the teaching materials developed in-house in Chapter 4. We discuss the results of the first four ETH Weeks in Chapter 5 and conclude our experiences with a look into the future (Chapter 6).

Since this book is deliberately designed as a visual reader, I invite you to access this book about ETH Week in different ways: Along with the picture series, you will experience the concept, methodology, learning environment, and results at a glance. These impressions are complemented by detailed information in the running text. All information and teaching materials published in this book and on our website can be copied and used for non-commercial purposes. We would be pleased if ETH Week could serve as an inspiration for as many teaching formats as possible. I wish you a pleasant reading experience and many interesting insights into a new and innovative teaching format.

Sarah M. Springman
Rector, ETH Zürich

1 Background

Research universities are addressing the challenges of the 21st century to develop solutions for complex societal problems. Their researchers are developing knowledge and technologies in the fields of food, water, manufacturing, and energy systems. To educate the next generation of scientists and engineers, however, universities will need to find radical new ways of teaching as well.

THE SATELLITES

In the first four editions of ETH Week, the participants successfully presented 66 projects. We call these the satellites. They are forward-thinking positions that provide direction and integrate the zeitgeist of the next generation with the views of practitioners and researchers. The satellites incorporate 66 personal ventures into a design space of opportunities, critically reflecting back on the current state of the world and its technological development. They are a solid starting point for further investigation and inform us about what insights resonated during the discussions between students, researchers and practitioners.

PROBLEMS NOT SOLUTIONS

More important than the potential solutions that the students explore and present at the end of the programme are the identified underlying problems. Indeed, the most successful presentations rely on interesting connections that the teams have identified from the discussions with stakeholders and with each other. The forward-looking solutions illustrate that potential paths to approach the problems exist and that they are worth investigating. By venturing out in order to search for solutions, students construct a critical understanding for what they are actually trying to solve. These underlying learnings are the real value of the programme.

CO-DESIGNING THE FRAMEWORK

ETH Week as a project is also about bringing the different ingredients for a new teaching format to life. A number of individual expectations stood at the beginning of the programme, much like the students on their first day. The contributors then had to assemble and connect these different ideas, visions, and motivations. ETH Week in its current implementation is the result of a collaborative design process that is not dissimilar to the programme itself. Its design has undergone iterations of exploration and consolidation; at times even taking the different elements apart before putting only the essential ones back together. As a result, it incorporates all of the design decisions and personal contributions of those involved.

1.1 The societal framework

A number of disruptive technologies are rapidly transforming our working environment and triggering exciting, as well as contentious, societal questions. About one-fifth to one-quarter of our current work activities in Switzerland are estimated to be replaced by 2030, while a similar number of new job activities might be created in the same period of time. The students we train in the year 2020 will, by 2030, be working in professional fields that might not even exist today. This creates enormous challenges around the academic training of future generations. Those same generations will be confronted by massive societal changes that are highly complex and of immediate global relevance; environmental risks such as climate change, food security, or the dramatic loss of biodiversity are closely connected, global problems. While populations in Western industrialised countries are ageing, countries of sub-Saharan Africa must deal with population increases that could account for more than half of the world's growth between 2020 and 2050. A decade or two from now, the students of today will be confronted even more immediately with ecological and social issues, and their links to national and global justice. All of these challenges require solutions that can only be reached through interdisciplinary collaboration. Developing fair and future-ready solutions will also require international cooperation beyond national and cultural boundaries as well as close coordination between diverse actors from academia, politics, business, and civil society.

Considerations such as these prompted ETH Zürich to begin working on the development of ETH Week in 2014. The project was conceived as a way of creating a new and innovative learning environment marked by cooperation instead of competition, interdisciplinary and intercultural collaboration, and respectful interaction between various people from different generations, nationalities, and fields of thought. This learning environment would empower students to deal critically with a vast volume of complex and scientific facts, both theoretical and practical, and enable them to correctly assess the relevance and accuracy of the sources within a very short period of time. Simultaneously, ETH Week would facilitate a truly collaborative approach between participants across hierarchies and academic disciplines. The didactic focus was on generating a fascination for a certain topic and an enthusiasm for the search of their own, relevant research questions, rather than solving prefabricated tasks. Moreover, in view of the significant societal challenges, we were aware that our students were more than ever in need of space to develop original solutions and experience constructive and democratic team processes; a space where overcoming temporary frustrations and learning from mistakes is something to aspire to, rather than to be avoided.

In this book, we will lay out the theoretical development and practical experience of ETH Week as a learning environment. We present the programme with its tools for teaching and learning that combines traditional scientific research principles with the design and social team processes. The conceptual thoughts are complemented by the results that we were able to gain during the first four ETH Week editions. They are rounded off by a short outlook.

1.2 The origins of ETH Week: bottom-up and top-down

In the summer of 2013, a group of students at ETH Zürich issued a call for a more transdisciplinary curriculum. They demanded that in the course of their studies, all students should have at least one opportunity to approach a great societal challenge of our time. Since some study programmes at ETH Zürich completely omitted the topic of sustainable development at that time, the students took their request directly to the university's Executive Board and demanded that at least one interdisciplinary course be offered on such a topic for all students, regardless of the subject they study.

The students had chosen a good time to present their request. The then Rector, Lino Guzzella, was launching the Critical Thinking Initiative at the same time. This had been prompted by results gathered by the Federal Statistical Office in regular surveys of ETH alumnae and alumni. The results depict how well the graduates were trained in their field of study (on page 11 in green) and how much of that knowledge or skill is effectively required in everyday professional life (on page 11 in red). Ideally, these two scales should be at least congruent, or training should exceed requirements.

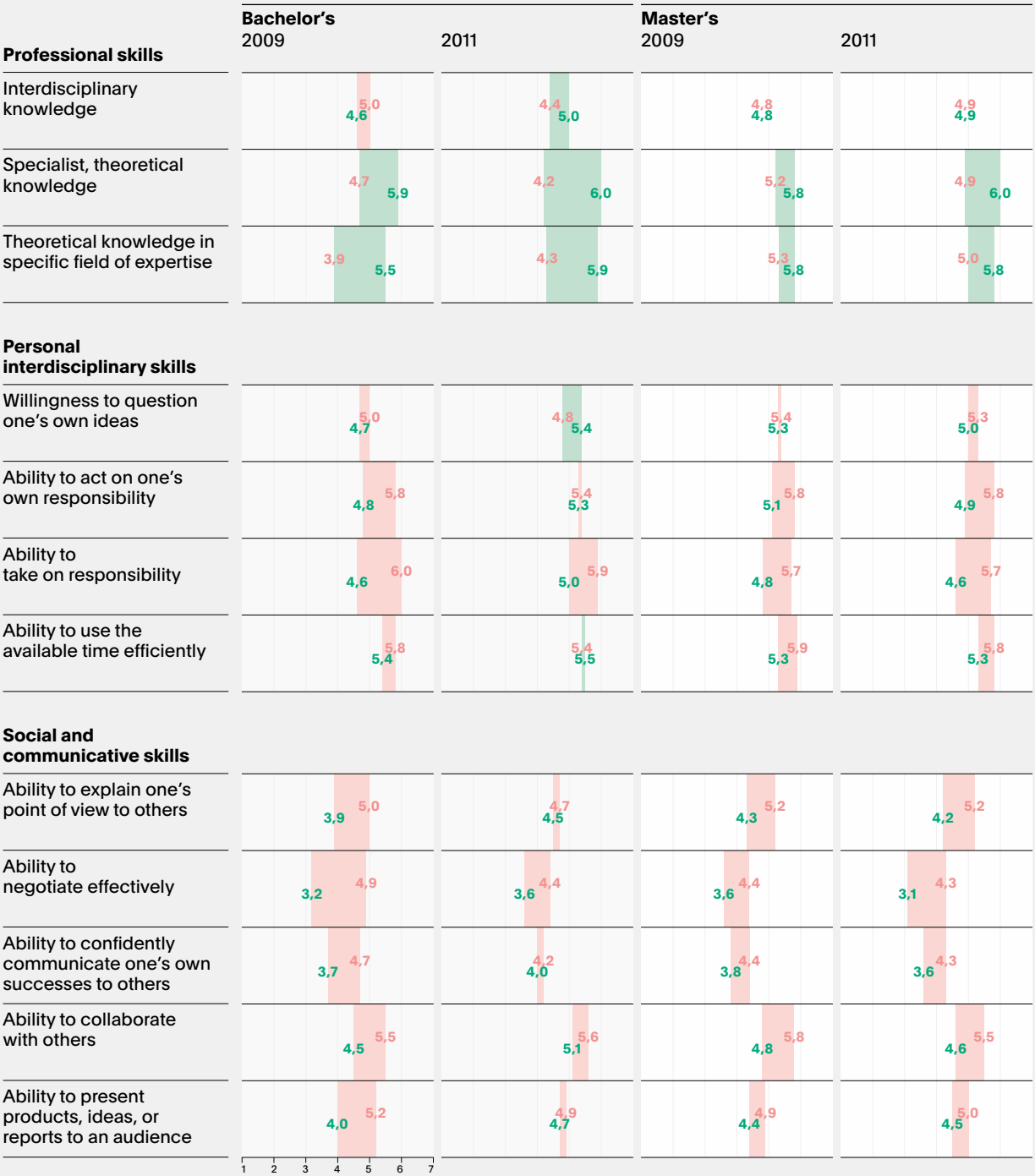
As shown on page 11, the training that the students of ETH Zürich get in the area of professional skills far exceeds the requirements of future work environments. From the university's point of view, this is desirable and intended. ETH Zürich guarantees an excellent technical-scientific education at the highest level, and intends to continue to do so in the future. However, a different picture emerged in the areas of interdisciplinary skills and social and communication skills, especially when it came to the ability to take on responsibility, accountability in action, the ability to challenge own assumptions, and collaborative teamwork. The alumni reported that they had not developed these skills at university to the level required in later professional life.

1.3 Project setup

In the framework of the Critical Thinking Initiative, the Executive Board therefore commissioned ETH Sustainability to develop a new teaching format that would stand out as a lighthouse project of the initiative both within ETH Zürich and beyond. This new format was to provide targeted support in acquiring the skills identified as lacking in the survey, while at the same time meeting the students' wish for a transdisciplinary curriculum.

The teaching format should therefore meet targets at three different levels, which would build upon each other and be mutually relatable, following a nested approach (see page 12). The first target level concerns our students, providing them with an opportunity to develop their critical thinking skills. The second target level is geared towards ETH Zürich as an institution: to be able to develop both as an organisation and as an institution, the ETH Week programme was to contribute to the development of a new spirit of togetherness for ETH Zürich as a whole. The third target level is aimed at society outside of ETH Zürich.

In order to implement this task with the highest possible degree of practical relevance, the project team carried out a literature review



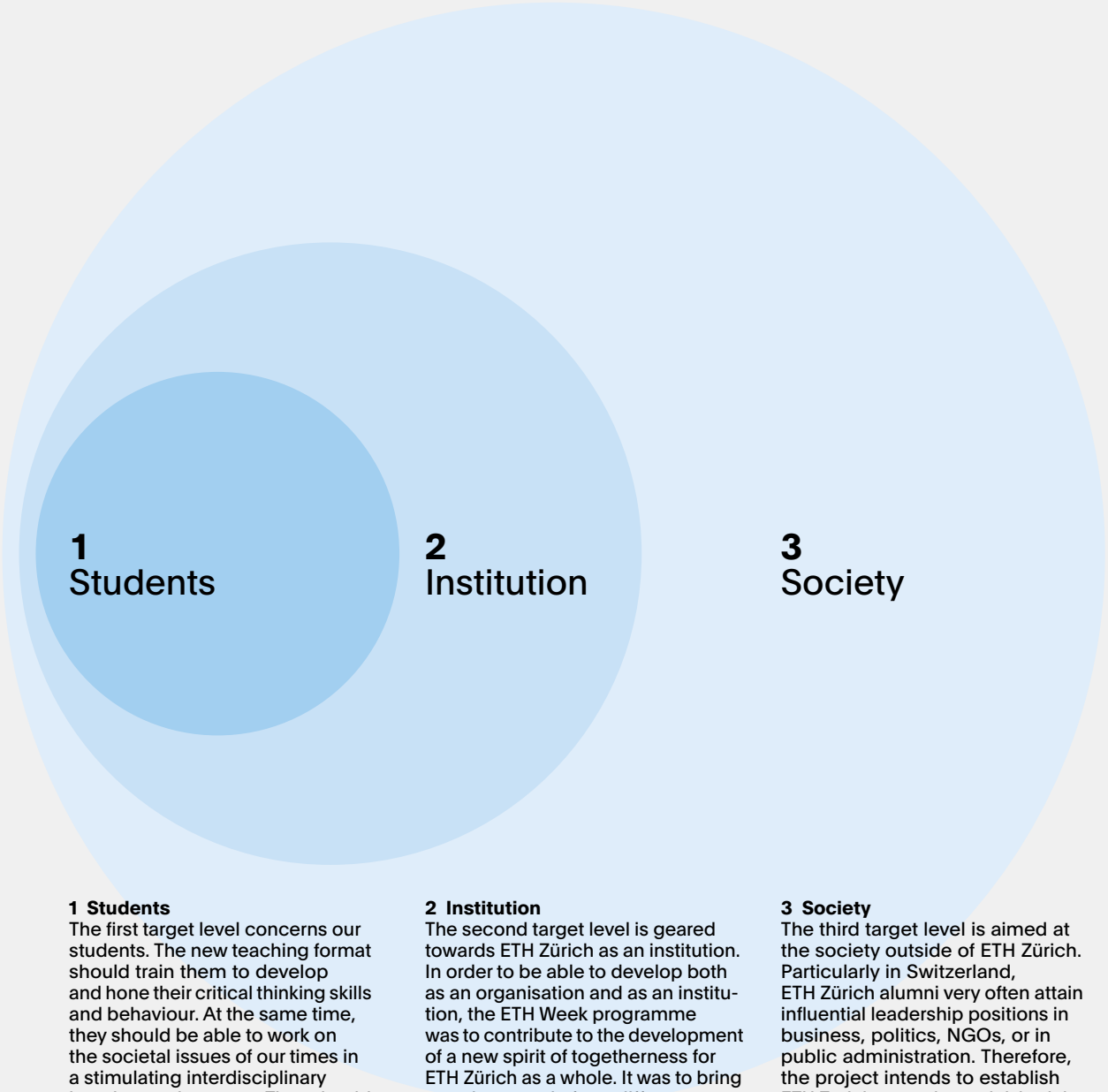
The skills which have been **acquired** during the studies **exceed** the **requirements** in the current employment (evaluation average).

The skills which have been **acquired** during the studies **fall short of** the **requirements** in the current employment (evaluation average).

Source:
Swiss Federal Statistical Office, Graduate Survey 2009 & 2011 (excerpt).

A SKILLSET FOR THE 21ST CENTURY

The regular survey of ETH graduates by the Federal Statistical Office depicts a scale from 1 to 7 of how well the graduates were trained in a given area and how much of that knowledge or skill is effectively required in everyday professional life. On the positive side, the training that ETH students get in the area of professional skills far exceeds the requirements of future work environments. In the areas of interdisciplinary skills and social and communication skills, however, the survey showed that students had not developed these critical thinking skills at university to the level required in later professional life.



1 Students
The first target level concerns our students. The new teaching format should train them to develop and hone their critical thinking skills and behaviour. At the same time, they should be able to work on the societal issues of our times in a stimulating interdisciplinary learning environment. They should be able to identify and analyse the most important problems while simultaneously developing options for solutions within interdisciplinary and intercultural teams.

2 Institution
The second target level is geared towards ETH Zürich as an institution. In order to be able to develop both as an organisation and as an institution, the ETH Week programme was to contribute to the development of a new spirit of togetherness for ETH Zürich as a whole. It was to bring together people from different disciplines, organisational units, and hierarchies for a joint effort aimed at fostering the education of students, but also for ETH Zürich as an organisation to reap the benefits of interdisciplinary collaboration.

3 Society
The third target level is aimed at the society outside of ETH Zürich. Particularly in Switzerland, ETH Zürich alumni very often attain influential leadership positions in business, politics, NGOs, or in public administration. Therefore, the project intends to establish ETH Zürich as a role model, both by making ETH Week students reflect on the contribution of science to society, and by enabling them to act as change agents for sustainable development.

THREE TARGET LEVELS

The goal was to develop ETH Week as a new teaching format that would stand out as a lighthouse project of the Critical Thinking Initiative both within ETH Zürich and beyond. This new format was to provide targeted support for acquiring 21st century critical thinking skills, while at the same time meeting the students' wish for transdisciplinary courses. The teaching format should meet targets at three different levels that build upon each other and become mutually relatable, following a nested approach. While the first goal focuses on the students, the initiative also intends to achieve further institutional and societal goals.

before visiting a number of interesting projects as well as lectures and seminars at other universities. It was focused on interdisciplinary offerings and teaching formats that included options for cross-departmental collaboration and innovative arrangements for teaching and learning.

Based on these insights, an interdisciplinary team developed the concept and programme for the first ETH Week prototype, which has been refined in the years since. A core group was formed with members from different departments and units, bringing together a wide range of backgrounds and experience across hierarchies. From student representatives to professors, from junior to senior staff members, the core group brought to life a rich set of ideas. Because ETH Week is a synthesis of the discussions, decisions, and opinions of these contributors, it would be very different if others had been involved. The testimonials at the beginning of this book represent some of the different contributors to this collaborative project, each one sharing a key ingredient or learning from having been a part of ETH Week. Our thanks go to all of them and all others who joined us on this journey.

We would further like to thank two universities in particular for making substantial contributions to the development of ETH Week: Technische Hochschule Darmstadt (TU Darmstadt) with its KIVA programme and the University of St Gallen (HSG) with its Startwoche allowed our team to sit in on their programmes, to gather valuable impressions, and to learn from their organisational experience. It was only through the far-reaching exchange of ideas with our colleagues at TU Darmstadt and HSG that we were able to develop ETH Week into a unique teaching format.


adidas
Team

The kick-off meeting of a team and their tutor during "Manufacturing the Future" in 2017. The entire first day of the programme on Sunday is dedicated to establishing a culture for successful teamwork.

2 Concept

Challenging, inspiring, and motivating; at ETH Week, students from all fields of study work together on their own ideas for projects related to complex societal questions. Of equal importance, the programme is about (1) providing room to think for all participants, (2) engaging with a societal topic, and (3) learning and reflecting by following a problem-based, solution-oriented process.

ROOM TO THINK

ETH Week is defined in an open manner. It is open to all Bachelor's and Master's students of ETH Zürich and brings together a broad set of interests, talents, and disciplines in order to engage in a student-driven learning process. The scope of their work is also framed in an open way. Instead of handing out problems to solve, students are required to define for themselves what they work on. All we ask them to do is remain in the realm of the topic, follow a precise process and give a presentation at the end of the programme that responds to the brief (see page 21).

2.1 Room to think

The most radical element of ETH Week is that the programme, although very precise in its implementation, is defined in an open manner.

First, it is open to all Bachelor's and Master's students of ETH Zürich, independent of their degree programme, their year of study, and their prior knowledge about the topic. The participants are instead required to bring an interest in the topic, an open mind, and a willingness to engage in interdisciplinary teamwork within a student-driven learning process. The students are grouped into teams that maintain and capitalise on this diversity in terms of the scientific and cultural backgrounds, age, gender, and prior knowledge. Everyone also has the chance to contribute his or her own interests or talents because the process creates a number of roles and requires various skills, such as scientific research, building physical prototypes, effective storytelling, and leadership.

