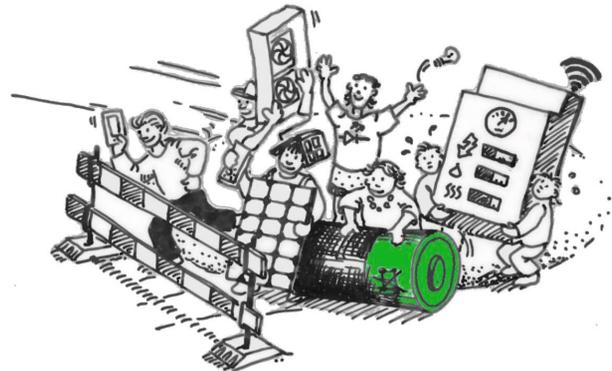
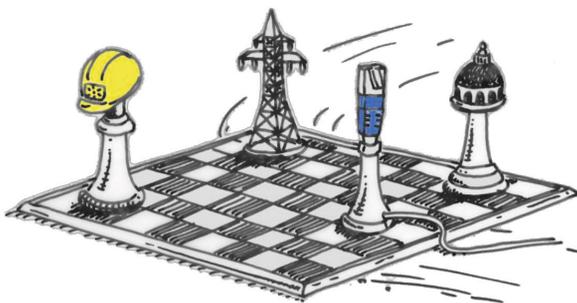
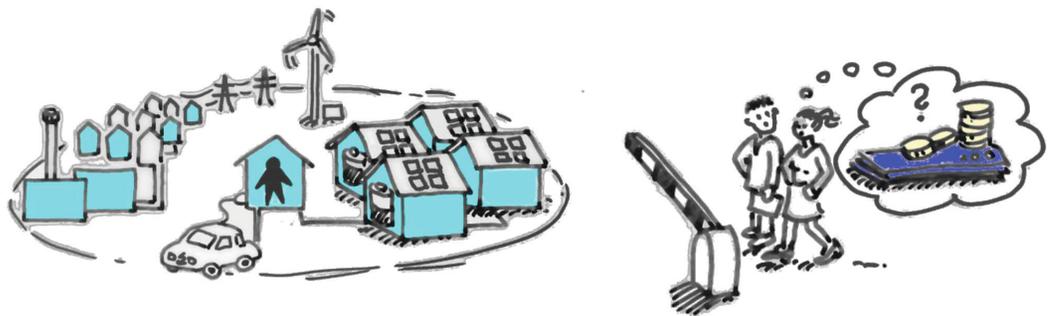


## Annual Report 2016



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## Sustainability at the ETH Domain – Promotion of Transdisciplinary Science

### Scope of activities

*novatlantis* – Sustainability in the ETH Domain – is the interface between research (ETH Zurich, EPFL, PSI, WSL, Empa and Eawag) on the one hand and industry, society and the public sector on the other. The aim is to contribute towards the sustainable development of our society whilst taking the ecological, economic and social dimensions of sustainability into account. Broad-based pilot projects are used to promote the transfer of the latest research results for the sustainable development of cities, municipalities and regions. The basis for this is the initiation of transdisciplinary projects in close collaboration with scientists from the ETH Domain, other research institutions and companies as well as with authorities at municipal, cantonal and national level.

#### The main points in brief

The 2016 financial year was characterised by diverse activities in Zukunftsregion Novatlantis Argovia, supporting the pilot region Basel in the transition period between the 2013 to 2016 legislative planning and determining the future alignment of the pilot programme «On the way to the 2000-watt society».

The additions to the *novatlantis* team in the prior year also made it possible to redouble our efforts on the topic of knowledge and technology transfer at national level and to continue to grow the *novatlantis* network with partners from business and research.

In addition to the well-received *novatlantis* Construction Forum in Lucerne in January 2016 on the topic of «City visions 2050 – building and mobility» in collaboration with the Canton of Lucerne and Lucerne University of Applied Sciences and Arts (HSLU), the *novatlantis* Construction Forum in Zurich in August was a particularly large success. The booked-out event on the topic of «Measuring

the success of sustainable construction» was dedicated on the one hand to the return on capital from sustainable building and on the other to the efficiency of buildings in the workplace. In Zukunftsregion Novatlantis Argovia, the «Forum Novatlantis Argovia» series of events included two forums on the topics «Energy future for Aargau municipalities» and «The mobile society – challenges for municipalities».

