

## 10.3

# Performance mandate of the Federal Council to the ETH Domain for the period 2013-2016

### Introduction

The core remit of the ETH Domain, comprising the two Federal Institutes of Technology in Zurich (ETH Zurich) and Lausanne (EPFL) and the four research institutes – the Paul Scherrer Institute (PSI), the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), the Swiss Federal Laboratories for Materials Testing and Research (EMPA) and the Swiss Federal Institute of Aquatic Science and Technology (EAWAG), is outlined in Article 2 of the ETH Law. The following performance mandate sets out the strategic objectives and sub-objectives drawn up by the Federal Council for the ETH Domain for the 2013-2016 performance period. As well as strategic priorities it also contains financial, infrastructural and staff objectives.

### A. Strategic goals

#### *Objective 1: Teaching*

The ETH Domain will provide teaching that is first-class in an international comparison and attractive to students.

Sub-objective 1: It will develop young scientific talent in the hard sciences, the natural and engineering sciences as well as in architecture and make a significant contribution to ensuring that science and education, the economy and administration have sufficient specialist and management staff at their disposal.

Sub-objective 2: It will promote dialogue and exchange between the natural and engineering sciences on the one hand, and the social sciences and the arts on the other. It will intensify the links between these disciplines as a contribution towards addressing global challenges. It will also promote cross-disciplinary competences in the courses of study and, wherever practicable, in continuing education courses.

Sub-objective 3: It will promote new forms of teaching and learning. Courses of study will be geared consistently to the learning outcomes to be achieved in accordance with the Qualifications Framework for the Swiss Higher Education Area (nqf.ch-HS).

Sub-objective 4: It will ensure the provision of top-quality teaching, in particular by enhancing supervision, by appointing, promoting and compensating teaching staff on the basis of their skills and performance in teaching and research, and by offering didactic continuing education courses. The ETH Domain will regularly review the quality of teaching using evaluation tools and also develop and establish a concept in coordination with the Federal Statistical Office for reviewing the ongoing development of its graduates (monitoring of educational output).

Sub-objective 5: It will promote the national and international mobility of students.

Sub-objective 6: It will ensure the provision of a varied range of high-quality continuing education courses and in doing so make an important contribution towards lifelong learning. Continuing education courses will be offered at customary market prices wherever a market exists.

*Objective 2: Research*

The ETH Domain will further expand its leading position in international research.

Sub-objective 1: It will pursue basic research geared towards scientific insight and sustainability in the service of society and the economy, and provide scope for exploratory research.

Sub-objective 2: It will pursue applied research and development activities in the service of society and the economy.

Sub-objective 3: It will strive towards the utmost quality in research. It will commit itself to disseminating and complying with the principles of scientific integrity and ethical guidelines.

Sub-objective 4: It will set priorities in the following subject areas: production processes (advanced manufacturing technologies), energy and sustainable development (energy technologies for a sustainable world), life sciences (engineering for life sciences), environmental research (environmental systems and technologies) and the further development of scientific methods (methods and platforms for the advancement of science).

Sub-objective 5: It will maintain strategic alliances with selected technology competence centres and research institutions, in Switzerland namely with CSEM and Inspire AG as well as Idiap, IRO, Swiss TPH and IRB.

*Objective 3: Knowledge and technology transfer (KTT)*

In order to reinforce Switzerland's innovative strength and competitiveness, the ETH Domain will promote the transfer of its insights and competences to society and the economy. It will further develop its KTT strategy and implement it consistently.

Sub-objective 1: It will strengthen cooperation with industry and the public sector, among other things by means of joint projects and services.

Sub-objective 2: It will make use of the opportunities for partnerships with industry and the public sector and play an active part in national innovation networks.

Sub-objective 3: It will promote an integrated understanding of the different phases in the innovation process and the various disciplines involved, which will then be adopted in the overall innovation process.

Sub-objective 4: It will create favourable conditions and a stimulating environment for the individual initiatives of its members in KTT and for the establishment of spin-offs. It will promote entrepreneurship.

Sub-objective 5: It will play an active part in the design and implementation of the national innovation park strategy.

#### *Objective 4: Research infrastructures and large-scale research projects*

The ETH Domain will operate existing research infrastructures of nationwide importance, implement projects in accordance with the "Swiss Roadmap for Research Infrastructures" and, in case of success, participate in European flagship projects.

Sub-objective 1: It will continue to operate large research infrastructures of nationwide importance and make these available to academic users and, subject to settlement of the full costs, users from the private sector.