Second, the content of the teamwork is defined in an open way. Students are engaged to analyse and reflect upon a set societal topic by following a precise process. Yet the scope of their work is up to them. There is neither a pre-defined case study nor a particular focus, be it critical thinking, sustainable development, innovation, entrepreneurship, design thinking, interdisciplinary learning, or teamwork. Students may instead draw lessons from all of the above. Indeed, ETH Week offers opportunities rather than establishing constraints and has been designed to provide room to think so that students can make up their own mind.

The students are given one task: their brief for the week (see page 21). It asks them to identify a problem that they want to solve and to define it with a concise problem statement. At the end of the week, they have to tell a story to explain where their ideas came from, why they think their problem is relevant, and what a possible solution could look like. In addition, they need to show that they have critically reflected on their ideas by answering a set of guiding questions.

ETH Week aims to encourage all participants to actively learn something new. Working together with their peers, students build on each other's understandings, skills, and ideas, to better comprehend how different individuals and disciplines can work together to define and solve problems. Maximising diversity within the student groups gives students access to a wider range of people who can share a willingness to cooperate across disciplines, building novel connections in a cross-university network that enables future collaboration.

2.2 Engage with societal topics

The ETH Week programme addresses major societal challenges (see pages 22–23). Each topic is chosen so that students from across ETH Zürich, a university of science, technology, engineering, and architecture, can all relate and contribute regardless of their distinct discipline or the stage of their degree. It does so by giving them a chance to engage with topics that concern all of us as humans.

To join, they need to bring enthusiasm for their own discipline. Yet the topics are not only relevant to all study programmes; they also require interdisciplinary cooperation. To this end, ETH Week asks students to bring a collaborative attitude so that they can place technology in the

context of further-reaching discussions that impact the society we live in, the economy we work in, and the environment we are going to leave to future generations. During these discussions, the students learn to work together and to go beyond the boundaries of their academic disciplines. They are also challenged to critically discuss their own positions by following a process that pushes them to define a common problem and contribute with a solution. By focusing on what unites them instead of what makes them different, they learn how to integrate their different perspectives into a bigger picture.

Each topic is designed to reflect its real-world complexity while remaining accessible. Combining research with practice, the topic is conveyed through different content vessels. They are structured to develop the topic along a number of focus areas and include lectures, field trips, a knowledge fair, and informal discussions during the side programme. Involving a variety of stakeholders, the vessels expose students to a mix of theoretical, practical, objective, and subjective ideas and provide personal access points to the topic. This helps the students to build an understanding of the topic from different angles and across varying scales. The objective is that students will grasp the topic from afar, from up close, through theoretical abstraction, and through a plurality of other people's lenses.

Through this approach, ETH Week aims to confront the students with the real-life realisation that there are many ways of knowing, and that they are complementary rather than contradictory. It is the role of the students to learn from the different personal perspectives and realities, critically reflect upon them, make judgements and integrate their positions within the topic as a whole. To succeed, they need to build their own filtered understanding of the topic so that they can, together as a team, find consensus on how to identify a problem and actively contribute a solution.

2.3 A problem-based, solution-oriented process

The last conceptual element of the ETH Week programme is that it follows a precisely designed process over six days.

While each day has its own goal and focus (see pages 24–27), they all follow the same structure in order to form positive work habits. The process is iterative: each step in the programme is introduced once and then repeated. Tuesday is the refined version of Monday and Thursday is a more intricate Wednesday, whereas the closing on Friday mirrors the opening on Sunday. The programme allows for the option to repeat the whole process a third time, if necessary, within the last 24 hours before the final presentation.

Referring back to the brief (see page 21), there are three main targets that the students must meet. First, the students need to critically understand and discuss a complex topic to identify a specific problem that they want to approach. Second, they must propose a forward-looking solution. Finally, they need to be self-critical of their ideas and embed their solution into a wider scientific and systems thinking context. There is a duality between these modes of thinking. One is objective and analytical. The other is subjective and creative. Each one drives the other.

Design thinking acts as the organising motor of this problem-based, solution-oriented process. It guides the students through a design process to identify a problem, define it in a problem statement, and develop their own original idea. Being engaged in the subjective process of actively contributing a potential solution propels the parallel objective process of critically analysing the topic. As this process repeats, the students construct a deeper understanding of the topic.

The programme also acknowledges the importance of the social team process and of developing self-competences. Indeed, the students need to mutually develop a shared understanding in interdisciplinary teams and are required to gather new knowledge and differentiate it from opinions and interests in order to pursue active learning in a social context. They are also asked to explain something complex in a simple and compelling way, so that an audience can understand why their work is relevant and how the problem they define has potential solutions in a real-world context.

Even though ETH Week is not about educating designers, the work of the students very much resembles that of a design project. They need to define their own rules and boundaries as they narrow a broader topic into a concrete problem that they then try to solve: the starting point for their project.

The brief

1. Define a problem statement that describes the challenge you want to address. It needs to be linked to a Swiss stakeholder and to at least one of the focus areas of the defined societal topic.

2. Tell an inspirational story that explains where your ideas come from, why your problem statement is relevant, and what a possible solution could look like.

3. Critically reflect your ideas by answering the following questions:

SCIENTIFIC RIGOUR

- What are your underlying assumptions?
- What facts and figures did you rely on?

FEASIBILITY

- How feasible is your solution?
- Are there uncertainties related to your solution that would need further clarification?

SYSTEMS THINKING

- How is the problem embedded in the ecological, societal, and economical context?
- What are the implications and tradeoffs of your solution?

THE BRIEF

Instead of predefining tasks, the programme gives the students freedom to choose an issue of interest within the realm of the topic. They are simply required to stick to the design process and answer the brief, which includes a list of requirements for the final presentation. Firstly, they must explain what problem they have chosen and why they want to solve it. Secondly, they need to tell a story that not only explains their solution, but also describes the origin of their ideas and contextualises how it is relevant. Finally, the students are given a number of questions to answer that help them critically reflect on their proposal.

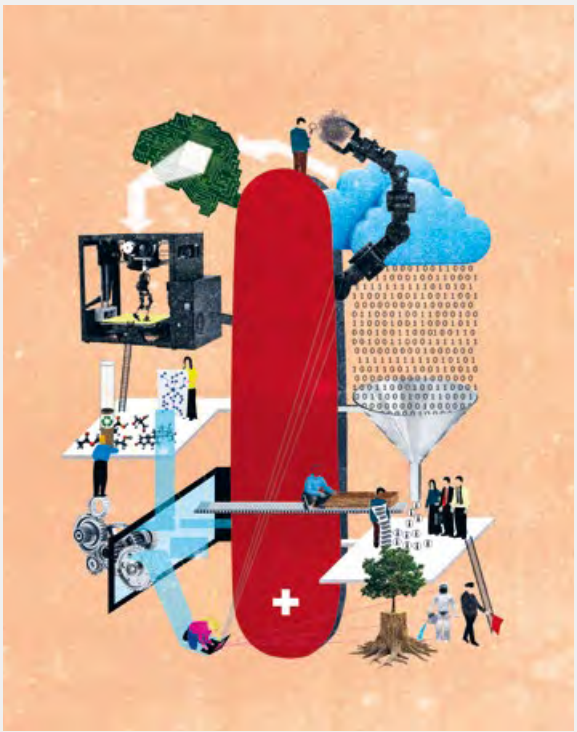
2015
The Story of Food

2016
Challenging Water

SOCIETAL TOPICS

During ETH Week, students engage with topics that concern all of us as humans. The 2015 edition on "The Story of Food" focused on challenges related to the world food system and its ecological, political and social implications. "Challenging Water" in 2016 discussed the issues of national and international water supply and water quality, while ETH Week 2017 "Manufacturing the Future" dealt with new materials and manufacturing technologies and their social impacts. The fourth edition "Energy Matters" in 2018 was on how to transform our energy system to meet the goals set in the political agenda.

2017
Manufacturing the Future



2018
Energy Matters

Sunday
Meet

On Sunday, students meet their tutors and build a foundation for the social process of learning in teams. Without working on the topic per se, they exchange their personal viewpoints to become comfortable with working in an interdisciplinary setup. Apart from understanding the goals and the process of the week, they discuss their individual expectations and team roles.

Monday
Experience

The goal for Monday is to dive into the topic to get an overview of its complexities. Afterwards, students build empathy for a range of stakeholders during the field trips, grasping the topic from afar and from up close. At the end of the day, they need to gather the different perspectives on the topic as they discuss the lessons learned in the form of stories that include personal interpretations.

Tuesday
Funnel

On Tuesday, the students develop the topic along key focus areas. Each one is introduced by their professors in the morning. Afterwards, the students meet more stakeholders during the knowledge fair. After unpacking different perspectives, they face the challenge of narrowing down and formulating their first problem statement, requiring an early collective decision by their team.

SIX DAYS

In addition to providing the students with room to think and making a complex societal topic accessible, we add an element of time pressure. In just six days, the students are required to learn something new, as a collective, and fast. To help them succeed, they follow a precisely designed process, with daily themes and goals. Each day follows a similar structure to form positive work habits and is book-ended by exercise and food. Even though time is scarce, the programme is rich. Apart from structured self-directed teamwork, it weaves in a variety of content sources while making time for self-reflection and plenary discussions around broader perspectives of the topic.

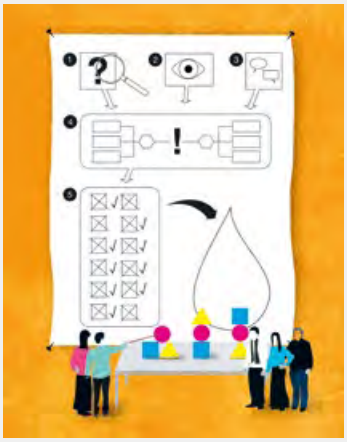
Wednesday
Refine

After focussing on problems, they start an iterative process to explore potential solutions on Wednesday. The goal for the day, however, remains to formulate a refined problem statement that reflects the deeper understanding gained during the first iteration. During the morning, they think of initial solutions to really understand the problem. The afternoon is reserved for integrating feedback and research results.

Thursday
Test

On Thursday morning, it is time to start prototyping. Students continue to work on solutions and make their ideas tangible by capturing them in models that serve as communication devices. They then use these prototypes to get feedback from researchers, testing two potential solution approaches to the same problem. Afterwards, they face the challenge of integrating this external feedback and reconsidering the brief.

Friday
Communicate



On this last day of ETH Week, the students focus on telling a balanced story explaining their ideas, conveying why their problem statement is relevant, and proving that they have acquired a sufficient understanding of the topic. After all teams have presented their solutions, the tutors close the team process before everyone comes back together to celebrate six days of critical thinking.

Sunday
Meet

The first day is reserved as a foundation for the social process of learning in interdisciplinary teams.

Exchange of personal viewpoints on the topic within the team.

Design process dry run to understand different work modes.

Reflection on the team process and filling in the daily template.

Side programme to experience further aspects of the topic.

Monday
Experience

Morning briefing, daily team discussion, and reviewing templates.

First iteration of exploring the topic where students build an understanding, both top-down and bottom-up.

Topic overview lecture providing a structured introduction (top-down).

Field trips and interviews with stakeholders (bottom-up).

Unpacking the information gathered and deliberation in teams. Synthesising and prioritising the gathered information.

Reflection on the team process and filling in the daily template.

Side programme to experience further aspects of the topic.

Tuesday
Funnel

Morning briefing, daily team discussion, and reviewing templates.

Second iteration to deepen the exploration of the topic where students structure information along focus areas.

Focus area lectures to structure the topic and the first wide-angle lecture.

Knowledge fair with stakeholder perspectives.

Unpacking the information gathered and deliberation in teams. First definition of the problem statement.

Reflection on the team process and filling in the daily template.

DESIGN THINKING

Design thinking serves as the organising motor of the week. It guides the students through a democratised design process that helps them identify what they care about when they formulate their task, assists them in defining the problem that they intend to solve and provides a framework when they develop a solution. The process describes a double diamond pattern, switching between divergent and convergent thinking, of working subjectively and objectively. In our implementation, every curriculum element is repeated twice. The design process is embedded in a reflective team process, aligned with topic touchpoints to combine the approach with scientific and research principles.

Wednesday
Refine

Morning briefing, daily team discussion, and reviewing templates.

First iteration of exploring solutions in response to the first problem statement. Ideation and consideration of the brief.

Wide-angle lecture representing further perspectives on the topic.

Self-directed testing of ideas via informal feedback with stakeholders.

Self-directed research and testing of first solution ideas. The result of the first exploration of solutions is a refined problem definition.

Reflection on the team process and filling in the daily template.

Side programme to experience further aspects of the topic.

Thursday
Test

Morning briefing, daily team discussion, and reviewing templates.

Second iteration of solution development by building physical prototypes. Development of two solution ideas in parallel.

Wide-angle lecture representing further perspectives of the topic.

Formal feedback sessions with researchers to test two solutions.

Teams learn to develop a narrative before dealing with feedback. Narrowing down to one solution and review of problem definition.

Reflection on the team process and filling in the daily template.

Friday
Communicate

Morning briefing, daily team discussion, and reviewing templates.

Polishing the solution and further development of the narrative to respond to the brief. Optional third self-directed reiteration.

Final presentations of all teams to a critical audience.

Final reflection and debriefing mark the end of the programme, discussion of learnings within the social team process.

Meta-level reflective team process

- Team building
- Daily reflection
- Team debriefing

Topic touchpoints with professors and stakeholders

- Topic input
- Feedback and student output
- Topic contextualisation

Double diamond design thinking process

- Engaging with the topic (divergent)
- Framing the problem (convergent)
- Developing solutions (divergent)
- Clarifying the solution (convergent)

The greater part of the programme is reserved for students to engage in the design process. The team spaces are arranged to foster active discussions while having enough room to document the process.

3 Programme

Within the conceptual framework, the programme intends to achieve five learning objectives whereby students (1) gain domain-specific knowledge, (2) improve their analytical skills, (3) acquire design skills, (4) strengthen their social competence, and (5) enhance their self-competence.

A SET OF METHODS

The programme is designed along five learning objectives. Apart from the first one, all are achieved through the methodology of the design process. The programme therefore goes beyond simply driving self-directed learning to provide students with the tools to think objectively and improve their analytical skills. Similarly, they acquire design methods when working subjectively, deciding between different potential paths. Each day is opened and closed with activities that require the students to reflect on and articulate their work, helping to strengthen their social competence. Finally, the students are responsible for their exchange with the stakeholders and the audience of their presentations, and this responsibility enhances their self-competence.

CONTENT VESSELS

Each topic is designed to reflect its real-world complexity, whilst remaining accessible. It is conveyed through a set of content vessels that include lectures, field trips, and a knowledge fair. These are structured to develop the topic along a number of focus areas and complement each other with a combination of objective content, subjective viewpoints, theoretical frameworks, and practical applications. The formal input lectures signpost the focus areas of the topic, but they are deliberately kept short to make space for dialogues between the students and their professors, often moderated by younger researchers.

FIELD TRIPS

One goal of the programme is to find new approaches to combine theory with practice. During the field trips, the students get to experience the topic, making the abstract societal topics very tangible. On Monday, the students gain an understanding of the bigger picture through the overview lecture, before each team member joins a different field trip. They are asked to connect the top-down overview to the bottom-up perspectives. It is up to the students to interview the stakeholders and to empathise with their particular challenges. This provides them with personal access points to the topic.

KNOWLEDGE FAIR

On Tuesday, the interchange between lectures and meeting stakeholders is repeated, this time going into more detail. First, different professors share their perspective about key focus areas. The students then build on the information that they have gathered so far while they lead discussions with different stakeholders from academia, industry, NGOs, and the public sector. At the knowledge fair, they work in pairs of two, meeting three stakeholders each. In this way each team reaches out to 12–18 different stakeholders, gaining a multifaceted understanding of the topic.

PROBLEM STATEMENTS

Through teamwork, the students get the opportunity to address complex, interdisciplinary, and system-oriented issues. They learn from different personal perspectives and realities, critically reflect on them, make judgements, and integrate diverse opinions to build their own refined understanding. Their main challenge is to link this complexity to a specific starting point, being the problem statement. It defines the issue that they want to address. Students reconsider the problem statement three times during the design process, each time readjusting or improving it.


new technology & design
Produce energy with hotspring
Use water to store energy
SCALING of existing tech
decentralize
use transportation to produce energy
Use human energy/heat
Wave energy
More hydro plants

PROTOTYPING

Students are not simply asked to objectively and critically analyse a complex topic. They must also engage in the subjective process of formulating an original idea and designing a solution that addresses their problem statement. Hands-on methods guide them through a democratic process of exploring ideas and making decisions.

Students bring their ideas into the material world through rapid prototyping. The process of physically building models requires them to make a cascade of decisions. This further clarifies the team's ideas, and the diversity of tasks gives each student an opportunity to contribute to the group in their own way.

FEEDBACK

The students follow a problem-based, solution-oriented approach that moves back and forth between critical problem analysis and the design of solutions. The subjective process of creation feeds a parallel objective process of critical analysis. Feedback loops help the teams to delve deeper into the detail of the topic and their solution. Students reach out to stakeholders whom they have met previously and also engage in a formal feedback session where they present two ideas 24 hours before the final presentations.

PRESENTATIONS

At the end of the design process, the students present their project to a critical audience. As a shared event, all teams get to present for seven minutes each. Their task lies in condensing the complexity of their learnings to explain it in simple way. Through the proxy of the solution, what really becomes obvious is the level of understanding that students have acquired. A successful presentation with clearly formulated messages usually relies on some deeper learnings that were far from obvious at the start. Instead, they usually come from identified connections that combine a subjective and objective approach to the topic.

TEAMWORK

ETH Week is embedded in a social context. Students must gather new knowledge, filter through opinions, and pursue active learning with people who come from different cultural and disciplinary backgrounds. They are asked to understand the different perspectives of the people they meet, including the other students. They must integrate these perspectives through deliberative discussions and hence construct knowledge socially. The programme also sets time aside to reflect on this process. The whole first day is reserved for students to exchange motivations and first impressions about the topic, while the beginning and end of each day is dedicated to team reflection.

3.1 Learning objective 1: Gain domain-specific knowledge

The learning objective related to domain-specific knowledge requires that the students have immersive knowledge about a certain complex societal topic. They should comprehend its scientific, technical, political, social, ecological, and economic contexts.

This is implemented in the programme through a variety of content vessels conveying the topic to the students. These vessels complement each other with a combination of objective content, subjective viewpoints, theoretical frameworks, and practical applications. These content vessels include different types of lectures, field trips, and a knowledge fair. The side programme also offers students the opportunity to personalise and contextualise this knowledge, leading to a deeper and more immersive experience.

LECTURES • The programme includes three types of lectures. First, there is an overview lecture followed by focus area lectures and three additional wide-angle lectures. The overview lecture introduces the topic, providing the terminology and vocabulary necessary for a cross-disciplinary discussion. It conveys the skeleton of the topic and explains how the other vessels relate to each other. The focus area lectures then introduce different, in-depth dimensions of the topic. The focus area lectures are given by professors, each one providing a state-of-the-art scientific understanding based on their research area. These lectures also identify connections with other focus areas, the field trips, and the knowledge fair. Finally, the wide-angle lectures are a forum for wider perspectives beyond academia. They are relevant to all areas of the topic and introduce additional views that are balanced to reflect different interests within society.