Networking was stepped up with various event partnerships such as patronage of the breinet seminar «Researching for construction in the context of energy and the environment» in September 2016 and the partnership with the Swiss Green Economy Symposium.

The launch of the *novatlantis* newsletter in September 2016 also established a new channel for public relations work, providing regular up-to-date information on events, studies and exciting projects from the world of *novatlantis* to all those interested.



#### List of abbreviations

BfE	Swiss Federal Office of Energy (Bundesamt für Energie)
CTI	Commission for Technology and Innovation
GESA	Gemeinde-Energie-Spiegel Argovia (Municipal Energy Level Argovia)
NTN	National Thematic Network
SCCER	Swiss Competence Centers for Energy Research
WTT	Wissens- und Technologie-Transfer (Knowledge and Technology Transfer)
ZURA	Zukunftsregion Novatlantis Argovia

#### Managing Director

Dr Anna Roschewitz

#### Project Partners

ETHZ  
EPFL  
PSI  
Empa  
Eawag  
WSL  
Pilot Region Basel  
Zukunftsregion Novatlantis Argovia

#### Project Websites

novatlantis.ch  
2000watt.ch  
novatlantis-argovia.ch





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# Sustainability at the ETH Domain – Promotion of Transdisciplinary Science

### Novatlantis Argovia forums

In 2016, ZURA hosted two Novatlantis Argovia forums: one at the beginning of the year on the topic of *Energy future for Aargau municipalities* and another one in the autumn on the topic of *The mobile society – challenges for municipalities*.

Forum Novatlantis Argovia, which took place in Baden on 27 January 2016, was hugely popular. Werner Leuthard, Head of the Office of Energy in the Canton of Aargau, presented the energieAARGAU strategy and its significance for municipalities. In various workshops, participants were able to approach topics such as the model regulations of the cantons in the field of energy, public lighting, electromobility and community photovoltaic systems in a targeted manner and ask questions specific to their municipality.

A second forum took place in Muri AG on 7 September 2016 on the topic of the mobile society. At the event, Simone Rangosch, Head of the Office of Transport in the Canton of Aargau, introduced the overall transport strategy *mobilität-AARGAU*. Furthermore, participants were able to choose from three workshops on specific topics in more depth:

- the overall transport strategy *mobilität-AARGAU* – significance for municipalities,
- mobility management for the municipalities and
- GESA (Gemeinde-Energie-Spiegel Argovia, Municipal Energy Level Argovia) – wishes and needs of the municipalities.

### New pilot project: Voluntary transport services

IT platforms can be used effectively to set up needs-optimised and cost-saving transport systems (e.g. TIXI in Zurich). *Sustainserv* organised a workshop on the topic of transport services that took place on 16 September 2016. The eight participating stakeholders declared their willingness to take part in a community of interest for transport services: An organisation that is as streamlined as possible is to lend a common voice to

transport services topics in dealings with politicians, the public and the business community.

Experiences from similar communities of interest in the Canton of Zurich show that cooperation helps to solve specific problems in practice and to use synergies in logistics, further training, procurement or in recruiting volunteers. There are plans to set up an «IG Fahrdenste» community of interest.

### New pilot project: Gemeinde-Energie-Spiegel Argovia GESA

The Gemeinde-Energie-Spiegel Argovia GESA (Municipal Energy Level Argovia) project is a pilot project within the framework of Zukunftsregion Novatlantis Argovia to support municipalities in Aargau in planning their energy policy measures and municipal energy strategies. It was commissioned by the steering group of Zukunftsregion Novatlantis Argovia at the end of 2015 on the basis of a concept and was implemented in the course of 2016.

As part of the pilot project, a specific Municipal Energy Level Argovia with a scope of approximately 16 pages as well as a set of 7 energy cards was developed for each of the 4 pilot municipalities Aarau, Abtwil, Stetten and Suhr. These confidential products were subjected to a practical test, where a municipal advisor and member of the monitoring group in the municipalities of Aarau, Abtwil, Stetten and Suhr met with var-

ious local persons responsible to discuss the content and presentation and test them using a questionnaire.

The seven municipality-specific energy cards were considered particularly worthwhile, as they are clear and easy to understand. According to the municipal advisors and municipal representatives, energy cards like these are an excellent means of communication.

### The *novatlantis* team 2016

The tried-and-tested *novatlantis* team remained unchanged in 2016:

Dr Anna Roschewitz is the Managing Director of *novatlantis*.