Sub-objective 2: As part of the implementation of the High-Performance Computing and Networking Strategy (HPCN), the new Swiss National Supercomputing Centre (CSCS) in Lugano-Cornaredo will be put into operation. CSCS is affiliated to ETH Zurich, but is available to all Swiss tertiary and research institutions for scientific projects and provides services to users from the private sector subject to settlement of the full costs. The ETH Domain will take measures within the scope of its financial capacity to ensure that the Centre is able to continue to keep pace internationally with the development of performance in the field of supercomputing.

Sub-objective 3: At the Paul Scherrer Institute, the X-ray free-electron laser SwissFEL will be completed and put into operation. It will be available to all Swiss tertiary and research institutions and, subject to settlement of the full costs, to users from the private sector for scientific experiments.

Sub-objective 4: At ETH Lausanne, the neuroinformatics project Blue Brain will be pursued further as a national network. The HPC infrastructure required for this will be installed in cooperation with CSCS.

Sub-objective 5: In case of success, the ETH Domain will participate in *FET flagship projects*. It will also participate in the ICOS and EPOS projects and in other national and international research infrastructure projects in accordance with its own priorities.

#### *Objective 5: International positioning and cooperation*

The ETH Domain will continue to expand its cooperation and networking in teaching and research with the best institutions in the world and strengthen its international profile.

Sub-objective 1: The ETH Domain will strengthen its attractiveness for particularly talented students and teaching staff as well as leading researchers from across the world.

Sub-objective 2: ETH Zurich and ETH Lausanne will continue to assume the role of leading houses in bilateral research cooperation with emerging countries, in line with Switzerland's international strategy in the field of education, research and innovation.

Sub-objective 3: The ETH Domain will create favourable conditions for bottom-up initiatives for international cooperation and make use of strategic alliances and networks with tertiary institutions, research institutions and companies across the world.

*Objective 6: National cooperation*

The ETH Domain will ensure greater cooperation within both the Domain and the Swiss higher education landscape.

Sub-objective 1: It will strengthen cooperation within the ETH Domain by means of joint projects – including between the two Federal Institutes of Technology – and continue to operate its centres of competence in the areas of Energy and Mobility (CEM), Environment and Sustainability (CCES), Materials Science and Technology (CCMX) and Biomedical Imaging (NCCBI).

Sub-objective 2: It will enhance the joint presence of the institutions in a targeted manner by placing a stronger emphasis on their common bonds and Swiss character through innovations to that presence, while upholding the strong 'brands', and by creating a brand identity for the Domain without curtailing the autonomy of the individual institutions.

Sub-objective 3: It will develop a strategy for strengthening translational research and the training of research staff in the field of medicine together with the cantonal universities and hospitals.

Sub-objective 4: It will cooperate with cantonal universities and universities of applied sciences in teaching and research and play an active part in reshaping the Swiss higher education landscape in accordance with the Federal Act on the Funding and Coordination of the Higher Education Sector.

Sub-objective 5: It will participate in selected programmes and projects of the Swiss University Conference (SUC), assuming a leading role in the two national strategic initiatives SystemsX.ch and Nano-Tera.ch.

*Objective 7: Role in society and national tasks*

The ETH Domain will maintain a dialogue with society and fulfil tasks of national interest.

Sub-objective 1: Within the scope of its mandate, it will make an active contribution to the sustainable development of society, the business world and the environment.

Sub-objective 2: It will promote dialogue with society and make scientific insights accessible in a comprehensible manner to the public at large.

Sub-objective 3: It will carry out a wide range of activities aimed at improving understanding and interest for MINT subjects in society and among schoolchildren.

Sub-objective 4: It will fulfil so-called national tasks on behalf of society, for example within the scope of the Swiss Seismological Service, the KOF Swiss Economic Institute, the National Forest Inventory, avalanche warnings and the Swiss Centre for Applied Ecotoxicology (Ecotox Centre).

## **B. Financial and infrastructural objectives**

### *Objective 8: Sources of financing and allocation of funds*

The ETH Domain will enhance its financing basis and efficiently deploy the available funds.

Sub-objective 1: It will increase second-party resources and third-party funding, as long as the indirect costs thereby incurred do not jeopardise its principal mission and the sustainable development of the institutions. It will disclose indirect costs and allocate these whenever possible.

Sub-objective 2: It will continue to pursue measures aimed at enhancing efficiency and make use of the benefits of coordination and cooperation between the institutions, among other things in terms of procurement.

Sub-objective 3: When applying the criteria for the allocation of funds it will particularly take into account its strategic objectives, the academic performance of the individual institutions and the financial burdens entailed by teaching, research and KTT activities and other tasks (especially national tasks).