FIELD TRIPS AND KNOWLEDGE FAIR • In addition to grasping the topic conceptually and from afar, the students also meet a variety of stakeholders and practitioners. The lectures are linked to ten field trips and the knowledge fair, which gathers 25–30 representatives from research, industry, NGOs, and the public sector. Students from the same team will participate in different field trips and knowledge fair discussions to collect a variety of real-world inputs. The field trips and the knowledge fair create a platform for student-driven discussions with key stakeholders. Structured along the different dimensions of the topic, they require the students to be empathetic to the experiences, needs, and challenges of those they meet.

SIDE PROGRAMME • The core programme is complemented by an optional side programme that is designed to explore further facets of the topic, which may include contributions from artists, philosophers, writers, or athletes. It intends to give students an opportunity to experience the topic socially and through their senses. This shared experience fosters informal discussions that help the students contextualise and frame knowledge acquired during the main programme.

3.2 Learning objective 2: Improve analytical skills

The learning objective in relation to analytical skills requires ETH Week participants to be able to structure complex problems systematically using selected methods. They should be able to acquire further knowledge as well as critically analyse the knowledge in interdisciplinary groups and with relevant stakeholders.

As set out above, the domain-specific knowledge is conveyed to the students through different vessels and different stakeholder lenses. The students are then faced with the task of analysing and synthesising a kaleidoscope of perspectives into their own structured view of the topic. This critical reflection runs in parallel with a narrowing of scale; from a global all-encompassing topic to something local and concrete. Indeed, the programme is designed to change between two attitudes, between opening up and narrowing down, between divergent and convergent thinking. This is embedded into the programme in a natural way, iterating every day to widen the focus throughout the morning before converging each evening back to an ever more precise understanding of a local and concrete problem. The second learning objective is therefore implemented through three different steps of group work: unpacking information, jointly formulating a problem statement, and researching and critically reflecting on their own ideas.

UNPACKING • During the unpacking process, the students share and discuss the newly gathered information from the stakeholders among the team members. There are two important principles of this step. First, each student contributes to the discussion. As time is limited, this requires each student to consolidate and prioritise their learnings so that they end up sharing not just information but also their perspectives of the topic. Second, the discussion is documented and structured on the fly on the walls of the ETH Week Hall. In this way, everyone is able to keep track of the information, organise and prioritise it further, and keep a visual reminder of what has been discussed.

FORMULATING A PROBLEM STATEMENT • While the unpacking step involves individual input to the group discussion, this formulation step requires the team of students to make a collective decision. It is the most difficult step of the week. To further narrow down the topic, students are asked to formulate a sentence that identifies and captures a specific problem, in the form of the problem statement. To succeed as a team, students need to work together in a fair and democratic way. It is important that the students remain flexible but also self-impose rules on the parameters of the problem statement. This is done through a repeated process of defining and refining, improving and rejecting the scope of the problem that they intend to work on.

RESEARCH AND TEST • Bringing together different stakeholders drives a divergence of information and assessments. The students then need to evaluate and synthesise the different facts and perspectives gathered during these discussions, converging towards one problem statement. Later, discussions diverge again while they generate potential solutions and gather further research, before once again converging as they refine their own ideas and re-evaluate the underlying causes to their identified problem. The design process therefore incorporates an objective process of analysing, researching, and testing to critically understand the topic.

3.3 Learning objective 3: Acquire design skills

The learning objective in relation to design skills requires the students to be able to use their knowledge and skills to develop approaches for problem-solving and decision-making for a selected problem statement. They should critically reflect on these approaches, assess their feasibility, transfer them into a specific form (physical model or prototypes), and present this work in a convincing way.

This third learning objective challenges students to develop solutions to the problem statement that they have developed. The programme combines intensive, objective, and scientific discussions with a hands-on design approach to foster a forward-thinking dynamic. This step in the programme takes the students beyond just critical reflection and intends to provide them with the tools to actively contribute to the world of tomorrow. It is also important because it prevents the students from dissecting the topic at an abstract level in perpetuity. Starting from various different leads, the students follow a subjective process to come up with an original idea. This demands creativity from the students as it requires them to fill a blank canvas. Embedding design thinking into ETH Week helps guide the students through this process.

The advantage of applying design thinking is that it is democratic and forces the students to make rapid decisions. It is a compilation of codified tools and a sequence of digestible methods that pushes the teams beyond talking and towards making. It gives everyone the chance to engage in a design process by framing it as a collaborative and controllable endeavour rather than mystifying it as the craft of the rare and lonely genius. This learning goal is implemented through steps that develop ideas in a structured way. These steps ask the students to check back with the requirements of the brief and help them to receive and incorporate feedback so that they can remain self-critical of their ideas.

IDEATE AND PROTOTYPE • The formulation of the problem statement at the end of each day concludes an iteration in the convergent phase. To open up again, students ideate. They try to conceive solutions to the problem statement and learn to both generate and evaluate original ideas. Working in teams allows the students to build on each other's ideas and expertise. The focus is first on breadth and then on depth.

Students are later asked to bring their ideas into the material world by making prototypes. They explore the technical implementation of the solution, its effects, and its relation to its context, including how it interacts with people. The students repeatedly develop and then discuss the prototypes. As the prototypes become objects of study, they help the students to make necessary decisions as their abstract ideas become more tangible and specific. This is because the prototypes encompass the students' original intentions while incorporating practical realities. In this way, the models convey meaning and help frame the discussions around what is already there.

CONSIDER THE BRIEF • The only guidelines set to frame the subjective process stem from the brief. It asks the students to define their own problem and to tell a story about their proposed solution. The story must convince the audience that they have identified a relevant problem that can be overcome locally, while still being embedded in the

overall topic and its focus areas. It propels the forward-thinking mindset of the programme, while also asking the students to critically reflect on their own ideas.

DEAL WITH FEEDBACK • One day prior to delivering their final presentations, the students receive feedback from researchers. It might be positive or negative, might spark new ideas, or help the students to better understand the root of the problem. The students discuss the feasibility of their ideas as well as facts, figures, and the scientific or technical assumptions on which they have built their problem statement and solution. As a key step in the subjective process, students will need to deal with feedback and learn how to deal with the reactions. This step in the programme asks the students to integrate their initial intentions with these new lessons so that they can further develop their ideas.

3.4 Learning objective 4: Strengthen social competence

The learning objective in relation to social competence requires the students to be able to work in interdisciplinary teams. This includes an ability to reflect critically on their own discipline, relate their own positions to different intellectual approaches, and debate with students from other disciplines as well as stakeholders in a critically-constructive and respectful way. They should also be able to assess to which extent they can actively make a contribution to society by using their talents and skills as change agents.

During the entire ETH Week, the focus is on learning from the process rather than on developing a correct solution. As the programme is framed in an open way, the students actively acquire new knowledge while pursuing their own research paths and solutions. In addition, because the students come from different cultural and disciplinary backgrounds, and because they learn through the perspectives of the stakeholders they meet, the students construct their own understanding socially.

In this way, the social process reaches far beyond the problems and solutions that the students present at the end of the programme. The final presentations represent only the tip of the iceberg of an acquired shared understanding. As the students work through differences between individuals, they must learn to find common ground so that they can bring together and build on different ideas, mindsets, and values. This fourth learning objective is implemented by making space for the social team process and by aligning it with the objective and subjective elements of the programme. Each day is structured so that there is space to reflect the underlying social developments among students on a meta level. The programme as a whole, and each day within the programme, are similarly framed by parentheses: the programme has team building and a rich picture on the first day, and the final reflection on the last, while each day has check-in and check-out points.

TEAM BUILDING AND RICH PICTURE • The first day of ETH Week is reserved for team building and for establishing a foundation for the social process. Students meet, make their expectations clear to each other, and become comfortable working in interdisciplinary teams. They need to learn that they do not have a common language or understanding as they share

their knowledge and perspectives about the topic. In making the differences explicit, the programme encourages students to see the diversity in their teammates' ideas, knowledge, and skills as a resource on which they can build.

DAILY CHECK-IN AND CHECK-OUT • At the end of each day, the students are required to document their work, filling in a template that contains the main achievements. This does not require them to produce anything new. Instead, they reflect on the day, revisit and condense the results of their discussions, and visualise the core learnings for everyone. The templates are then displayed in the ETH Week Hall for all other teams and stakeholders to see, supporting spontaneous interaction and discussions among the participants.

In line with the constructive and iterative pattern of the programme, the students meet each morning to look over their templates. Tutors lead the discussion, review the results of the previous day, monitor the state of the team, explain the goals of that day, and ask reflective questions to predict potential challenges for the team. In this way, the check-in and check-out templates also serve as a roadmap for the week.

FINAL REFLECTION • The end of ETH Week is not marked by the final presentation, but by a team reflection. Designed by the tutors, the students reflect on how they dealt with the different phases of the team process, discuss the roles they had in the team, how they collaborated, and how each one was able to contribute. This is done democratically so that everyone is heard before they close the process, and it is a time for the teams to take pride in their work.

3.5 Learning objective 5: Enhance self-competence

Finally, the learning objective in relation to enhancing self-competence requires students to be able to plan their work effectively, efficiently, and autonomously. By considering approaches from different disciplines, they must be able to form an individual judgement. In exchange with non-academic partners from industry, NGOs, and the public sector, they need to communicate appropriately, present their results professionally, and convince a critical audience.

This learning objective is mainly implemented through the beginning and the end of the programme. While the students are required to work effectively and efficiently during the whole process, they are guided through a quite precise sequence of steps in the middle. They are most autonomous during the initial phase when they learn about the topic from the stakeholders, and towards the end when it is entirely up to them to organise the last 24 hours before delivering their presentations.

At the beginning of the programme, the students are made responsible for representing the university when they meet with different stakeholders. Although they are non-experts, they are challenged to actively lead these discussions and gather insights from the stakeholders. It is up to them to make judgements and distinguish fact from opinion, to synthesise the knowledge, and to formulate their own judgement. In the middle of the programme, students are explicitly asked to be self-critical of their assumptions and beliefs before they settle their own point of view. During the whole process, the students are continually required to judge

their own abilities. They are far outside their comfort zone and are being confronted with external views. This helps them to reflect on their competence as a person and on their academic perspective, evaluating what they still intend to learn but also how much they already know.

PREPARE MEETINGS WITH STAKEHOLDERS • To foster active learning, the content of each ETH Week is delivered in a repeated two-stage process, first through a lecture and then through a student-led discussion with stakeholders. In between, the students are asked to work in pairs to prepare questions. This second stage is more self-directed and hands-on, requiring them to communicate professionally and act respectfully. To aid them in their preparation, students are provided with carefully designed workbooks. These workbooks introduce them to the people they are going to meet and the areas in which they work. It is then up to the students to decide how the different stakeholders fit into the overarching topic of the week. They must also create links between the different scales of the topic by connecting the localised approach of a stakeholder to the issues raised by the lectures.

CHECK YOUR ASSUMPTIONS • The design process is briefly halted soon after the students start to think about potential solutions. At this moment, students are asked to check their underlying assumptions as a team. During the discussion, each member of the team explains the position of their particular academic discipline and how this impacts the first draft of possible solutions. The ETH Week programme is designed in this way for a couple of reasons. First, it tries to instil a habit in the students of judging their own ideas and of being self-critical so that they remain open to feedback. It also helps students to become comfortable working at the boundaries of different disciplines where they are required to move beyond the facts to form their own judgements.

PREPARE THE PRESENTATION • After the feedback round, the students might judge that their project is not of sufficient quality, or that they need to adjust their stance. In that case, the students will be sufficiently versed to autonomously cycle through the design process as they reshape their solution. Regardless of the feedback, the students will also need to work together on different aspects of their presentation. They will need to explain why they have judged their problem statement to be relevant, prove that they have acquired some depth of understanding of the topic, and convince the audience of their solution by explaining something complex in a simple way.

The end of the programme is marked by a team discussion, closing the loop of the social team process. Mirroring Sunday, the tutors lead the final team reflection, tying together the personal learnings.

4 Learning environment

The learning environment provides opportunities for people to interact at eye-level, creates space to learn and to think critically, and for content and process to come together. It consists of (1) tutors and facilitators who guide the teams through the process, (2) the design of the ETH Week Hall and team spaces, (3) the documents that support the learning, and (4) the side programme that is organised around the core schedule.

THE ETH WEEK HALL

The custom-built ETH Week Hall forms the centre of the programme. The space is chosen because of its relationship to the topic and it is transformed to become a physical embodiment of the programme. The image shows the 2016 ETH Week Hall, where the civil engineers paused their experiments in the construction hall to make room for ideas and people to come together. At the start, the space is free of any bias, designed to enable students to break out of the classroom to meet their professors and experts from industry at eye level. As the week progresses, the ideas of the students fill the walls, triggering spontaneous formal and informal exchanges.

TUTORS AND FACILITATORS

Tutors and facilitators accompany the teams and have complementary roles. The tutors engage the students in interdisciplinary group work and make sure the teams progress, fostering a positive environment and managing team dynamics and roles. Importantly, they are neither responsible for the content of the projects nor for the outcome. The facilitators drive and supervise the design thinking process and ensure that all teams obtain the desired results at each step. They manage the quality of the content of the projects by asking reflective questions. To ensure continuity, ETH Week students become tutors and tutors in turn become facilitators.

WORKBOOKS

Each student is handed a custom-designed set of workbooks, one for each day, at the beginning of the week. It is a physical companion that can be used by students to take notes and to document their work. It is also full of information. It introduces them to the topic, the experts, and the process. Each task and element of the programme has a dedicated spread that includes descriptions, suggestions, and at times, room for meta-level reflection. The workbooks are compact but dense and designed as a complete companion that students can annotate and refer back to during later projects. As a written guide for the design process, it also serves as a safety net.


Build rapport.
Seek stories.
Ask why?

PROCESS WALLS

Documentation is especially important in an iterative design process. What the workbooks do on an individual level, the process walls do for the teams as a whole. While the students document their discussions in private and on the fly, they are also asked to fill one template at the end of each day that they then bring back to the ETH Week Hall. It is part of the reflective action where they review and distil the most relevant results of the day. In this way, the hall fills with the ideas of the students, truly becoming the embodiment of the topic. Each morning, it is where the tutors reconvene with their teams and, as a backdrop, it remains in place until the end of the programme.

TEAM SPACES

Students spend the majority of their time in a studio-like environment in the privacy of their team spaces. Each studio is shared by multiple teams working in parallel with their tutors and facilitators. The layout and furnishings of the space are designed to fit the fast-paced process of working in teams, smaller groups, or in pairs. The furnishing is minimal, so that all teams can convene in the middle of the room with tables and standing tables for different modes of thinking and making. Chairs are kept to a minimum. During their programme, the students slowly appropriate their space, rearrange the furniture to make it their workspace, and fill the walls, documenting their ideas and discussions.

SIDE PROGRAMME

Each day, when the main programme draws to a close, students return to the ETH Week Hall to come together with the other teams. After a shared dinner, the side programme begins and brings students, researchers, stakeholders, and the invited guests into a forum to explore further facets of the topic. It combines formal and informal elements in one location, fostering the social cohesion of the learning environment. With the process walls showing the current status of the individual projects, further opportunities to share ideas arise. It is also the space for critical debates with professors and stakeholders.

4.1 Tutors and facilitators

The students within a team do not know each other before starting the programme. They come from different cultural backgrounds and academic disciplines. While this diversity is a strength of the programme, it also adds an extra challenge for the students. For this reason, each team is accompanied by a tutor. Their role is to oversee the team process so that the students can focus on working together productively under time pressure. They are asked to assist the teams as little as possible and as much as necessary, moderating group discussions and ensuring democratic decision-making. The one rule they need to stick to is to *not* be responsible for the content of the projects or for the outcome. This means that tutors cannot make decisions for the students, even if they know better. Instead, they are responsible for the team process and their central task is to encourage self-directed learning.

The tutors are also responsible for the beginning and the end of the process, i.e., the team building and rich picture exercises on Sunday as well as the final reflection on Friday. At the outset, the tutors ensure that different interests, viewpoints, and perspectives can be accommodated in the team. They also moderate the initial discussions to help the students make decisions as a group and to foster positive team dynamics. Having a tutor enables the students to engage in constructive and self-critical conversations while building trust in their peers. As the programme unfolds, the tutors help the students understand and clarify their individual roles within the team.

Complementary to the tutor role is the role of the facilitator. While each team is accompanied by a tutor for the whole week, the facilitators oversee multiple teams and are less closely integrated within the teams. They only come in on Wednesday and Thursday and do not stay for the entirety of the programme. Their role is to drive the design thinking process and ensure that all teams obtain the desired results at each step of the process. Their respective relationships with the team are complementary: while the tutors focus on creating support and space for reflection, the facilitators partially take control away from the teams and steer them through the fast-paced process. They may ask certain teams to repeat or to go and revisit a certain step in order to achieve the quality of the projects to which they aspire. Like the tutors, the facilitators do not get involved with the content.

Every year, the tutors are prepared for their role during the preparatory tutor training. Here, they simulate the programme, train in design thinking, and are introduced to techniques for overseeing the team process. They also meet the facilitators. The intention is to carefully select a team of tutors who bring various forms and levels of expertise and can learn from each other. Those who have been tutors in previous years convey institutional knowledge, while former students of the programme who become tutors bring a participant perspective. In addition to the simulation of ETH Week, the training includes a core component of moderated reflective discussion rounds. Here, the tutors, supported by the trainers, discuss their experiences and collaboratively agree on how to define their role and how to handle particular situations. In this way, the tutors become crucial in establishing and conveying the general attitude and mindset of the programme. Together with the organisers, they are instrumental in building a sense of community and inclusiveness.

4.2 ETH Week Hall and team spaces

Each year, a custom-built ETH Week Hall emerges for the six days as a physical embodiment of the topic. It combines the formal learning during the core course with opportunities for informal exchange during the side programme. It all takes place in a temporary space that is ready to be filled by the ideas and impressions of the students and all other involved parties.

The concept is to pull the students out of their usual understanding of ETH Zürich into an unprogrammed space where they can experience being at their university in a novel way. For example, the first ETH Week on the topic of food systems was in the building site of a university canteen that was being refurbished, reflecting the fact that the students were building something new. The second edition on water was in the technical hall of the civil engineering department featuring heavy machinery as well as delicate and precise lab measurement tools. "Manufacturing the Future" took place in the Rapid Fabrication Hall of the architecture department, combining forward-looking technologies with the ancient art of building. The edition on energy was hosted in the campus power station, creating a link between facility management and research.

The focus lies on giving people a platform to meet at eye level, outside their normative space, and creating a shared experience that goes beyond just acquiring knowledge. The atmosphere is special, tangible, and formative. Experiencing this network of people coming together gives the students the opportunity to reflect and challenge their role in relation to that of others. Many may also realise that they have already been shaped by the institution. By bringing people together in this neutral space, some students have reported that they finally connected to ETH Zürich.

The students also have dedicated team spaces in proximity to the main hall where they can work on their projects in a studio-like environment. They are located in the design studios of the architecture department, where each space is shared by either two or four teams. Instead of each having a whole room at their disposal, the team spaces are fluid and open to one another so that they can interact and influence each other's dynamics, be mutually inspired, and give feedback across teams. In this way, the facilitators are also able to guide multiple teams simultaneously. To provide room for different moods and ways of working, the furniture is basic but provides a variety of layouts. It includes standing and normal tables, multi-functional foam cubes, and, importantly, as few chairs as possible to avoid the static setup of sitting around a meeting table. Instead, the intention is to activate the floor and the tables as sitting spaces so that the students, along with their roles and their thoughts, remain in motion. The walls and windows are also activated as pin-up spaces to help students keep track of their ideas and decisions throughout the process.