Project manager Regina Flury von Arx is responsible in particular for the further development of Zukunftsregion Novatlantis Argovia and for the preparation and visualisation of data models.

Cornelia Moser uses her role as project manager to progress new initiatives in the field of knowledge and technology transfer as well as in (hydrogen) mobility.

Agnieszka Hamburger is responsible for accounting.

The Paul Scherrer Institute still is the leading house for *novatlantis*.

Figure 2:  
The Novatlantis Argovia Forum on the topic of «The mobile society – challenges for municipalities» took place in the monastery in Muri: a workshop in the the refectory.

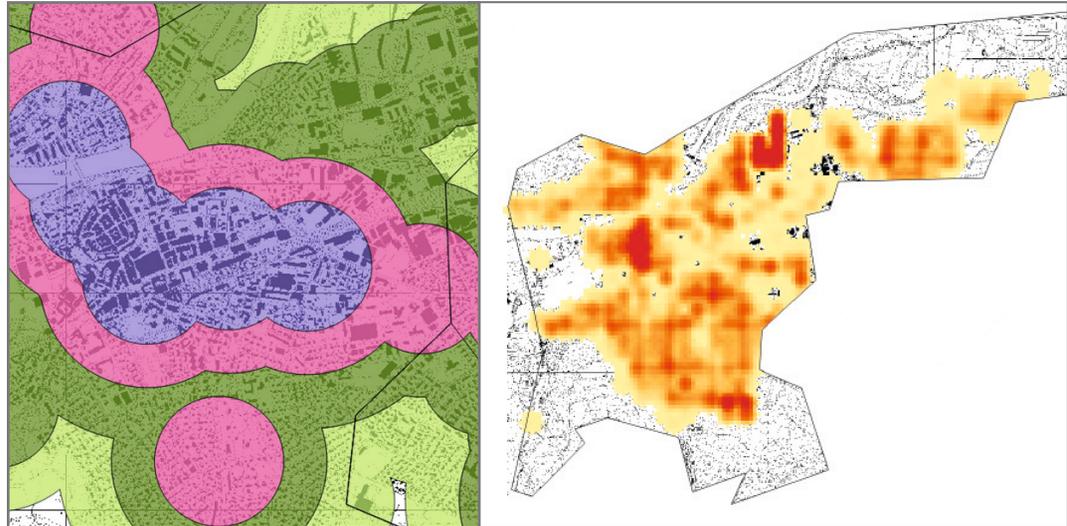




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Figure 3:  
A picture is worth a thousand words: a visualisation of the connectivity of local public transportation (left) and a heat density map (right).



In the course of the pilot project, it emerged that automated creation of a GESA project with the scope and level of accuracy of the pilot project is currently not possible on a widescale basis for all municipalities in Aargau. In some cases, the quality and availability of the data basis do not meet the requirements. As a result, a great deal of resources would be needed to present the energy data correctly. The municipal advisors and Energiestadt advisors would have to be involved in every municipal report in order to verify and supplement the data available. For implementation in 2017, this would require too many resources.

The conclusion of the GESA project is that the sets of energy cards can be produced in standardised form with a reasonable amount of effort, as the existing data basis is good. The experts and monitoring commission members involved in the project also rate the energy cards highly as a new tool. Another advantage for all interest groups is the good balance between costs and benefits.

Consequently, there are plans to determine whether it is possible to produce GESA energy card sets for a larger number of Aargau municipalities in 2017.

The second step would then be to create further municipal energy levels – comparable with the existing pilot project – for municipalities who wish to save energy.

A third step could involve the development of GESA plus, which is based on the needs of individual municipalities and is supplemented accordingly with municipality-specific figures.

#### Accompanying research on Zukunftsregion

In line with its definition, Zukunftsregion Novatlantis Argovia focuses its activities on the Canton of Aargau. However, it is likely that important findings from the collaboration at municipal level and the Potential Analysis project in terms of handling energy and CO<sub>2</sub> data for public buildings or municipalities can be applied to other

municipalities. This poses the question surrounding the overarching success factors of energy accounting for buildings and energy and CO<sub>2</sub> accounting in towns and municipalities. *novatlantis* has developed a concept for an accompanying research project to answer this question.

The project aims to examine the success factors for active participation of municipalities in programmes to promote sustainability and energy efficiency, such as «Zukunftsregion Novatlantis Argovia» or «Energiestadt», and to look in more detail at the requisite framework conditions for introducing and putting a value on energy and CO<sub>2</sub> accounting in towns and municipalities.