Sub-objective 4: The ETH Board will draw up a strategy for the participations of the ETH Domain. As part of its reporting, the ETH Domain will disclose its participations and report on their purpose in the context of the performance mandate and the associated risks.

### *Objective 9: Real estate management*

The ETH Domain will coordinate the management of properties and real estate and ensure that both value and functionality are maintained.

Sub-objective 1: It will plan and coordinate the long-term development of the real estate and infrastructure with regard to the foreseeable needs of teaching, research, and knowledge and technology transfer. It will make targeted investments in maintaining the value and functionality of the real estate portfolio assigned to it and in necessary expansions.

Sub-objective 2: It will support the objectives of sustainable development through its real estate management. It will make use of the latest technologies and concepts of sustainable building and take into account the property-related life cycle costs during planning, in particular the operating and maintenance costs.

Sub-objective 3: As far as possible, it will ensure access to buildings and facilities for students and staff with disabilities.

Sub-objective 4: It will review options for enhancing the flexibility of real estate management and implement these with suitable measures.

### **C. Staff objectives**

#### *Objective 10: Working conditions, equal opportunities and young scientific talent*

The ETH Domain will create attractive and family-friendly working conditions, promote equality of opportunity and develop young scientific talent.

Sub-objective 1: It will promote young scientific talent, strengthen the middle-ranking academic staff and the administrative and technical personnel, and provide good career opportunities. In doing so, it will take into account gender-specific differences in career planning

Sub-objective 2: It will support women at all levels and in all functional groups. It will ensure a substantial increase in the proportion of women in management positions and on decision-making bodies.

Sub-objective 3: It will promote flexible working time models that facilitate the compatibility of family and career at all levels and for both genders, and ensure the provision of a sufficient range of childcare facilities.

Sub-objective 4: It will utilise and promote the flexibility of the salary system and working conditions for the benefit of staff and in line with the needs of tertiary and research institutions.

Sub-objective 5: It will support the professional reintegration of persons with disabilities and create the best possible working conditions for them.

### **D. Reporting, evaluation and monitoring**

The consolidated reporting of the ETH Board on the ETH Domain will comprise three parts:

- The annual report – together with the annual financial statements – will provide the usual information of an annual report. In particular, it will report on progress made, the extent to which the performance mandate has been discharged and how the resources have been used. The report will examine the ETH Domain and specify its strengths, weaknesses and challenges. The ETH Board will ensure that the institutions carry out comparisons in selected areas and in accordance with their respective profile, in particular also with international top performers.
- The ETH Board will prepare a self-evaluation report half way through the performance period which provides an overview of the extent to which the objectives of the performance mandate have been fulfilled and supplies bibliometric data that it is not possible to collect annually. This report will serve as the basis for the external evaluation (peer review) commissioned by the responsible government department.
- At the end of the performance period, the ETH Board will prepare a final report for submission to the Swiss Federal Assembly. This will comprise a concluding summary on the fulfilment of the performance mandate.

### *Evaluation by the responsible department*

The responsible government department will review the fulfilment of the performance mandate in accordance with the budget appropriation and, in case of non-fulfilment of the objectives, will ask the Federal Council to take appropriate measures. The department will carry out an evaluation of the performance of the ETH Domain in mid-2015 for which it will draw on external experts. The ETH Board will state its position on the evaluation report. The evaluation report and the position of the ETH Board will form the interim report, which will be forwarded to the Federal Assembly together with the proposal for the next performance period (Art. 34a ETH Law).

### *Monitoring of the performance of the ETH Domain (monitoring table)*

The extent to which the objectives have been achieved will be assessed by means of qualitative statements in the reports of the ETH Board and set out in quantitative terms using relevant indicators, in particular those featured in the following monitoring table. This is to be supplemented for the years 2013 to 2016.