4.3 Workbooks and process walls

Another important element of the learning environment is the idea of documenting the process. This is done on an individual basis with the support of the custom-designed workbooks. At the team level, the students are provided with templates that form the process walls.

At the beginning of the programme, the students receive one workbook for each day. The workbooks provide templates, learning goals, and guiding questions that help the students interact with the different stakeholders while providing space to document their research and judgements. They are also a source of written support during the programme that form a complementary path to both convey and reflect upon the programme. They introduce the topic and its underlying concepts, the speakers and organisers who are part of the programme, provide practical information about ETH Week, and give explanations of why different steps of the programme have been included.

Alongside this private documentation, the teams record the process and preliminary results for their group on the process walls. At the end of each day, the teams fill out a template containing the most relevant steps of the day. When they are finished working, they hang the template on their process wall in the ETH Week Hall where it remains until the end of the programme. In this way, the different stakeholders may understand what students are currently working on. It also emphasises that a constructive and iterative process is the main goal of ETH Week. In making the different building blocks visible, we encourage spontaneous discussions between stakeholders and students as well as between students of different teams, so that ideas can build on each other. The tutors and the students also meet every morning in front of the templates that then serve as a roadmap for the week.

4.4 Side programme

The glue of ETH Week is the side programme, creating opportunities for the participants to spend time with other students, professors, stakeholders, and organisers, so that a wider community forms beyond the individual teams. The days begin with the sports programme and a shared breakfast in the morning and end with a communal dinner and further inputs to explore complementary facets of the topic. In this way, the ETH Week Hall becomes the place where everyone arrives and meets and where participants return to after work.

The organisers and professors who are responsible for the learning environment, for preparing the topic, and for overseeing the process spend a considerable amount of time on location during the programme. They share the daily routine with the students, combining their responsibilities with the enjoyment of food and good company. This more informal setting enables students to discuss their ideas, motivations, and visions with the organisers, professors, and stakeholders, be it on a personal level or in relation to their projects. As a result, a variety of experience is made available to the students as support for both content and process.

ETH Week intends to provide a safe environment that encourages free-spirited critical thinking while building on the scientific research tradition as an essential foundation for designing responsible solutions to problems. The participants grow into a single cohort during the side programme as the various student backgrounds, motivations, and critical mindsets cross-pollinate.

Each year, ETH Week is organised in a different location. The custom-built ETH Week Hall emerges for the six days as a physical embodiment of the topic and is consciously located outside of the traditional academic structure, at an address that is not assigned to a particular discipline. For example, the edition on energy was hosted in the campus power station, creating a link between facility management and research.

5 Results

This chapter will discuss the results on the three target levels that were set out in the introduction. We start by (1) describing the targets of the programme on a student level, then (2) move towards how ETH Week has functioned as a collaborative platform for the institution as a whole, before (3) venturing on to the impact of the programme in relation to society in general.

STUDENT COHORTS

A large part of the success of the programme is owed to the excellent motivation of the students themselves. We focus on creating an inclusive environment, where students are confronted with different perspectives not only from experts but also from their own peers. While many international students are regular students at ETH Zürich, one-fifth of the participants can be mobility students. Many students have stated that it was the first time in their studies that they have been part of such broad and vibrant student community.

5.1 Targets on a student level

The first target level (see page 12) is geared towards establishing a new teaching format for the students to develop and hone their critical thinking skills and behaviour. At the same time, they should be able to work on the societal issues of our times in a stimulating and interdisciplinary learning environment. They should be able to identify and analyse the most important problems while simultaneously developing options for solutions within interdisciplinary and intercultural teams. This section will therefore discuss the following: the composition and general motivation in the student cohort; the setup for interdisciplinary learning; the general feedback of the students; as well as feedback on the learning objectives of the programme and on the learning environment.

A large part of this section is based on a yearly evaluation that is sent to the participants immediately after the completion of the programme. Every year, between 75 and 100 students complete it online. The graphs (see pages 72–74) compare the results over the four years, showing histograms with the distribution of the student feedback on a scale of 1–5, with 1 being the most negative, 3 being neutral, and 5 being the most positive. The quotes in this section are mostly taken from over 50 pages of comments in these evaluations.

CROSS-CULTURAL STUDENT COHORTS • An important contribution to the success of the programme is the excellent motivation of the students themselves. In deciding to join the programme, they give up one week of their two-week-long summer holidays after their exams. One student stated: "I personally felt like I worked for myself and not for credits or a university programme or anything else, and I believe this is what education is all about."

What many of the students have in common is their curiosity and their willingness to be open-minded as they learn with other students. One student stated that their most significant personal experience was "when the group really clicked and communication got a lot easier". The programme gives them an opportunity to find like-minded people and shapes an atmosphere of togetherness. Students realise what they have in common and how much their studies have shaped their perspectives. As one student stated, "it might sound arrogant but I learned how much I already know, how much I have actually learned during my Bachelor's." In this way, they can discuss their views and ideas about the world they live in and how they as ETH students can contribute while having a common goal, across teams, of creating something together.

Many students have stated that it was the first time in their studies that they had been part of such a broad and vibrant student community, all sharing what they study at ETH Zürich. Many have also stated that they formed friendships through the intensive programme and that they keep meeting their fellow students after the completion of the course: "It is one month after ETH Week now, and our group meets to discuss the semester start: pharmacy, management, mathematics, and environmental science are all no longer hidden parallel worlds, but have become part of my circle of friends."

A last key element of the atmosphere and the feeling of togetherness is the number of students that can be accommodated at ETH Week. Bringing together about 200 students, 180 of them being participants and 20 tutors, seems to be close to the limit of the current format before it would become a much more anonymous experience from the students' point of view. Currently, there is a feeling of belonging to a specific team and to belonging to the cohort as a whole that is fostered by creating opportunities to meet across groups, during the field trips, during peer reviews in the shared studios, and the side programme and plenum lectures.

LEARNING IN INTERDISCIPLINARY TEAMS • The students are divided into teams within which there is a balance of gender and cultural backgrounds as well as a mix of departments, study levels, and prior knowledge about the topic. Although a third to a half of the students in ETH Week are Swiss, the programme has gathered students from over 50 countries (see page 68). There are targets of equal gender balance and one-fifth mobility students for whom ETH Week is usually the first contact point with the university before the start of the semester.

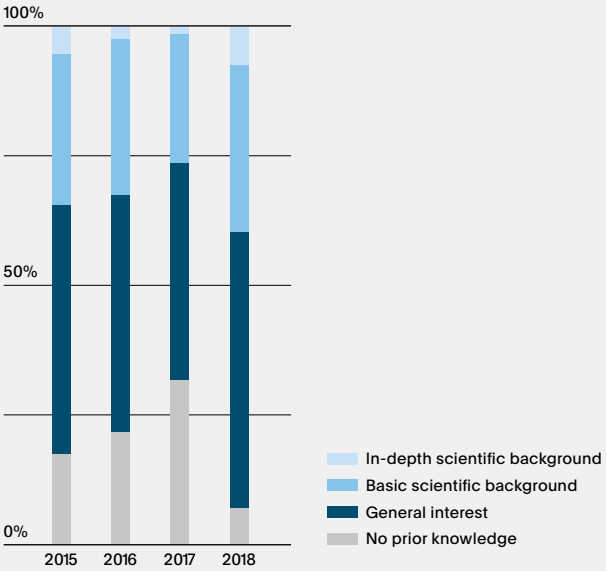
In its first four years, ETH Week has brought together over 600 participants from across all departments of ETH Zürich (see page 69). The topic seems to have an influence on the representation of the different departments. One fourth of the students bring no prior knowledge and one student stated: "I found it challenging as a person who is rather knowledgeable in the field to give the information I knew to the rest of the group. It was very enjoyable to hear different opinions from people coming from different disciplines."

Mixing students of different levels enables a setting of co-learning that benefits both the more senior and the less experienced students. By explaining their understanding, the more advanced students realise how much scientific knowledge they have already acquired during their studies or how much their education has shaped their ideas. Younger students bring a fresher approach or may relate to the topic on a different level. Together, they are challenged to define their knowledge gaps.

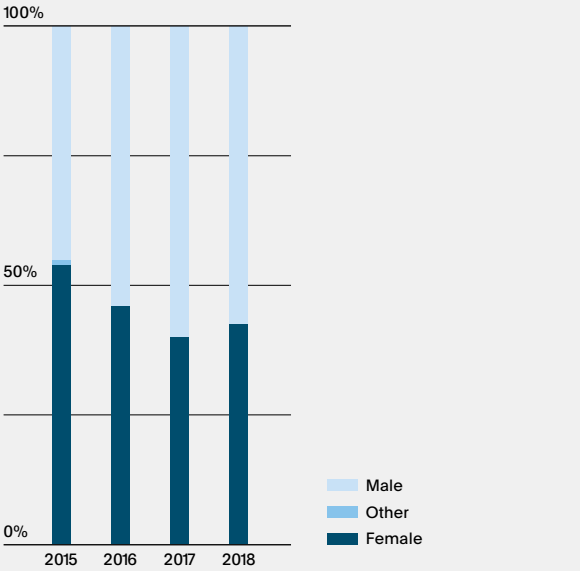
Many students stated that it was "a first during [their] studies" to work on a project with positive team dynamics. For some it was even the first opportunity to gain experience with teamwork at all. They valued learning how to "come to a consensus in a diverse group", which included "finding roles within a short time". In general, their attitudes towards each other were very respectful; they made sure to "get to know silent teammates" but also learned about "dealing with difficult [ones]". From going through the process, many seem to have learned to navigate "tensions and the balance of accepting some things… [while] articulat[ing] disagreement in other situations."

They found it "pleasant to work [while] having to find [their] own guidelines", and realised why they needed to "stick to a schedule and not get lost in discussions". In their opinion, the main challenge was "to take decisions quickly" and many were impressed "to see what [they] had achieved in a short time". Often this included "struggles and [the need to] overcome conflict[s]" while also understanding "how you can stand behind an idea even if you are not really convinced by it".

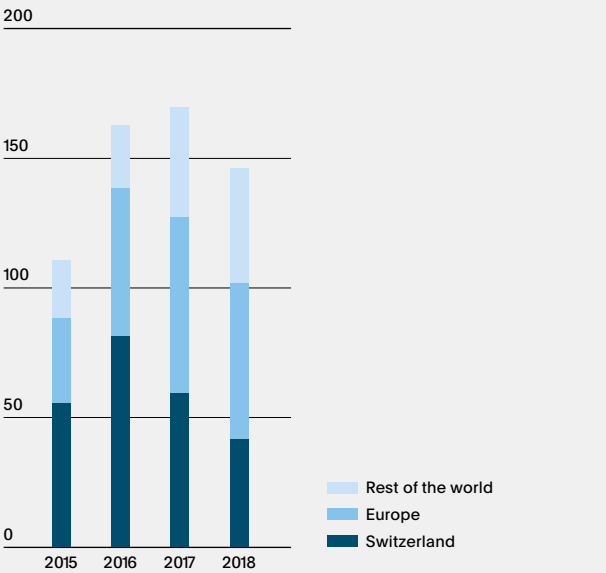
Prior topic knowledge



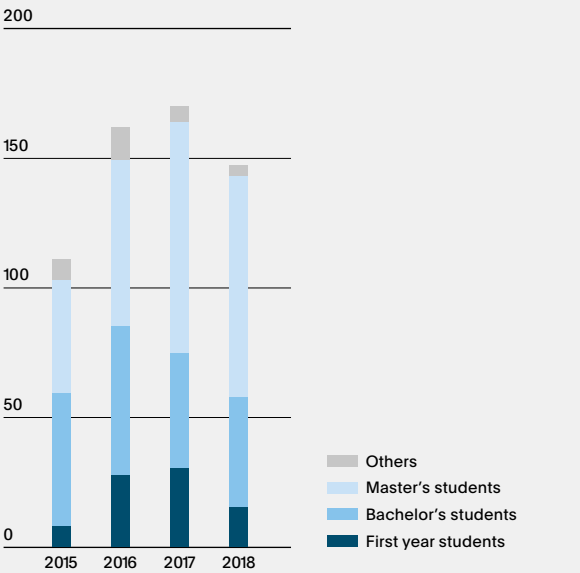
Gender balance



Students by origin



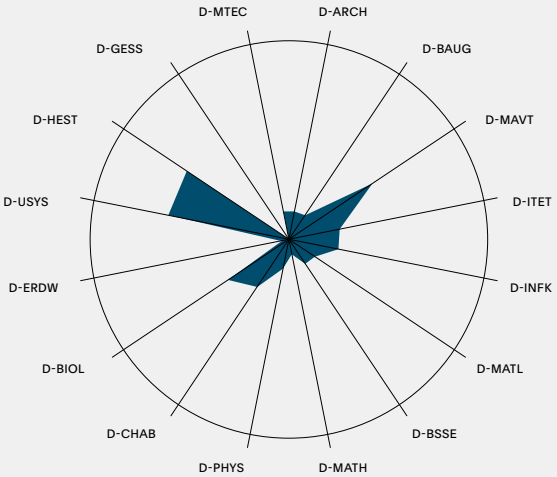
Study level



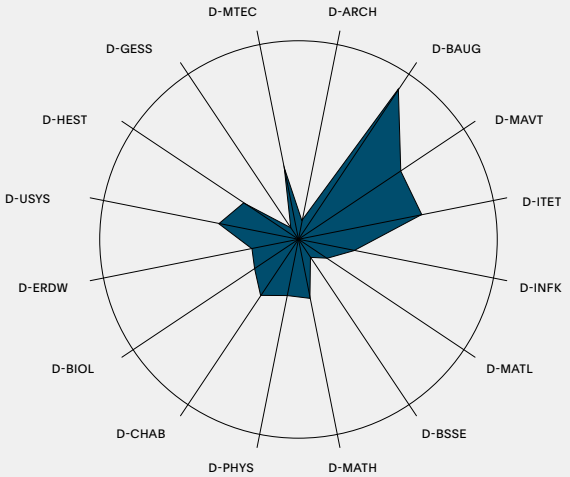
INTERDISCIPLINARY LEARNING

The programme generally attracts an open-minded set of students from all departments of ETH Zürich, even though the topic influences the distribution by department. Only about a third of the students have in-depth or basic scientific knowledge of the topic and between a third and a half of the students are Master's students. Mixing students of different ages, diverse backgrounds with various scientific knowledge into teams of about 8–10 creates a co-learning space that benefits both less experienced students and their more advanced peers.

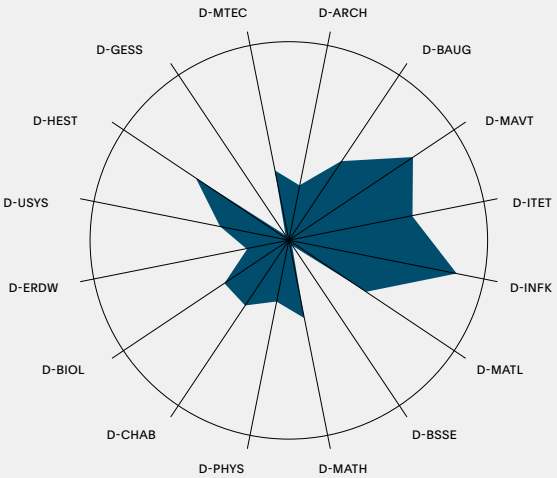
2015 The Story of Food



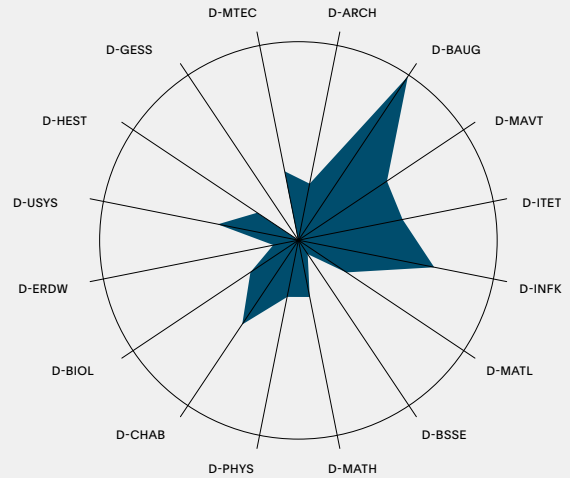
2016 Challenging Water



2017 Manufacturing the Future



2018 Energy Matters



Departments

D-ARCH	Architecture
D-BAUG	Civil, Environmental and Geomatic Engineering
D-BIOL	Biology
D-BSSE	Biosystems Science and Engineering
D-CHAB	Chemistry and Applied Biosciences
D-ERDW	Earth Sciences
D-GESS	Humanities, Social and Political Sciences
D-HEST	Health Sciences and Technology
D-INFK	Computer Science
D-ITET	Information Technology and Electrical Engineering
D-MATH	Mathematics
D-MATL	Materials
D-MAVT	Mechanical and Process Engineering
D-MTEC	Management, Technology and Economics
D-PHYS	Physics
D-USYS	Environmental Systems Science

ETH Week 2015–18 has 562 alumni students.
All 16 ETH departments have been represented as well as the following 54 countries:

Albania, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Finland, France, Germany, Ghana, Greece, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Liechtenstein, Luxembourg, Malaysia, Mexico, Morocco, Nepal, Netherlands, Nigeria, Pakistan, Panama, Peru, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, United Kingdom, and United States.

GENERAL SATISFACTION • To measure their general satisfaction, students had to answer if they "would recommend ETH Week to other students". The vast majority replied positively, namely 98% in 2015, 95% in 2016, 89% in 2017, and 94% in 2018. On average, 5% were neutral while negative scores tended towards 0% (see page 72). While the pioneers in 2015 were overwhelmingly enthusiastic about the programme, these results are now balanced with scores that also include valuable critical feedback.

Among the personal comments related to the general satisfaction were statements explaining why this programme was, for many, a novel experience during their studies that complemented their other courses. It gave them the feeling that they could contribute while "learning together, creating and thinking in a group, finding [their] own point[s] of view, but framing it into a whole with the opinions of [their] teammates". And in the process, they learned "about taking tough decisions".

Many comments are on a personal level, stating that they "learned a lot about [themselves]", including "how other people see [them], what some of [their] weaknesses are, what [they] need to improve". They enjoyed the learning environment as a safe space to "put [themselves] out there as [they] normally would not" with the result that "since ETH Week, [they] actually participate in class".

THE LEARNING ENVIRONMENT • Students stressed they had "enjoyed being guided through [the process]" by tutors and facilitators. The majority of students agreed that the support by the tutor was helpful (see page 72). Since the beginning of the programme, the positive scores have increased from 83% in 2015, 86% in 2016, and 79% in 2017 to 91% in 2018. Neutral answers ranged from 5–15%, with between 5–10% negative. This suggests that the tutors understand their role and are well trained and qualified. The best score was reached in 2018, when the overseeing tutor trainer role was introduced. The facilitator role is, by design, often perceived as more disruptive to the team dynamics, which initially led to a less positive rating in comparison. In 2017, the collaboration between tutors and facilitators was clarified and therefore improved, which resulted in much more positive feedback, namely 69% in 2016, 73% in 2017, and 76% in 2018. Between 15–20% of answers were neutral, and 5–15% were negative.