The first step is to get an overview of the different accounting methods, how common they are at present and what role they play in municipal, cantonal and national energy and climate strategies.

The second part will involve empirical accompanying research and will take the form



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of examining decision-making processes in favour of or against taking part in programmes as well as the implementation processes using the example of energy and CO<sub>2</sub> accounting in municipalities. The objective is to name and assess the benefits, accommodating factors or obstacles, additional expenses and costs as well as other stumbling blocks.

The empirical accompanying research will be geared to the processes in the municipalities. They will record energy consumption between the heating periods and ideally update them every year. An examination of the first data recorded and the first update will thus run over two years. Together with the basic and consolidation phases, the total project duration is three years and will lead to a closing report as well as a «Solutions for meaningful energy and CO<sub>2</sub> accounting for municipalities» toolkit with best practice examples for municipalities. With those tools and the in-depth knowledge of the leverage effects at municipal level, the project will contribute to enabling municipalities to better exploit their potential for achieving the objectives of Energy Strategy 2050.

This three-year accompanying research on Zukunftsregion Novatlantis Argovia will be funded by a foundation and commenced at the beginning of 2016.

### Basel as a pilot region for the 2000-Watt society

The concept of the «2000-Watt Society» – a visionary model of a sustainable energy future – developed by *novatlantis* more than ten years ago has been successfully tested and implemented in the pilot region Basel in recent years. A network of science, industry and public administration resulted in a «practical laboratory for sustainability» with different pilot and demonstration projects in the fields of construction, mobility and spatial development.

Financing of the pilot region Basel by the Great Council in the years 2013 to 2016 permitted active knowledge and technology transfer and made it possible to establish a network between research institutes, companies and public administration. A total of ten projects on the topics of construction, renewable energies and vehicles were agreed upon and implemented (in part) during this timeframe.

Because it has not been possible to realise some of the projects from the 2013 to 2016 legislative term yet or realise them in full, there is still a budget available for the year 2017 to implement some short, smaller projects. *novatlantis* has been actively involved in preselecting these projects. The definitive project selection will take place at the beginning of 2017.

What has already been decided is that *novatlantis* will host a *novatlantis* Construction Forum in Basel in June 2017 in collaboration with the Office for Environment and Energy of the Canton Basel-Stadt.

Apart from final work on the various projects, the focus in 2016 in the pilot region Basel was on determining a location and strategic discussions regarding the future of the pilot region Basel beyond 2017. The discussion of in what form and under what name the pilot region Basel is to be continued from 2018 onward commenced in 2016 and will be carried on into 2017.

### Pilot projects

The Office for Environment and Energy, the FHNW's Institute of Energy in Construction, *novatlantis* and *Sustainserv GmbH* are responsible for realising the projects. The following projects were pursued further in 2016, and some have already been completed:

Project	Status as of the end of 2016
Façade Module	Implementation is difficult due to lack of locations; the topic is to be advertised using a short film.
Aerogel Heat Insulation	Implementation not yet possible; further project discussions are under way.
Thermal Use of the Rhine	Project completed.
Solar Façades	Project is ongoing; a subproject on the installation of wind farms is also being pursued (WindRail).
Network Optimisation with Buildings Nehmeth and Kohlesilo (Coal Silo)	Plants in operation; further communication measures are planned.
Local Solar Electricity Storage	Project completion planned for year end.
Local Energy Hub	Modelling and evaluation is complete; project report planned for mid-2017.
Renewable Hydrogen for Small-Fleet Vehicles	No location has been found yet for a H <sub>2</sub> service station; the search for a location is continuing.
Electromobility – Fast-Charging Stations	12 charging columns are installed; the project including an accompanying study is continuing.
Natural Gas Hybrid Commercial Vehicles	2 sweeping machines in operation; possible follow-up project available.



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In 2016, *novatlantis* continued to manage and support the project «Local Energy Hub», which is being implemented as part of the IDEAS4cities initiative (Integration of Decentralized Energy Adaptive Systems for Cities). 2016 saw the development of various scenarios for a cost-optimised model of the energy system in Basel-Stadt on the basis of existing data. Alongside the various scenarios from Energy Strategy 2050, factors taken into consideration included the amount of CO<sub>2</sub> levies, feed-in tariffs, renovation potential as well as electricity and fuel prices. The initial results were presented to the specialised experts of the IWB (Industrielle Werke Basel) in the autumn of 2016. The modelling work is complete, the publicly available results will be published by mid-2017 and presented at the *novatlantis* Construction Forum in Basel in June. What needs to be clarified in 2017 is whether direct recommendations can be derived from the closing report for the IWB, the Canton of Basel-Stadt or other stakeholders and whether these can be implemented in a subsequent project.