| Indicators                                     | Reference values |        |          |
|--|------------------|--------|----------|
|  | 2004             | 2008   | 2010 [1] |
| <b>TEACHING</b>                                |                  |        |          |
| <b>Students</b>                                |                  |        |          |
| <b>Students excl. doctoral students</b>        | 14,354           | 16,233 | 18,696   |
| Percentage women                               | 27.4 %           | 29.3 % | 29.4%    |
| Percentage foreigners [2]                      | 19.8 %           | 27.2 % | 31.3%    |
| Diploma programme                              | 7,741            | 751    | 191      |
| Bachelor's programme                           | 5,969            | 10,138 | 11,716   |
| Master's programme                             | 0                | 4 649  | 5 997    |
| Postgraduate programme                         | 644              | 695    | 792      |
| Supervision ratio [3]                          |                  |        |          |
| BA/MA students per professor                   | 24.3             | 25.1   | 26.1     |
| Teaching by research institutes [4]            | 10,145           | 15,569 | 15,950   |
| <b>Doctoral students</b>                       | 3,987            | 4,823  | 5,408    |
| Percentage women                               | 24.5 %           | 28.6 % | 30.4 %   |
| Percentage foreigners [2]                      | 57.0 %           | 62.5 % | 67.2 %   |
| Supervision ratio [3]                          |                  |        |          |
| Doctoral students per professor                | 7.1              | 7.8    | 7.9      |
| <b>Students incl. doctoral students</b>        | 18,341           | 21,056 | 24,104   |
| Percentage women                               | 26.7 %           | 29.1 % | 29.7 %   |
| Percentage foreigners [2]                      | 27.9 %           | 35.3 % | 39.4 %   |
| Supervision ratio [3]                          |                  |        |          |
| Students incl. doctoral students per professor | 32.5             | 34.0   | 35.1     |
| <b>New admissions</b>                          |                  |        |          |
| Bachelor's programme                           | 2,922            | 4,052  | 4,527    |
| <b>Graduations</b>                             |                  |        |          |
| <b>Bachelor's</b>                              | 1                | 1,656  | 1,887    |
| Percentage women                               | 0.0 %            | 27.1 % | 29.3 %   |
| Percentage foreigners [2]                      | 100.0 %          | 16.8 % | 18.8 %   |
| <b>Diploma, Master's</b>                       | 1,723            | 1,978  | 1,896    |
| Percentage women                               | 23.0 %           | 27.0 % | 28.7 %   |
| Percentage foreigners [2]                      | 15.1 %           | 21.3 % | 31.3 %   |

| Indicators   | Reference values |         |          |
|--|------------------|---------|----------|
|  | 2004             | 2008    | 2010 [1] |
| <b>Doctorate</b>   | 719              | 832     | 986      |
| Percentage women   | 28.0 %           | 25.2 %  | 29.4 %   |
| Percentage foreigners [2]  | 54.9 %           | 59.1 %  | 59.7 %   |
| <b>RESEARCH</b>  |                  |         |          |
| <b>Publications [5]</b>  |                  |         |          |
| <b>Second-party resources and third-party funding</b>              | 454.2            | 706.4   | 763.6    |
| as percentage of financial contribution                            | 25.4 %           | 36.2 %  | 35.9 %   |
| Second-party resources   | 241.6            | 323.8   | 408.5    |
| of which SNF   | 100.0            | 141.6   | 192.5    |
| of which CTI   | 28.3             | 26.1    | 33.1     |
| of which EU  | 49.0             | 97.7    | 110.4    |
| Third-party funding  | 104.3            | 230.5   | 210.3    |
| <b>KNOWLEDGE AND TECHNOLOGY TRANSFER</b>                           |                  |         |          |
| New patent registrations   | 186              | 155     | 165      |
| Licences   | 111              | 103     | 178      |
| Spin-offs  | 25               | 46      | 38       |
| <b>PERSONNEL [7]</b>   |                  |         |          |
| Professors   | –                | 612     | 690      |
| Percentage women   | –                | 10.3 %  | 10.9 %   |
| Percentage foreigners [2]  | –                | 60.7 %  | 64.2 %   |
| Scientific personnel [8]   | –                | 7 955   | 8 991    |
| Technical and administrative staff                                 | –                | 4 727   | 5 049    |
| Apprentices  | –                | 386     | 396      |
| <b>FINANCES / REAL ESTATE (in m CHF)</b>                           |                  |         |          |
| Internal resources   | 1,788.2          | 1,949.4 | 2,129.9  |
| of which federal financial contribution                            | 1,603.0          | 1,778.4 | 1,984.5  |
| of which investment credit of the Federal government for buildings | 185.2            | 170.9   | 145.4    |

In order to ensure comparability, the reference values of the years 2004 and 2008 were adjusted in accordance with the counting method applied by the ETH Board since 2010 (cf. 2010 Annual Report, 'Progress 2010', p.78). This results in some deviations from the figures published in earlier annual reports and in the 2008-2011 ERI Message.

- [1] or the most recent figures at the end of the previous period, i.e. 2012
- [2] Students and professors with non-Swiss nationality
- [3] Undergraduates or doctoral students per professor
- [4] Number of hours per year, partly based on estimates
- [5] Publishing activity is assessed every four years as part of the interim evaluation
- [6] including service revenues and financial result
- [7] in full-time equivalents (FTEs), comparable data for 2004 not available
- [8] including doctoral students and post-docs with an employment contract