The physical environment was also well received. Comparing the highest rating of "absolutely true", students especially liked the ETH Week Hall in 2017 (91%), followed by the event of 2016 (77%). The lower scores of 2015 (70%) and 2018 (55%) are related to the colder temperatures on the building site and the more uncomfortable seats in the smaller venue, respectively. In general, the participants embraced the concept of the hall with positive scores of 85% in 2015, 98% in 2016, 97% in 2017, and 88% in 2018. Less than 10% were neutral and less than 5% were negative.

Generally, the students enjoy the team spaces, even if a bit less than the ETH Week Hall. The positive scores ranged from 80% in 2015, 92% in 2016, 93% in 2017, and 90% in 2018. Between 10–15% were neutral, and under 5% were negative. While the studio-like setup remains convincing for group work, the students are less used to this environment and regularly commented on the higher noise levels, the openness of the space, and having to share the space with other teams. The layout was

improved in 2016 to a more fluid arrangement. Instead of dividing walls between the groups in one studio, each group is assigned one corner so that all groups can see the facilitator in the centre. This correlated with improved feedback.

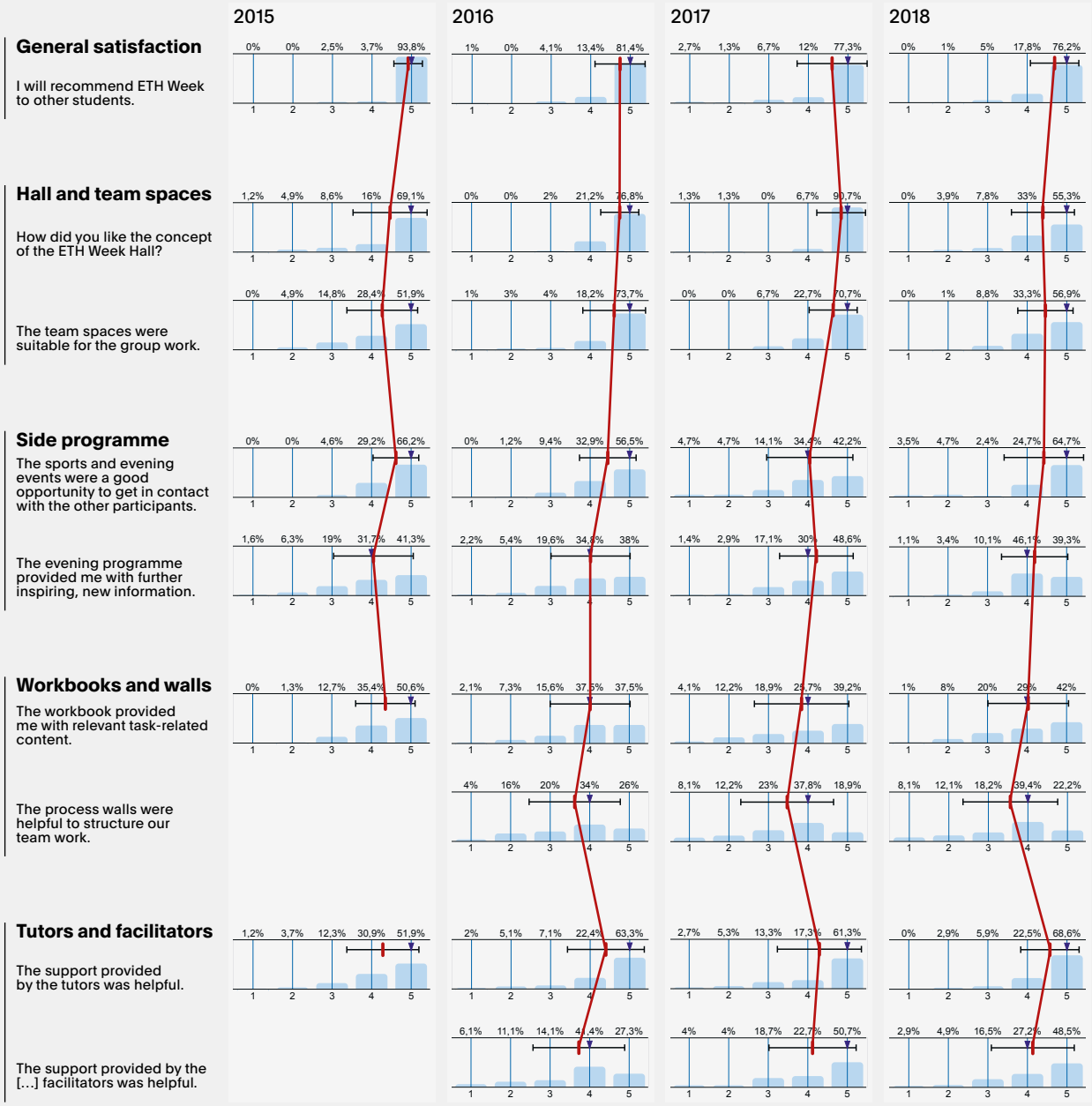
The workbooks were well received by the students, too. Most students agree that they "provide them with task-related content", namely 86% in 2015, 75% in 2016, 65% in 2017, and 71% in 2018. The neutral responses ranged from 10–20%, and negative responses ranged from 5–15%. The positive response rate has dropped since 2015. One possible explanation is that the tutors are more experienced and have a clearer view of the tasks at hand. In this way, the students have needed to rely less on the written explanations in the workbooks. Given that the week takes place under significant time pressure, this would also explain why, in 2015, the majority of the students used the workbooks "every day", in 2016 "sometimes", and in 2017 and 2018 "almost every day". The workbooks were also relied upon for programme information. The students were more ambivalent when it came to the process walls. They found them more useful for structuring their teamwork than for organising the tasks of the week. Here, the positive scores were 60% in 2016, 57% in 2017, and 62% in 2018. On average, 20% were neutral and 20% were negative.

The side programme of the week was judged to be a "good opportunity to get in contact with the other participants"; the positive scores were 95% in 2015, 89% in 2016, 77% in 2017, and 89% in 2019. Neutral responses ranged from 5–15% while negative responses were less than 10%. The side programme was also a good source "of further inspiring, new information": the results indicate that most students agreed, namely 73% in 2015, 73% in 2016, 79% in 2017, and 85% in 2018. Between 10–20% were indifferent, while 5–10% disagreed. Here, one could argue that there is a trade-off between more informative content and informal meeting opportunities.

LEARNING OBJECTIVES • The students also evaluated the learning objectives of the programme relating to developing their social competence, their self-competence, their design, and their analytical skills (see page 73). Each learning objective was evaluated with two questions, as discussed below. In general, the scores are positive, with all medians around "true" or above.

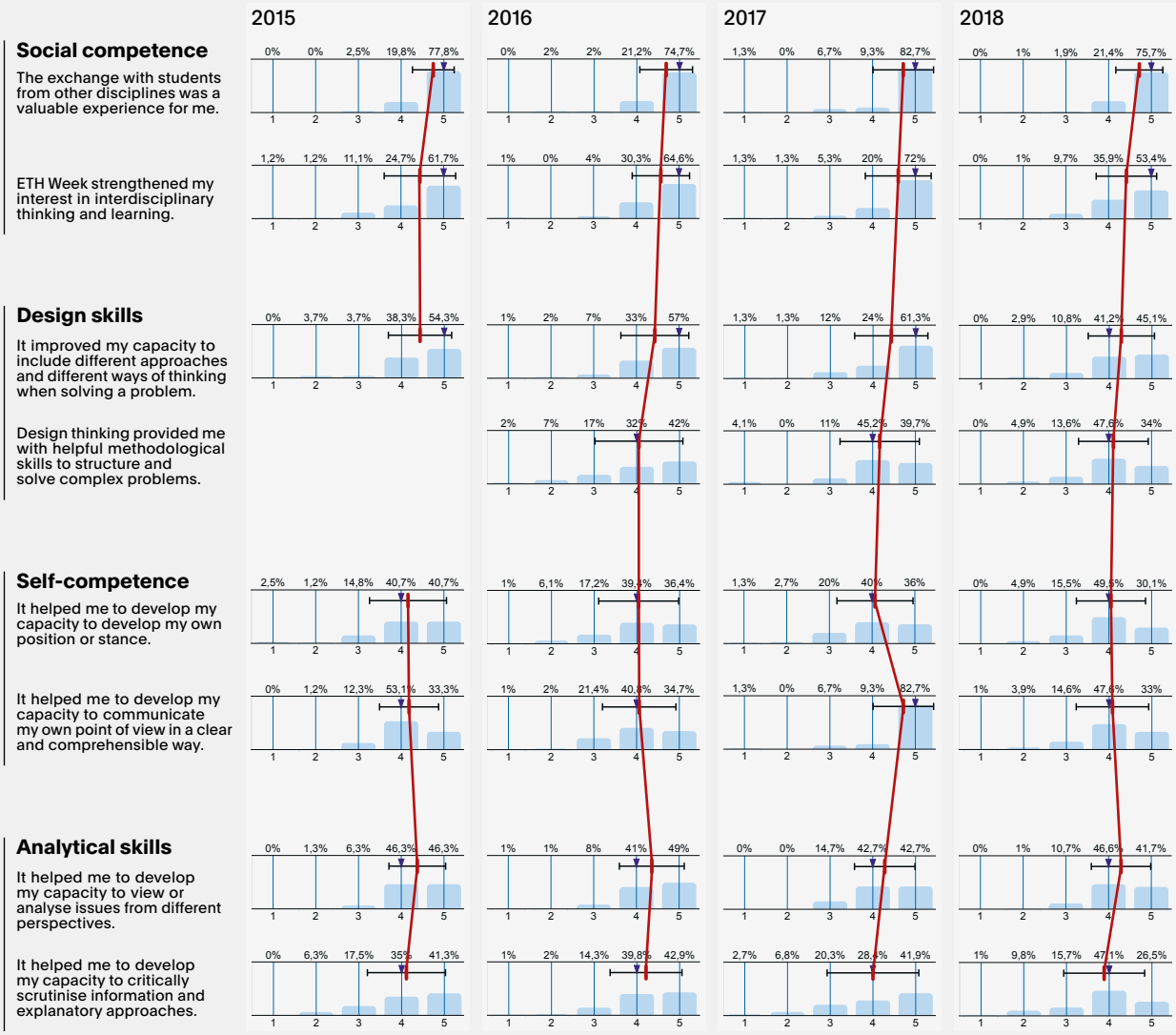
Students rate the learning objective of social competence highest, based on two questions. They agreed "that the exchange with ETH students from other disciplines was a valuable experience", being 98% in 2015, 96% in 2016, 92% in 2017, and 97% in 2018. Neutral and negative responses remain below 5%. Similarly, they agreed that their "interest in interdisciplinary thinking and learning has been strengthened", with "true" responses for 86% in 2015, 95% in 2016, 92% in 2017, and 89% in 2018. The neutral responses were between 5–10% and negative responses were below 5%. Learning in a social way therefore seems to be the most successful capacity developed during ETH Week.

The learning objective relating to design skills received the next most positive evaluation. Most students judge as "absolutely true" the statement that they "developed [their] capacity to include different approaches and different ways of thinking when solving a problem", with



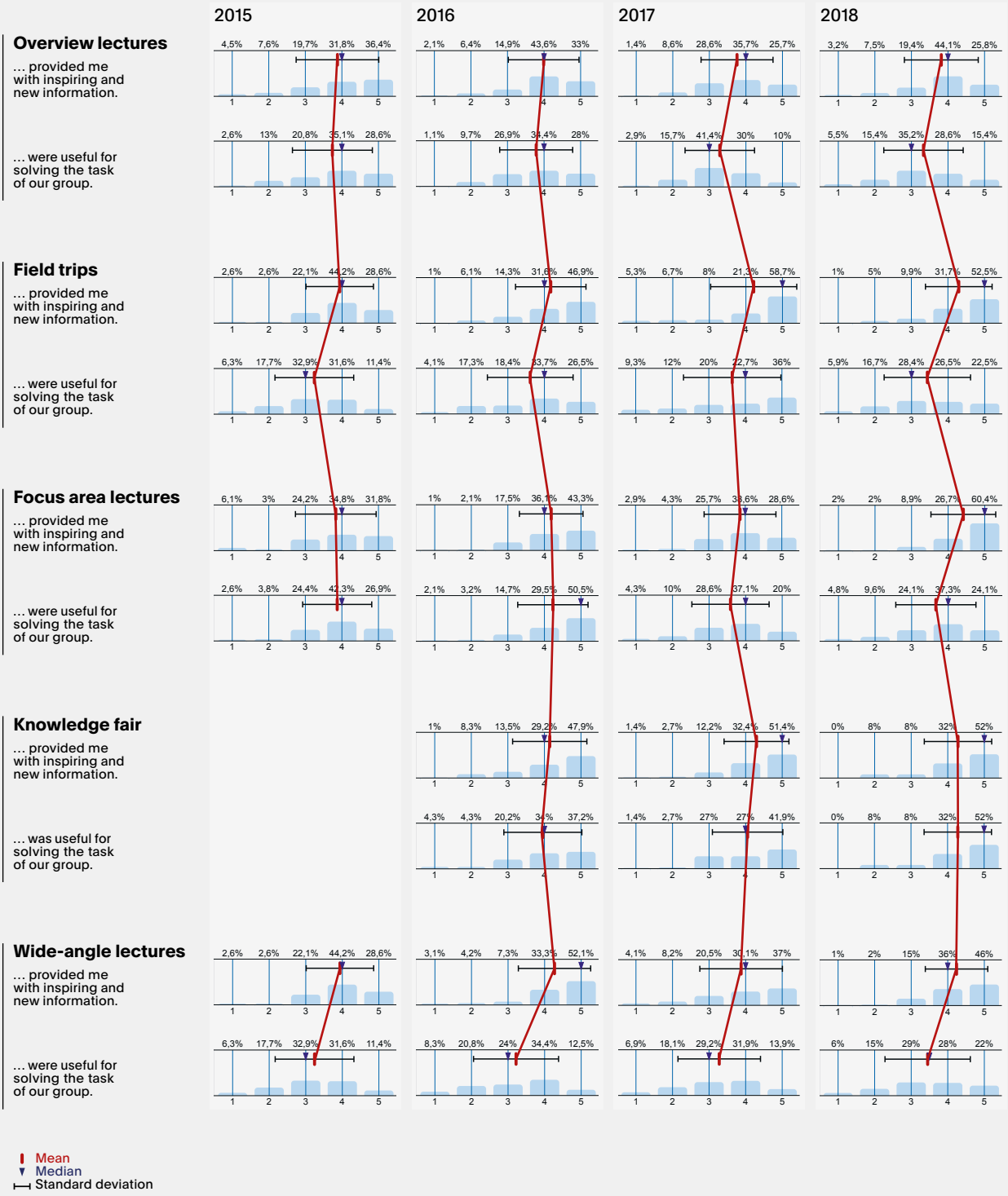
EVALUATING THE LEARNING ENVIRONMENT

The students evaluate the programme every year. We show the detailed results: The first row shows the general satisfaction, where we receive top marks. The feedback below relates to the learning environment as described in Chapter 4. Highest marks go to the physical environment and to the side programme as an opportunity to meet their peers. This is followed by the tutors and facilitators, and the workbooks. In general, all scores are very positive.



EVALUATING THE LEARNING OBJECTIVES

The evaluations show that all four learning objectives that relate to the process have been achieved. The responses with the lowest scores are “to develop their own stance” and “to critically scrutinise information and explanatory approaches”. One possible explanation is that students judge one week as not enough time to sufficiently develop both capacities. A second explanation could be that not enough time is available for the analytical steps in the programme. The next table shows the evaluation of the learning objective related to gaining domain-specific knowledge.



EVALUATING THE CONTENT VESSELS

The evaluations above show that the students agree that the first learning objective, to gain domain specific knowledge has been achieved. For each vessel, students responded to two questions: if it provided them with new and inspiring information and if that information was useful to solve the task of the group. The responses are positive even if the results are more critical and divergent than for the four remaining learning objectives. Some vessels are designed to convey more contextual information while others provide the starting points for the group work.

agreement levels of 93% in 2015, 90% in 2016, 85% in 2017, and 86% in 2018. The neutral responses ranged from 5–15%, while the negative responses remained below 5%. The majority of students judged positively that "design thinking provides [them] with helpful methodological skills to structure and solve complex problems". Specifically, 74% in 2016, 85% in 2017, and 82% in 2018. Neutral feedback was between 10–20%, and negative feedback was below 5%. In 2015, the question was phrased differently, and so the answers do not capture comparable data.

The learning objective relating to developing self-competence received mostly evaluations of "true". The majority of students replied positively to both questions. In relation to whether they were able "to develop their own stance", 81% in 2015, 76% in 2016, 76% in 2017, and 80% in 2018 replied in the affirmative. Between 15–20% responded neutrally and less than 5% were negative. Whether they were able "to communicate their own point of view in a clear and comprehensive way" was affirmed by 86% in 2015, 76% in 2016, 96% in 2017, and 81% in 2018. The neutral responses ranged between 5–20% and negative responses were under 5%.

The students judged the development of their analytical skills between "true" and "absolutely true". The majority of students agreed that the programme gave them an opportunity "to view or analyse issues from different perspectives", namely 93% in 2015, 90% in 2016, 85% in 2017, and 88% in 2018. Neutral feedback was between 5–15%, and negative was under 5%. The majority of students judged positively that they developed their capacity to "critically scrutinise information and explanatory approaches". In 2015, 76% were positive, with 83% positive in 2016, 70% in 2017, and 74% in 2018. Neutral responses ranged between 15–20% and negative feedback was less than 10%.

Over the years, the median score results remained in similar ranges, with two exceptions: students agreeing significantly more with "communicating their own point of view" in 2017 and students agreeing a bit less with "including different approaches and different ways of thinking when solving a problem" in 2018, when examining the reduced number of students who responded with "absolutely true".

It is possible to interpret these results as the students judging that one week is too short to critically scrutinise information in depth and develop their own stance, which would have also impacted their ability to communicate their point of view. With such large amounts of information and the number of perspectives that need to be accommodated within a short period of time, it is possible that not enough time was made available for the analytical steps in the programme. If that is the case, then this compromise has so far been accepted in order to maintain the momentum of the process.

From the comments, the students also mentioned that they appreciated and learned "to define a clear problem before thinking of solutions" and the processes were focusing on "problems instead of solutions". They enjoyed learning to "proceed step by step to achieve a solution" and that there was "room to provide ideas without being judged immediately". They also learned that "integrating different views on the same ideas […] improved their solutions" and found that "the variety of good solutions" and "the speed at which ideas can be formulated,

moulded, and become reality" was impressive. They recognised the value of "prototypes [being] much clearer than words can be". One of the most significant personal experiences was to be "working on one solution and in the next moment working on something new and throwing out the old idea".

The students also evaluated the remaining learning objective relating to gaining domain-specific knowledge (see page 74). The evaluations included two questions for each vessel (i.e., the lectures, field trips, and knowledge fair) in relation to "if they learned new and inspiring information" and if the inputs were "useful for solving the task of the group". In comparison to the team process and general satisfaction, the students were slightly more divergent and critical about the content inputs. While all the content vessels were rated to be inspiring, students did not find all of them equally useful. Most inspiring were the field trips, at 73% in 2015, 79% in 2016, 80% in 2017, and 84% in 2019. Between 10–20% of responses were neutral, and under 10% were negative. This was followed by the knowledge fair with a 77% positive response in 2016, 84% in 2017, and 84% in 2018. Neutral responses ranged from 10–15% with less than 5% negative responses.