## Series of events: the *novatlantis* Construction Forum – platform for sustainable construction

The *novatlantis* Construction Forum – Platform for Sustainable Construction – is a series of events where the latest developments from the university sector and from sustainable building in practice are presented and discussed. It is geared towards those responsible for the real estate portfolios of private and institutional investors, pension funds, authorities, building contractors and architecture and planning firms.

The talks, posters and photographs at the construction forums can be downloaded from [www.novatlantis.ch](http://www.novatlantis.ch). *novatlantis* also reports on every event in the form of brief articles published in journals and on the homepage.

Three construction forums are planned for 2017:

- In January 2017, the *novatlantis* Construction Forum in Lucerne will take place on the topic «Current prospects and regional examples in practice».

- In June 2017, the *novatlantis* Construction Forum in Basel will provide information on projects from the pilot region Basel.
- In August 2017, the *novatlantis* Construction Forum in Zurich will take place at ETH Zurich.

## ***novatlantis* Construction Forum Lucerne: building and mobility**

The *novatlantis* Construction Forum in Lucerne was held in January 2016 on the topic «City visions 2050 – building and mobility» in collaboration with Lucerne University of Applied Sciences and Arts and the Canton of Lucerne. The topic of mobility attracted a new target audience, leading to exciting network contacts and positive feedback.

The content of the Construction Forum focused on economic, planning and social aspects that contribute to the success or failure of projects on the interface between construction and mobility. The speakers successfully presented current aspects of construction developments from various different perspectives. For example, they showed the perspective of large cities using the example of Vienna, and also presented the perspective of a rural municipality in the Lucerne region as well as of mobility providers and researchers. The Swiss Competence Center for Energy Research (SCCER) Mobility partnered the event, allowing for a good exchange between research and industry



Figure 4:  
Informal chats in the innovation exhibition at *novatlantis* Construction Forum Lucerne.

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through the presentation of research findings and informal chats during the breaks and of course at the extensive lunch.

The innovation exhibition by Lucerne University of Applied Sciences and Arts with informative posters rounded off the occasion, also contributing to knowledge transfer from research to practice.

### ***novatlantis* Construction Forum Zurich: measuring success**

The overarching topic of the *novatlantis* Construction Forum in Zurich was «Measuring the success of sustainable construction», and the forum endeavoured to find answers to the question of how sustainable investments and energy-efficient construction is assessed in practice. The topic met with great interest, and the August event in the Alumni Pavilion at ETH Zurich was booked out at an early stage. In the first thematic block, experts from the real estate sector presented their experiences of successful, sustainable investments. The second topic focused on explaining and critically assessing how to measure the success in the work place using specific examples.

The event's success was also attributable to the strong partner organisations that advertised actively for the Construction Forum beforehand: In addition to ETH Zurich, partners included the City of Zurich, Forum Energie Zurich FEZ and the Sustainable Construction Network Switzerland NNBS. The event was also supported by various sponsors from industry.



Figure 5: Jan Eckert, CEO JLL Switzerland, talked about «Sustainability: an investment criterion for transactions?» at *novatlantis* Construction Forum Zurich.

### Knowledge and technology transfer: activities stepped up in 2016

*novatlantis* is a member of the working group «Knowledge and technology transfer (WTT) in major energy research programmes». Since January 2015, those responsible for WTT at the Swiss Competence Center for Energie Research (SCCER), the National Research Programmes and other programmes and organisations have been exchanging information regularly on current and planned activities and using the working group as a workshop for learning and ideas. The working group held two workshops in 2016, with *novatlantis* organising the second workshop, which took place on 29 September 2016: Three keynote speeches from business showed the expectations from WTT transfer from a corporate perspective and discussed the extent to which research can respond better to these needs.

### **oikos<sup>®</sup> – a National Thematic Network initiative**

As part of the same working group, at the end of 2015 an

initiative emerged to take part in the tender of the Commission for Technology and Innovation (CTI) to establish a «National Thematic Network, NTN».