In terms of usefulness, the knowledge fair had the most positive responses, with 71% in 2016, 69% in 2017, and 84% in 2018. Between 10–30% of responses were neutral, and under 10% were negative. The wide-angle lectures were considered least useful for their project work. This is probably by design, as the knowledge fair directly precedes the decision about what students will focus on, while the wide-angle lectures and the overview lectures provide more contextual information. The students also mentioned that they particularly enjoyed "getting in touch with people at eye level" and also "getting completely new inputs on a subject I was already quite familiar with". Students also appreciated the opportunity to "get educated in topics of general importance" and to "do something related to the real world". They further enjoyed discovering "many shades of the world", "different approaches to one topic", and "[diving] deeply into a topic to understand what is behind [it]" so as to discuss "sustainability without ideology".

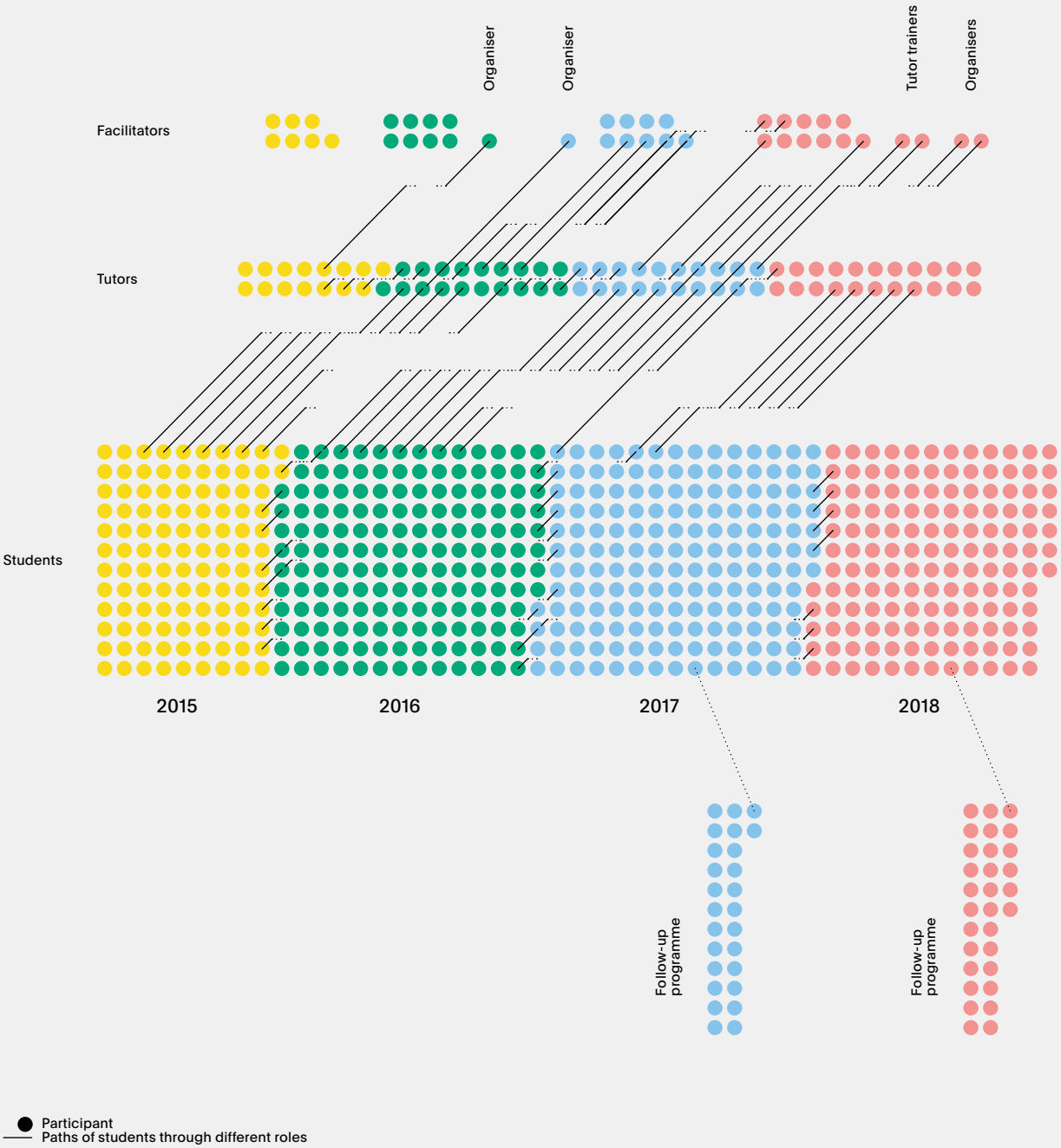
5.2 Targets on an institutional level

The second target level is geared towards ETH Zürich as an institution (see page 12). Here, the ETH Week programme was to contribute to the development of a new spirit of togetherness for ETH Zürich as a whole. It was to bring together people from different disciplines, organisational units, and hierarchies for a joint effort aimed at fostering the education of students, but also for ETH Zürich as an organisation to benefit from further interdisciplinary collaboration. The goal was to initiate new forms of cooperation within the university and to strengthen respect for the work of all parties.

From the start of the ETH Week project, the process has been collaborative. It involved a breadth of expertise and built on different bodies of knowledge. All in all, it involved about 12 different groups from across the university (see page 77). This chapter will describe how the project has brought together people from across ETH Zürich: the Executive Board,

INSTITUTIONAL TEAMWORK

Similar to the student work that takes place during ETH Week it has been a deeply interdisciplinary undertaking to design and implement the programme. It involved twelve different bodies from across the university, not counting that for each topic, different competence centres and departments were involved. It engages the institution both vertically and horizontally, from the Executive Board to the facility managers, from student groups to staff units, and from fields of innovation, education and sustainability. All involved parties make an exception to their usual day-to-day activities in order to create space and opportunity for ideas to come together.



CONTINUITY

An important strategy for imparting continuity to a six-day programme was to give ETH Week participants the chance to become tutors in the next edition, and for tutors to become facilitators. So far, 17 former participants have become tutors, and 12 tutors have become facilitators. In addition, four former tutors have supported the organisers in implementing the programme. In this way the mindsets and values of the students are conveyed from year to year. This has also helped to strengthen the links between students, and to make them into an active group of like-minded people. A group of former ETH Week tutors, together with alumni of other programmes, meet regularly at the Student Project House (SPH) where they also support the follow-up programme called "The Hatchery".

different disciplinary departments and cross-disciplinary competence centres, ETH Sustainability, Spark Labs, Educational Development and Technology (LET), Student Project House (SPH), Services and the Events Team, Facility Management, Corporate Communications, the Rector's Staff, the Rectorate, and the ETH Foundation.

In addition, there are two project-related groups that are important to mention. First, the alumni students and former tutors of ETH Week. Second, the core group that was formed to set up the two prototypes and the Steering Board that has overseen the project since its establishment in 2016.

PROGRAMME DESIGN • In 2014, ETH Sustainability was mandated by the Executive Board to build the first prototype of ETH Week. It formed the core group with professors from various departments (representing topic and process) and members of the staff unit of the Rector, as well as Spark Labs, LET, Services, and the student association. A part of the core group, known as the project team, built on their transdisciplinary teaching experience to implement the prototype while the core group as a whole oversaw the total design process. Within 12 months, they implemented the first successful pilot together in September 2015.

For the second edition in September 2016, a new project team was formed between Spark Labs, the content partners, LET, and ETH Sustainability, to improve and align the design of the programme. It is really this combination of competences that is reflected in the design of the programme. Spark Labs, the in-house design-thinking specialist, contributed with their expertise to the process. The content partners brought their experience in transdisciplinary teaching and contributed with their expertise on how to convey a complex topic in innovative ways. LET brought their background in didactics and team processes, contributing with their expertise on how to integrate reflective meta-level team processes into the learning experience. ETH Sustainability had the lead and took the role of the project architect, finding the right balance and questioning the different elements and how they fit together. The core group remained in place to oversee the process. Within another 12 months, they implemented a second ETH Week and established the programme as an element of the academic calendar. Since then, the process and setup of the week has only been slightly modified. In 2017, ETH Week matured from prototype to established programme, with clear procedures and role definitions. In 2018, the project management was handed over to a new team.

CONTENT PREPARATION • Since the completion of the programme design in 2017, it is the preparation of the content that requires the largest amount of time. As the topic of the programme changes each year (see page 83), it engages different professors and researchers from across the institution. Each topic links to the strategy of the Executive Board and is chosen by the Rector. ETH Sustainability then has a mandate to find content partners from across the institution, including both content coordinators (usually in the form of a competence centre) who provide a broad networked overview of the topic and the professors who provide focus area expertise. Then, further researchers and practitioners are co-selected and invited to become part of the field trips, knowledge fair, and the feedback session.

So far, ETH Week has involved three competence centres and two research institutes as content coordinators: the World Food System Centre (WFSC) in 2015; the Institute of Environmental and Geomatic Engineering (D-BAUG) and the Institute of Biogeochemical and Pollutant Dynamics in (D-USYS) in 2016; the Competence Centre for Materials and Processes (MaP) in 2017; and the Energy Science Centre (ESC) in 2018. Twenty professors and researchers from ten departments of ETH Zürich and Eawag have headed the focus areas (see pages 86–87). They are also listed in the table in the appendix (see page 101) together with all other practitioners and researchers.

A considerable effort is spent on putting together the topic of ETH Week. It relies on the support of this interdisciplinary group of specialists and generalists to co-design an interconnected and complex message that builds on specialised knowledge from different disciplines. This usually means making the content partners part of the project team to discuss how topic and process can align for the new edition. Together, they define the focus areas and frame the topic on a societal level, which is then approved by the Rector. Invitations to different professors, usually across departments, are then issued, requesting them to head a certain focus area and join the team to further co-design and refine the topic. After embracing the learning objectives and the learning environment of ETH Week, they help select and invite further researchers and practitioners and collaborate on balancing their focus area lectures to convey a structured, complex, but accessible message to the students. The professors are present during the programme and side programme and review the projects.

In this way, the ETH Week programme can also be understood as a platform that brings researchers together to shape new collaborations across disciplines and hierarchies, where they reflect their individual field under the umbrella of a societal topic.

LEARNING ENVIRONMENT • To support the students in their self-directed learning requires collaboration between Spark Labs, who oversee the process and the work of the tutors and facilitators, the content coordinators who ensure that the teams remain within reasonable topic territories and introduce and interact with the invited researchers and practitioners, and the tutor trainers who are responsible for a successful team process, i.e., LET and former tutors who become tutor trainers. Such a collaboration between content, design process, and team support requires a clear framework around individual roles. There is the potential for large overlaps between individual responsibilities, especially when different approaches and mindsets need to come together. The balance of roles and responsibilities needs to be recalibrated each year as the partners change. While in 2015, the programme still included research guides to support students in their content-related questions, it has become clear since 2016 that the content coordinators needed to be present during the week to monitor projects that go off-topic or venture into speculative fields outside of scientific territory. Since 2017, the roles of tutors and facilitators have been clearly differentiated, and since 2018, the tutor trainer role was assumed by former tutors for the first time.

Creating a barrier-free learning environment in spaces within the campus that are not designed for a large audience requires that these spaces be repurposed. This is achieved through the effort of the following branches of ETH Zürich: Facility Management, who were willing to make an exception by accommodating the extra planning requirements; and the Services and the Events Team, who co-designed the ETH Week Hall together with ETH Sustainability. Four different halls have been built so far and have put the students in direct contact with different aspects of the campus: the support infrastructure (the canteen and the campus power station) and the complex technical setups of different disciplines (Civil Engineering Hall and the Rapid Fabrication Hall of the architecture department). This also gave the facility managers a stage to showcase their work and their facilities, bringing them into the spotlight for the students and faculty to see and acknowledge their importance and contribution to a complex institution.

CONTINUITY • As part of the Critical Thinking Initiative, ETH Week belongs to a network of cross-institutional programmes, like the Student Project House (SPH), which is run by students for students and provides a space for them to realise their own ideas. Since the establishment of the follow-up programme in 2017, there has been a direct link between ETH Week and the SPH, supporting the students to take their ideas further and to develop working prototypes. About 30 students continued to work both in 2017 and 2018 in the so-called "The Hatchery" programme. Former ETH Week tutors and facilitators guide the students through the programme, with support from the SPH, Spark Labs, the content coordinators, and ETH Sustainability.

The tutor training is another opportunity to foster continuity between the different editions. Former participants often become tutors, some then even move on to become facilitators or join the organising team (see page 78). It is there that they discuss together with the organisers and trainers how to handle the different tasks during ETH Week. Apart from methods, the values and aspirations are also shared by the organiser with the tutors and then later, during the programme, with the participants. Spark Labs in collaboration with LET and ETH Sustainability is in charge of running the tutor training programme.

Developing ETH Week over the four years has been truly interdisciplinary and fostered a transfer of knowledge within the project and a diffusion of knowledge across the institution through the established cross-institutional networks. The project therefore was not just about creating a learning format and organising a one-week event, but actually involved various people and organisational units in a learning process within a common participative culture. This requires a larger effort, as people first had to come together, cross language barriers, and find a common mindset. Specifically, it required each one to prioritise a common goal of co-creation above individual expertise or the savoir-faire of a particular job profile. While it was more challenging, it was also more rewarding for each of the involved partners.

5.3 Targets on a societal level

On a societal level, the project intends to establish ETH Zürich as a role model, both by making ETH Week students reflect on the contribution of science in society and by enabling them to act as change agents for sustainable development. ETH Zürich alumni very often attain influential leadership positions in industry, NGOs, or the public sector. Therefore, the stated goal of ETH Week is to provide opportunities for critical debate with a large variety of internal and external experts and to equip students with an expanded set of transdisciplinary, social, and critical thinking skills.

The 17 Sustainable Development Goals (SDGs) comprise 169 targets and balance the economic, social, and ecological dimensions of sustainable development. Each societal topic relates to different SDGs (see page 84), but the programme does not frame ETH Week solely under the umbrella of sustainability. Students are engaged in a dialogue with representatives from industry and society that has many dimensions. In this way, the programme supports the SDGs by removing language barriers and fostering collaboration across a variety of interests and mindsets. Sustainable development, therefore, remains a leading driver without being the sole focus.

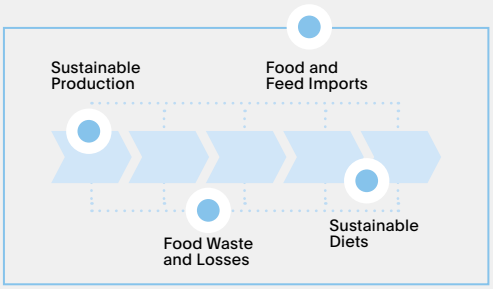
During the four editions between 2015 and 2018, ETH Week involved 20 professors, included 43 field trips, and involved 68 discussion partners at the knowledge fair. The diagram (see pages 86–87) shows that it involved people from academia (in green), both from ETH Zürich and other research institutions, as well as industry partners (in red), the public sector (in yellow), and NGOs (in blue). In this way, students experience the different and complementary roles of research, industry, the public sector, and NGOs, and how they come together.

Reading the diagram from the inside out, it explains how the four topics of ETH Week between 2015–2018 were structured. The centre of the diagram shows the content partners who were responsible for coordinating the topic (as explained on page 80). They also gave the overview lecture. The next concentric layer shows the professors involved who were each responsible for one of the focus areas (for the detailed list, see table on page 100). The two outer layers show the partners that hosted a field trip and those who were present at the knowledge fair and the side programme.

The diagram (see pages 86–87) also shows how the structure of the topics has changed over the years (see also page 83). In 2015, the four focus areas shed light on four elements of an interconnected system, namely the global food value chain, within different boundary conditions. While the objective was also to convey a balanced and multiplexed view in 2015, the knowledge fair had not yet been incorporated into the programme. Therefore, the graph only shows the 11 field trips, involving mostly practitioners. In 2016, the first knowledge fair provided students with further opportunities to drive the discussion following their interests. The topic was structured along the UN World Water Development Report 2015: Water for a Sustainable World.

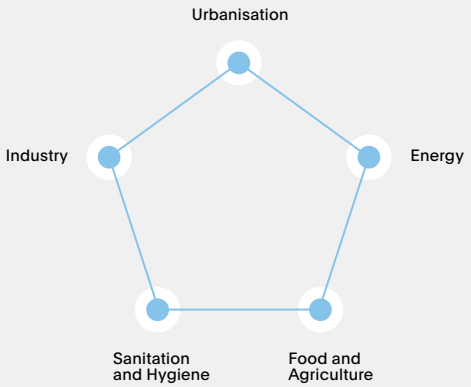
In 2017, ETH Week slightly changed the approach to fit the structure to the topic. For the first time, it did not address a global problem that

2015 **The Story of Food**



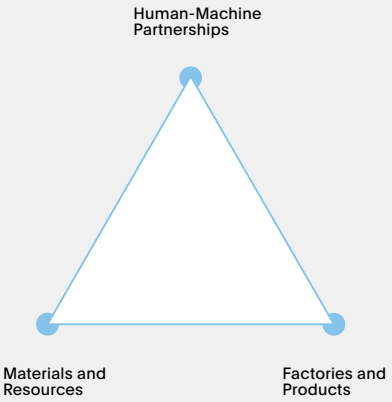
ETH Week 2015 was structured along four key elements of the food value chain and its boundary conditions: (1) sustainable production, (2) food waste and losses, (3) sustainable diets, and (4) food and feed imports.

2016 **Challenging Water**



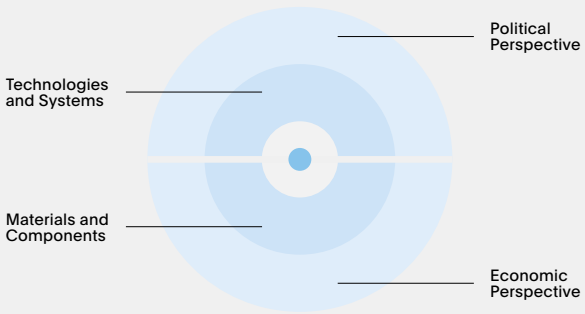
The UN World Water Development Report structured the focus areas in 2016, namely, water for (1) urbanisation, (2) energy, (3) food and agriculture, (4) sanitation and hygiene, and (5) industry.

2017 **Manufacturing the Future**



The third edition of ETH Week in 2017 looked at a field of opportunities, structured along three angles: (1) human-machine partnerships, (2) materials and resources, and (3) factories and products.

2018 **Energy Matters**



The structure of ETH Week 2018 acknowledged (1) the individual and their value system at the centre of the energy system, surrounded by (2) a technological and (3) a socio-economic sphere.

STRUCTURING THE TOPICS

In a way, each ETH Week is unique. Each one involves new knowledge partners, different competence centres and departments. To develop an ETH Week programme around a certain topic therefore always involves finding a new common ground between process and content, and an agreed approach for how to structure a broad societal topic. In developing the topic concepts were important devices to define the focus areas and to decide which stakeholders to involve in order to find the right balance between breadth and depth.

2015 **The Story of Food**

2016 **Challenging Water**

2017 **Manufacturing the Future**

2018 **Energy Matters**

SUSTAINABLE DEVELOPMENT GOALS

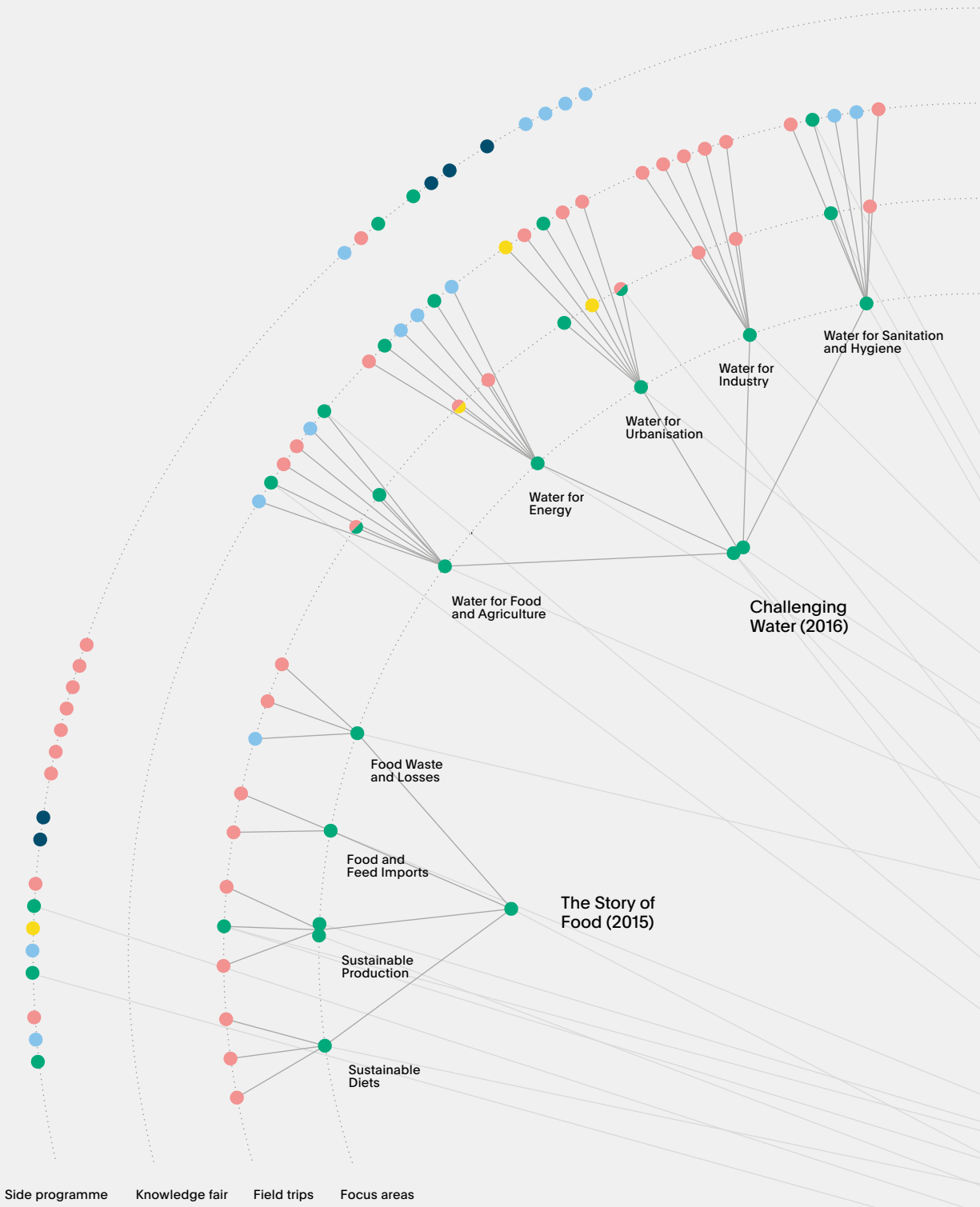
The 17 Sustainable Development Goals (SDGs) comprise 169 targets and balance the economic, social and ecological dimensions of sustainable development. While each edition of ETH Week addresses a societal topic that relates to a set of SDGs, we do not frame ETH Week solely under the umbrella of sustainability. It is our aim to engage all students in a discussion with many dimensions. Sustainable development remains a leading driver without being explicitly. In this way, the programme supports the SDGs by removing language barriers and fostering collaboration across a variety interests and mindsets.

needs to be solved, but rather represented an opportunity field, enabled by the interrelation of emerging technologies in the field of manufacturing and their impact on society. The goal was to bring students to design technological solutions while evaluating their implications not just on a technological but also on a human level. This edition therefore involved six professors from six different departments, presenting the three subtopics in pairs, engaging in a dialogue. All field trips and knowledge fair discussion partners were chosen in such a way that they were loosely linked to one or more of the focus areas. This approach was chosen as the goal of the students was to find synergies and combinations of fields and technologies instead of limiting their scope to a fixed focus area.

In 2018, the topic acknowledged the individual and their value system at the centre, surrounded by a technological system and a socio-political and economic layer. This enabled students to get a holistic understanding of the topic and to comprehend the interdependencies between these different layers.

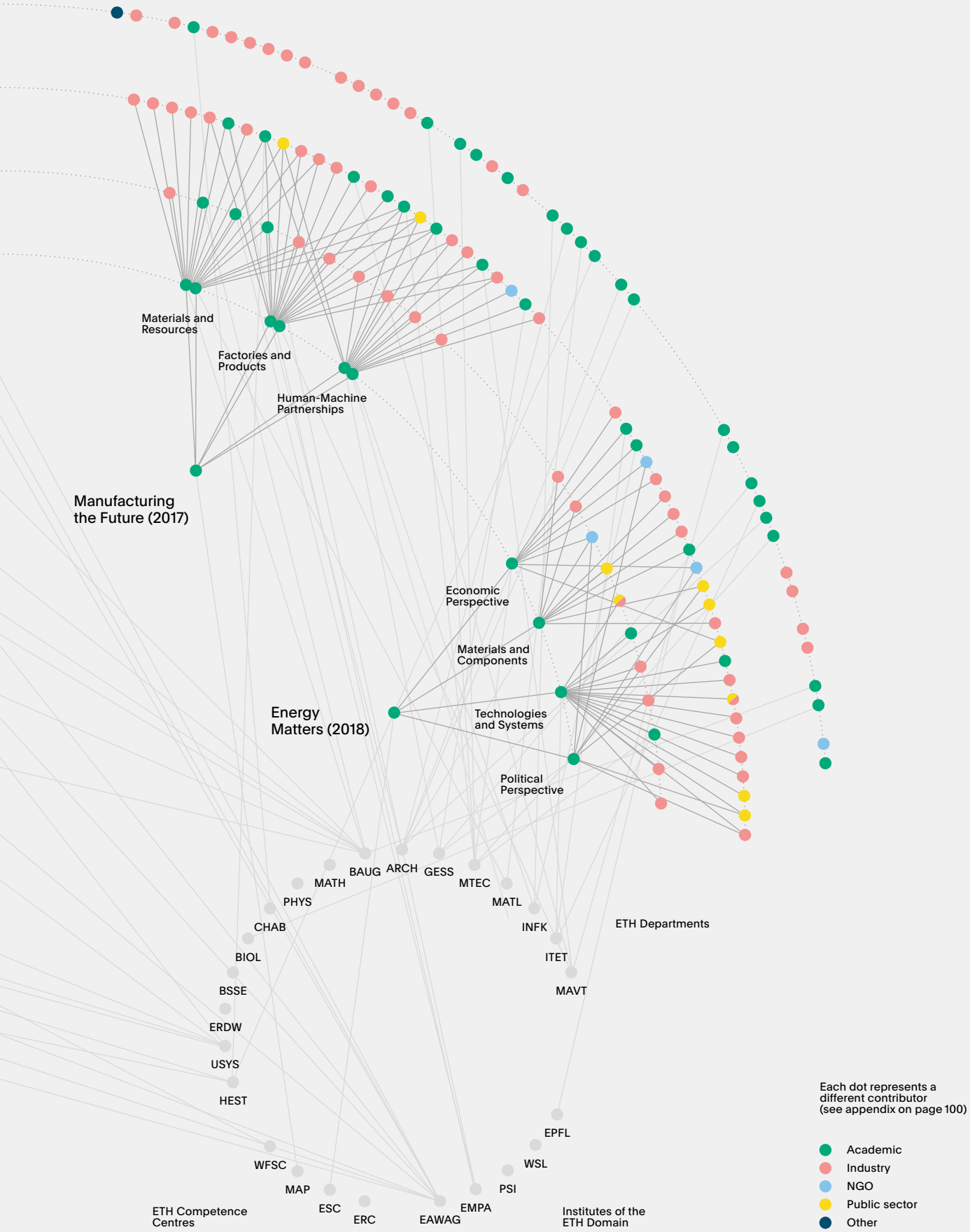
In this way, ETH Week aims to act as a platform against the compartmentalisation of knowledge. It also aims to make a contribution to how science and research can, in general, be brought together to overcome knowledge silos by self-reflecting on how research and technology can contribute to solving societal challenges. It brings together experienced specialists with a generation of students who have the opportunity to consider topics from a distance and in a conceptual and intuitive way by focusing on the bigger picture. It is hoped that the students in turn discover their individual paths and how they link to issues of social importance.

Indeed, since 2017, ETH Week has been affirmed to be an inclusive event, challenging all participants, students, professors, and staff to come together and shape a societal discussion. It demands that they no longer position themselves as niched experts and instead approach problems as generalists. This can only work if they all acknowledge that common learning is more important than individual disciplinary rigour. In this way, the organisers of ETH Week hope that this learning experience breaks down barriers, builds fruitful cooperation in the future, and equips students with the necessary skill sets to become agents for sustainable development and change in our society.



RICH PERSPECTIVES

The content is conveyed to the students through theoretical abstraction (overview lecture and focus area lectures) and through a plurality of people's lenses (field trips, knowledge fair, and side programme). They are structured along specific dimensions to create focus and balance. In total, stakeholders from four different sectors bring a real-world complexity to the programme. Hence, it combines theory and practice in a new way so that the students can build on the different approaches and understand how they relate to one another, ultimately also providing an opportunity to discuss the role of research in society.


Materials and Resources
Factories and Products
Human-Machine Partnerships
Manufacturing the Future (2017)
Economic Perspective
Materials and Components
Technologies and Systems
Political Perspective
Energy Matters (2018)
BAUG
ARCH
GESS
MTEC
MATH
MATL
PHYS
INFK
CHAB
ITET
BIOL
MAVT
BSSE
ERDW
USYS
HEST
ETH Departments
EPFL
WSL
WFSC
PSI
MAP
EMPA
ESC
ERC
EAWAG
ETH Competence Centres
Institutes of the ETH Domain
Each dot represents a different contributor (see appendix on page 100)
Academic
Industry
NGO
Public sector
Other

The opening evening of ETH Week 2017 in the Rapid Fabrication Hall during the inspiration night with Vice President Detlef Günther and six ETH spin-offs. The learnings from a discussion around failure are further discussed around dinner.

6 Outlook

About six years ago, a small team from across ETH Zürich set out to establish ETH Week as a new learning programme. We had a variety of backgrounds and ideas from across the institution and shared a strong desire to develop a new way of learning. In this last chapter, we draw personal conclusions and propose three approaches to build on this now established format.

CHANGE AGENTS

Our intention was to give young people a chance to personally engage in a real-world context before graduating to help them make decisions as they progress through their education and career. We wanted them to develop their critical thinking skills so that they could commit themselves to questioning the current state of the world and to shaping the future as change agents who combine a variety of roles to promote organisational change and to find alternative paths. If they are to succeed, they will need the tools to convince their colleagues and their superiors by distilling complex information into meaningful messages, and be able to motivate and inspire their peers while mitigating possible fears, just like during ETH Week.

GENERALISTS AND SPECIALISTS

The networks that ETH Week creates for each topic across researchers and practitioners represent a long-term value for ETH Zürich's institutional memory and its interdisciplinary capacity. When they are invited to give feedback on the students' projects, they are challenged to venture out of their own disciplinary comfort zones and often need to act more as generalists than specialists. There is indeed a similarity to convergence research that is generally driven by the need to address a specific challenge or opportunity. Further follow-up programmes could build on our use of the design process to serve as vehicles for triggering research across disciplinary frontiers.

6.1 Ideas turned into reality

At the beginning, our team set out to develop a teaching format that would allow all Bachelor's and Master's students of ETH Zürich to learn together and from each other, respectfully and regardless of their individual background or level of education. We wanted to give them the opportunity to take a critical look at the major challenges facing our society today while working in small interdisciplinary teams. To achieve these goals at an institutional level, we needed to lead by example and bring different ideas from across the institution together and implement the programme through collaboration. Our aim was to empower and motivate our students to contribute and develop solutions that are socially, economically, and environmentally in balance. In short, we wanted these young people to develop their critical thinking skills so that they could commit themselves to questioning the current state of the world and to shaping the future as change agents.

Today, we know that our vision has become reality and ETH Week is a cornerstone for innovative teaching at our university. When we look back, we can see that we have achieved more than what we hoped for originally. In 2015, we celebrated the 50th student registration. Today, we hold waiting lists. The last years have shown that our students are capable of tackling the breadth and depth of today's problems in collaboration with specialists and generalists, while integrating information from various stakeholders and experts in different fields. Participants engaged in meaningful, respectful conversations across knowledge frontiers to gain deeper understandings of complex issues. They learned to embrace interdisciplinary connections and not to be limited by disciplinary boundaries in developing their ideas. Forward-looking design thinking, in balance with critical reflection, helped them find system-oriented and sustainable solutions.

The students who became tutors and facilitators also confirm the success of ETH Week. These students were able to acquire so much competence through ETH Week that they are ready to train the next generation of tutors. Some of the former tutors even formed a new association that runs professional coaching and team leadership programmes within and outside ETH Zürich.

6.2 Good, but we can do even better

The annual evaluations that were carried out immediately after each ETH Week underlined the performance of the teaching format. And after five years, the programme has converged to a stable form and setup. For each one of the three target levels (see page 12), however, there are elements that could be developed further.

On the student level, there is an opportunity for a complementary follow-up programme with a focus on critical thinking. It could function in tandem with the existing "The Hatchery" initiative that gives students a chance to develop their initial ideas into functional prototypes. As a counterpart, it would extend the analytical side of the programme, giving students a chance to further develop their own stance towards the complex topic by continuing the critical analysis of the interconnected problems that were identified. This programme could help to reflect,

condense, and structure the common learnings of ETH Week. They could result in developing strategies and visions that then lead to white papers or potential interdisciplinary research projects. In this way, the design projects could serve as vehicles to trigger research.

On the level of the institution, the biggest opportunity for further development lies in the newly formed networks that ETH Week creates across scientific fields for each topic. These networks represent a long-term value for ETH Zürich's institutional memory and its interdisciplinary capacity. There is an opportunity to build on these initial networks by aligning ETH Week with other interdisciplinary initiatives, such as the Student Project House (SPH) or the ETH Singapore Month. In such a scenario, ETH Week could mark the beginning of an academic year followed by other educational or research formats, linking them together under a certain topic, and potentially even extending or benefiting other courses of the study programmes.

On a societal level, it is more difficult to assess the improvement potential of ETH Week as we are currently still evaluating the long-term effect of ETH Week within our alumni community. It remains to be seen whether ETH Week is successful in this long-term evaluation. However, preliminary results show that ETH Week has actually contributed to some career decisions already. Still, the target of being self-critical as an institution, reflecting the contribution of science and technology in society, has only been marginally discussed during the programme. This could be an opportunity for the development and maintenance of an alumni network where former students, who now have active roles within society, could meet current students to continue a more long-term discussion. Ideally, information would flow in both ways, from the current students to practitioners and vice versa. Such a network would support critical self-reflections, build on transdisciplinary approaches, continue the dialogue between specialists and generalists across hierarchies and disciplines, and help negotiate the collaboration of theory and practice.

6.3 A week that makes a difference

After five editions, we are now frequently confronted with the question of why we limit ETH Week to only 200 students. A concern that is often raised is that "as many students as possible should get the chance to participate in such a successful course". Although this critique is fundamentally correct, ETH Week has reached its maximum capacity with 200 students. In the current format, the teams with eight to ten students are already very large. With even more individual groups, both logistical and supervisory complexity would reach the limits of feasibility. The 200 students, around 20 speakers, ten parallel field trips, and more than 30 practitioners and stakeholders from academia, industry, the public sector, and NGOs already make the implementation of the current concept of ETH Week complex and logistically demanding. More importantly, a larger number of students would change the teaching quality, team spirit, and the atmosphere of ETH Week.

In our view, the next steps would be to explore the above-described complementary ideas and identify connections and synergies between different formats, or develop new ones. In principle, it would even be

possible to run multiple ETH Week editions within one year, which may be conducted under the alternating patronage of different departments. Another option would be a closer cooperation with other universities, for example the University of Zürich (UZH) or EPFL in Lausanne. Such solutions would enable us to expand both the spectrum of participating disciplines and the topics covered. Whether ETH Zürich wants to go down this path is at the discretion of the Executive Board.

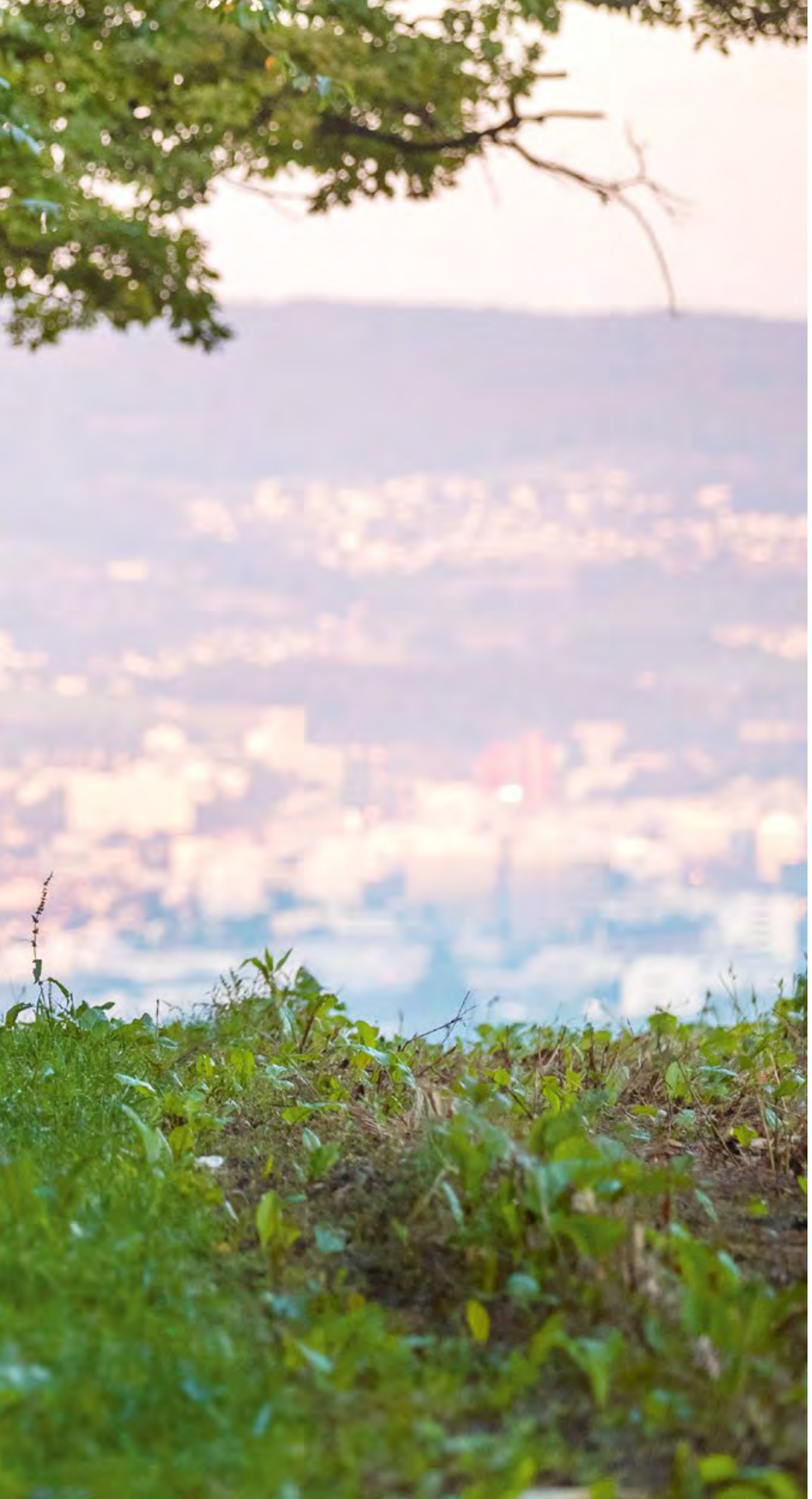
After five years of ETH Week, we now know that a single week can make a difference: it can provide stimulating impulses and have a lasting impact on the life of participants, on the collaboration within our institution, and on ETH Zürich's interaction with society. We hope that the ideas of ETH Week will remain relevant for our alumnae and alumni and that they will carry what they have learned out into the world.

Lex Schaul and Christine Bratrich,
on behalf of the entire ETH Week team

FEELING OF TOGETHERNESS

The interdisciplinary and intercultural collaboration between students also fosters a mutual commitment towards ETH Zürich and generates personal ties with the university. Part of our aim is to strengthen the sense of togetherness through which we identify as members of the institution and, ultimately, question our roles and the role of ETH Zürich in relation to society as a whole. On a more personal level, this was demonstrated by the commitment of the Rector and President (above right) to be present during ETH Week and to engage with the students, both formally during the core programme and informally during the side and sports programme. The students appreciated and respected this contribution tremendously.


Lee



Each day starts with the sports programme before the participants enjoy a shared breakfast in the ETH Week Hall. Traditionally, the Rector reserves time in the middle of the week to join the running team, composed of students and organisers alike.

Organising team, tutors, facilitators, and guides of the first edition:

ETH WEEK TEAM	
Overall responsibility	Lino Guzzella, Sarah M. Springman
Steering Board	Stefano Brusoni, Reto Knutti, Andreas Vaterlaus
Project lead	Christine Bratrich
Project coordination	Ulrike Messmer
Programme development	Christine Bratrich, Stefano Brusoni, Anita Buchli, Nina Buchmann, Katrin Fenner, Reto Knutti, Ulrike Messmer, BinBin Pearce, Florian Rittiner, Lex Schaul, Andreas Vaterlaus, Achim Walter, Bernhard Wehrli, Julia Wysling
Topic development	Claudio Beretta, Antoine Champetier, Michelle Grant, Anna Gilgen, Wolfgang Langhans, Mayte Morillas Arcos, Christian Stamm, Achim Walter
Tutor training	BinBin Pearce, Elke Tomforde, Benno Volk
Project support	Alice Chau
Logistics	Ann Van der Aa, Olivia Kolbe
Sports programme	Renato Maggi
TUTORS, FACILITATORS, AND GUIDES	
Tutors	Franziska Akert, Wilfred Elegba, Kathrin Fuchs, Christian Giang, Danielle Griego, Johannes Heck, Julian Helfenstein, Melanie Imfeld, Tscherina Janisch, Parvathy Krishnan, Barbara La Cara, Lukas Sigrist, Joep van Dijk, Judith Wemmer, Imanol Zabaleta
Facilitators	Stefan Breit, Stefano Brusoni, Alan Cabello Llamas, Anna Déreky, Aurelia Müggler, Florian Rittiner, Regina Vogel
Research guides	Fabiola Alig, Lukas Böcker, Lisa Bounoure, Anna Gilgen, Hannes Hübner, Klaus Jarosch

The list of contributors of the first societal topic, complementing the graph on pages 86–87:

OPENING AND CLOSING			
Sarah M. Springman	Rector, ETH Zürich	Opening event	●
Julia Wysling	Student and former president of VSETH, ETH Zürich	Opening event	●
Lino Guzzella	President, ETH Zürich	Closing event	●
Reto Knutti	Associate Vice President for Sustainability, ETH Zürich	Closing event	●
TOPIC OVERVIEW			
Nina Buchmann	World Food System Centre, ETH Zürich	The Story of Food	●
Michelle Grant	World Food System Centre, ETH Zürich	The Story of Food	●
FOCUS AREAS			
Claudio Beretta	Ecological Systems Design, ETH Zürich	Food Waste and Losses	●
Antoine Champetier	Agricultural and Resource Economics, ETH Zürich	Food and Feed Imports	●
Wolfgang Langhans	Physiology and Behaviour, ETH Zürich	Sustainable Diets	●
Christian Stamm	Environmental Chemistry, Eawag	Sustainable Production	●
Achim Walter	Crop Science, ETH Zürich	Sustainable Production	●

FIELD TRIPS			
Anonymous	Basimilch Cooperative	Industry	
Stephan Heck	DSM Nutritional Products	Industry	
Manuel Klarmann	Eaternity and Compass Group	Industry	
Frank Liebisch	Strickhof, Agridea, and ETH Research Station for Plant Sciences	Academic	
Max Messmer	Urban Farmers	Industry	
Rika Schneider	St. Jakob Beck and Ässbar	Industry	
Alex Stäheli	Tischlein Deck Dich	NGO	
Markus Stalder	Fenaco Cooperative	Industry	
Markus Staub	Max Havelaar	Industry	
Paul Verbraeken	Evolva	Industry	
Stefan Weber	Frigemo	Industry	
Fritz Wyder	St. Jakob Beck and Ässbar	Industry	
WIDE-ANGLE LECTURES			
Marc Chesney	Institute for Banking and Finance, University of Zürich	Academic	
Rupa Mukerji	Helvetas	NGO	
Eliana Zamprogna	Bühler AG	Industry	
JURY			
Kathrin Fenner	Environmental Chemistry, Eawag	Academic	
Reto Frei	Co-Founder, Tibits	Industry	
Thomas Gumbsch	President, VSETH, ETH Zürich	Academic	
Silke Meyns	ETH Transfer, ETH Zürich	Academic	
Chantal Weibel	President, Fachvereinsrat, ETH Zürich	Academic	
SIDE PROGRAMME			
Guido Albrecht	Bierakademie Schweiz	Workshop	
João Almeida	Refiller	Marketplace	
Elizabeth Bernold	FehrAdvice & Partners	Marketplace	
Lukas Bühler	Carbon Queen	Marketplace	
Patrick Camele	SV Group	Panellist	
Erich Fässler	WormUp	Marketplace	
Kathrin Fenner	Environmental chemistry, Eawag	Panellist	
Matthias Grawehr	Essento	Workshop	
Alain Kamm	FehrAdvice & Partners	Marketplace	
Bernhard Lehmann	Swiss Federal Office of Agriculture (BLW)	Panellist	
Thomas Lehmann	Zum guten Heinrich	Marketplace	
Rebecca Näf	Essento	Workshop	
Urs Niggli	FiBL	Panellist	
Linn Nilsen	Center for Development and Cooperation, ETH Zürich	Feedback	
Nicolai Räber	WormUp	Marketplace	
Romy Scheidegger	Refiller	Marketplace	
Sarah Steiner	WormUp	Marketplace	
Bernhard Wehrli	Institute of Biogeochemical and Pollutant Dynamics ETH Zürich, and Eawag	Panel moderator	
Alexis Wiasmitinow	Everycook	Marketplace	
Patrick Zbinden	Food Journalist	Workshop	

Organising team, tutors, and facilitators of the second edition:

ETH WEEK TEAM	
Overall responsibility	Sarah M. Springman
Steering Board	Christine Bratrich, Stefano Brusoni, Reto Knutti, Andreas Vaterlaus
Project lead	Lex Schaul
Project coordination	Melanie Imfeld, Cyrill Zosso
Programme development	Christine Bratrich, Stefano Brusoni, Anita Buchli, Paolo Burlando, Alan Cabello Llamas, Gerd Folkers, Reto Knutti, Marion Lehner, Lukas Möller, Darcy Molnar, Lex Schaul, Elke Tomforde, Andreas Vaterlaus, Bernhard Wehrli, Benno Volk
Topic development	Helge Fuchs, Stefanie Hellweg, Max Maurer, Darcy Molnar, Eberhard Morgenroth, Bernhard Wehrli, Christian Zurbrügg
Tutor training	Linda Armbruster, Alan Cabello Llamas, Marion Lehner, Elke Tomforde, Benno Volk
Project support	Pia Aeschlimann
Logistics	Anahita Zelger, Daniel Kottmann
Sports programme	Renato Maggi

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Tutors	Hazem Ahmed, Dominic Bernath, Sander de la Rambelje, Wilfred Elegba, Julian Helfenstein, Maya Hiltpold, Jannes Jegminat, Daniel Langmeier, Laura Merseburger, Jesko Mueller, Stefanie Katharina Müller, Andrea Popp, Raphael Portmann, Dhivyabharathi Ramasamy, Sara Tatiana Roldan Velasquez, Jennifer Schmitz, Alexandra Waskow, Imanol Zabaleta, Axel Zeijen
Facilitators	Jose Arrieta, Linda Armbruster, Stefano Brusoni, Sonja Förster, Hans Kaspar Hugentobler, Daniella Laureiro-Martínez, Florian Rittiner, Amulya Tata, Regina Vogel

The list of contributors of the second societal topic, complementing the graph on pages 86–87:

OPENING AND CLOSING		
Gerd Folkers	Head of the Critical Thinking Initiative, ETH Zürich	Opening and closing event ●
Lukas Möller	Student and President of VSETH, ETH Zürich	Opening event ●
Sarah M. Springman	Rector, ETH Zürich	Closing event ●

TOPIC OVERVIEW		
Darcy Molnar	Institute of Environmental Engineering, ETH Zürich	Challenging Water ●
Bernhard Wehrli	Institute of Biogeochemical and Pollutant Dynamics ETH Zürich, and Eawag	Challenging Water ●

FOCUS AREAS		
Helge Fuchs	Hydrology and Glaciology, ETH Zürich	Water for Energy ●
Stefanie Hellweg	Ecological Systems Design, ETH Zürich	Water for Food and Agriculture ●
Max Maurer	Urban Water Systems, ETH Zürich and Eawag	Water for Urbanisation ●
Eberhard Morgenroth	Process Engineering, ETH Zürich and Eawag	Water for Industry ●
Christian Zurbrügg	Solid Waste Management, Eawag	Water for Sanitation and Hygiene ●

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Assumpcio Anton	IRTA Research Institute	Academic
Eva Baier	Fischwanderung.ch	Industry
Karin Bartel	PUCP Research Institute	Academic
Christoph Doerr	F. Hoffmann-La Roche	Industry
Roland Enderli	Bühler Yarns	Industry
Francesc Ferrer-Alegre	LabFerrer	Industry
Patricia Fischer	F. Hoffmann-La Roche	Industry
Thomas Gabriel	Hardwasser, Pratteln	Industry
Peter Hunziker	SH Power	Industry
Isabell Köpping	Nest Building, Eawag	Academic
Monica Lehmann	Coca-Cola Schweiz	Industry
Fritz Meier Jr.	Gebrüder Meier	Industry
Laila Rüesch	Kompotoi	Industry
Martin Studer	F. Hoffmann-La Roche	Industry
Ian Vazquez Rowe	PUCP Research Institute	Academic
Urs von Gunten	Water Resources and Drinking Water, Eawag	Academic
Stefan Wassmer	Winterthur Municipal Utility	Public sector
Alain Zaessinger	ProRheno	Industry

KNOWLEDGE FAIR

Luc Amgwerd	Gjosa	Industry
Daniela Anghileri	Swiss Competence Center for Energy Research Supply of Electricity	Academic
Sreenath Bolisetty	Bluact Technologies	Industry
Valérie Cavin	Helvetas	NGO
Ulrike Feldmann	Wings	Academic
Max Friedrich	Science Department, Eawag	Academic
Carlo Galli	Nestlé	Industry
Miriam Harter	Department Environmental Social Sciences, Eawag	Academic
Gerhard Hauber	Studio Dreiseitl	Industry
Anja Herlyn	Wifpartner	Industry
Sabine Hoffmann	Wings	Academic
Carolin Hoyer	Unilever	Industry
Klaus Jorde	KJ Consult	Industry
Regula Meierhofer	Gravity-Driven Membrane Filtration, Eawag	Academic
Mona Mijthab	Mosan	Industry
Roni Penn	Water Reuse in Israel, Eawag	Academic
Stephan Pfister	Technical Advisory Group on Water, FAO	NGO
Christoph Rusch	Joulia	Industry
Raphael Schilling	Coop Switzerland	Industry
Holger Schürle	Neoperl	Industry
Sonia Seneviratne	Land-Climate Group, ETH Zürich	Academic
Tobias Siegfried	Hydrosolutions	Industry
Philipp Staufer	Office for the Environment, Canton Solothurn	Public sector
Ursula Stocker	VUE – Verein für Umweltgerechte Energie	NGO
Eduardo van den Berg	Pharmafilter	Industry
Luca Vetterli	Pro Natura	NGO
Stefan Vollenweider	Wasseragenda 21	NGO
Hanspeter Walser	HP Walser Kleinkraftwerke	Industry
Irene Wittmer	VSA Information Platform	NGO

WIDE-ANGLE LECTURES

Maude Barlow	The Council of Canadians	NGO
Suzanne Thoma	BKW Energie	Industry
Klement Tockner	Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB)	Academic

FEEDBACK			
Nico Derlon	Process Engineering, Eawag	Academic	●
Christoph Lüthi	Sandec, Eawag	Academic	●
Jasmine Mertens	Biogeochemistry and Pollutant Dynamics, ETH Zürich	Academic	●
Matthew Moy de Vitry	Urban Water Management, Eawag	Academic	●
Mariane Schneider	Urban Water Management, Eawag	Academic	●
Volker Weitbrecht	Hydraulics, Hydrology and Glaciology (VAW), ETH Zürich	Academic	●
JURY			
Stefano Brusoni	Technology and Innovation Management, ETH Zürich	Academic	●
Anita Buchli	Rectorate staff, ETH Zürich	Academic	●
Paolo Burlando	Institute of Environmental Engineering, ETH Zürich	Academic	●
Alan Cabello Llamas	Spark Labs, ETH Zürich	Academic	●
Darcy Molnar	Institute of Environmental Engineering, ETH Zürich	Academic	●
Bernhard Wehrli	Institute of Biogeochemical and Pollutant Dynamics ETH Zürich, and Eawag	Academic	●
SIDE PROGRAMME			
Andreas Batliner	Drink and Donate	Inspiration night	●
Ernst Bromeis	Long-distance Swimmer and Water Ambassador	Inspiration night	●
Danielle Bürgin	Viva con Agua	Inspiration night	●
Lino Guzzella	President, ETH Zürich	Inspiration night	●
Niklaus Holbro	MSABI Organisation	Inspiration night	●
Michael Kropac	cewas	Inspiration night	●
Danielle Lalive	Lalive Moderations	Critical thinking night	●
George Steinmann	Visual artist, musician, and researcher	Critical thinking night	●
Hartmut von Sass	Collegium Helveticum, University of Zürich	Critical thinking night	●

Organising team, tutors, and facilitators of the third edition:

ETH WEEK TEAM	
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Project lead	Lex Schaul
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Programme development	Stefano Brusoni, Alan Cabello Llamas, Lex Schaul, Larissa Schefer
Topic development	Ingo Burgert, Fabio Gramazio, Gudela Grote, André Studart, Andreas Krause, Mirko Meboldt, Larissa Schefer
Tutor training	Linda Armbruster, Alan Cabello Llamas, Marion Lehner
Project support	Pia Aeschlimann, Monika Molnar
Logistics	Ann Van der Aa, Daniel Kottmann
Sports programme	Renato Maggi
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Stelian Coros	Computational Robotics	Concluding panel	●
Benjamin Dillenburger	Digital Building Technologies	Concluding panel	●
Andri Fritz	Franke Water Systems	Technical panel	●
Wulf Glatz	greenTEG	Inspiration night	●
Sunnie J. Groeneveld	Inspire 925	Panel moderator	●
Keith Gunura	noonee	Inspiration night	●
Samuel Halim	Avantama	Inspiration night	●
Hans Hess	President, Swissmem	Inspiration night	●
Lucio Isa	Interfaces, Soft Matter and Assembly	Concluding panel	●
Oliver Kläusler	Swiss Wood Solutions	Inspiration night	●
Russell Loveridge	NCCR Digital Fabrication	Robotics night	●
Michael Lyrenmann	RFL, ETH Zürich	Robotics night	●
Kathrin Michel	Rahn	Technical panel	●
Torbjörn Netland	Production and Operations Management, ETH Zürich	Panel moderator	●
Sandra Neumann	Peripal	Inspiration night	●
Larissa Schefer	Materials and Processes (MaP), ETH Zürich	Panel moderator	●
Johannes Schumm	Sensirion	Societal panel	●
Simone Schürle	Responsive Biomedical Systems	Concluding panel	●
Tobias Straumann	Economic History, UZH	Societal panel	●
Jan-Egbert Sturm	KOF Swiss Economic Institute, ETH Zürich	Societal panel	●
Samuele Tosatti	SuSoS	Inspiration night	●
Toni Wäfler	Applied Psychology, FHNW	Societal panel	●
Paolo Zanone	Bühler	Technical panel	●
Jan Zimmermann	Forster Rohner Textile Innovations	Technical panel	●

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The list of contributors of the fourth societal topic, complementing the graph on pages 86–87:

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ETH Week is a teaching programme that gives students the chance to follow a collaborative design process across disciplinary boundaries. It brings together up to 200 Bachelor's and Master's students every year. They come from all study programmes within ETH Zürich, a technical university in Switzerland. Each edition addresses a major societal topic, providing students with the opportunity to engage with real-world problems and to find solutions by pursuing their own interests, such as sustainable development, innovation, design thinking, or interdisciplinary learning. Students are not handed a pre-defined problem. They are instead responsible for defining the scope of their work within the relevant topic. The learning objectives are centred on students gaining domain-specific knowledge, improving analytical and design skills, strengthening social competence and enhancing self-competence. The programme is defined in an open manner, providing room to think. It requires students to rapidly learn together in teams, to collaborate across disciplines and boundaries, to think critically, to define a tangible problem, and to create a workable solution.

This book explores the origins of ETH Week and explains the rationale behind the design of the programme and learning environment. It reflects on results achieved during the first four editions and aims to provide valuable insights into transformative learning, so that future programmes may build on our findings.

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