Within the framework of such a network and under the name of «oikos<sup>®</sup>», there were plans to create and enhance energy-relevant innovation areas in districts and areas by means of targeted knowledge transfer between different sectors.

The NTN submission, which was actively supported and coordinated by *novatlantis*, was very well received in the worlds of research and business.

Because of the very short preparation time, however, it was not possible to integrate initial practical and implementation examples in the submission. The breadth of topics was also relatively large, prompting the CTI to decide in the closing phase for applications not to provide financial support to the submission from oikos<sup>®</sup>. However, as numerous project



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partners and also the CTI emphasised the importance of the topic, it was examined in the second half of 2016 whether certain objectives contained in the submission could be achieved without CTI base financing. These discussions will be continued in more depth with key partners in 2017.

### Smart City

In the 2016 financial year, *novatlantis* continued to play an active role as a representative of knowledge and technology transfer from the ETH Domain in participating in the working group Smart City of the Swiss Federal Office of Energy (BfE). It attended the quarterly meetings of the Smart City community of interest (also BfE).

Furthermore, *novatlantis* will be a founding member of the association «Smart Regio Basel», an initiative by trade association Gewerbeverband Basel and Industrielle Werke Basel (IWB). The aim of the association is to promote Basel as a Smart City and in particular to create value added for the city by means of digitalisation projects.

*novatlantis* intends to use its membership to make an active contribution on the topics of energy, sustainability and the environment.

The constitutive meeting of this new association will take place in February 2017.

### Network and PR work

In the 2016 financial year, *novatlantis* continued its PR and networking activities, already stepped up in the previous year. The year 2016 focused in particular on expanding the specialist network, positioning *novatlantis* as a competent and unbiased expert agency and raising awareness of the *novatlantis* «brand». Various activities were carried out to achieve these aims successfully.

### Mobility

In the area mobility, *novatlantis* was especially heavily involved in the Canton of Aargau in order to determine in cooperation with other stakeholders the possibilities of testing hydrogen-based mobility further.

One of the reasons behind this was the decision by Postauto AG to discontinue testing of hydrogen-fuelled postal vehicles at the end of 2016, which meant the loss of hydrogen buses as a popular technology ambassador. The hydrogen buses had also contributed

positively to the public image of hydrogen research at PSI during the pilot project.

As an independent contact, *novatlantis* took part in various workshops and meetings and helped to ensure a coordinated approach by the partners from industry, the public sector and research.

There are plans to include local business partners and to host various information events in the first half of 2017.

### Events

As a patron of the 19<sup>th</sup> brenet Status Seminar, *novatlantis* took advantage of the opportunity to broaden its network at two seminar days in September 2016 by speaking to the participants and presenting *novatlantis* visually through roll-ups.

At the event by the brenet network «Building and Renewable Energies Network of Technology», findings by Swiss-based researchers and innovations in the area of buildings and set-



Figure 6:  
Networking in relaxed  
summer atmosphere at  
ETH Zurich.



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tlements with a focus on energy and environmental topics were presented and discussed. The conference was designed for specialists from industry, research and the authorities as well as engineering and architecture firms.

In 2016, *novatlantis* was also a partner to the Swiss Green Economy Symposium (SGES) in Winterthur. With roughly 600 participants, it is one of Switzerland's largest events. This year's motto was «Smart changemakers – successful through sustainability».

The *novatlantis* Construction Forums in Lucerne and Zurich were enhanced through various partnerships and brought to a wide audience.

In Lucerne, the Swiss Competence Center for Energy Research (SCCER) Mobility, was an important partner.

In Zurich, Forum Energie Zurich (FEZ) and the Sustainable Construction Network Switzerland (NNBS) were two strong partners that raised the profile of the event.

The visibility of the Construction Forums was also aided by further support e.g. from the Center for Corporate Responsibility and Sustainability (CCRS) at ETH Zurich and by advertisements for the event in various newsletters and event agendas.

### ***novatlantis* newsletter**

The *novatlantis* electronic newsletter was launched in September 2016. In the future, the newsletter will appear several times a year at various intervals and provide succinct information on current events and topics.

While the first newsletter from September focuses on reviewing the *novatlantis* Construction Forum in Zurich in August as well as on current developments in Zukunftsregion Argovia, the November newsletter advertised for the *novatlantis* Construction Forum in January and provided information on various upcoming events of *novatlantis* partners.

### **Websites**

More information about the projects in the Zukunftsregion Novatlantis Argovia is available at:

[www.novatlantis-argovia.ch](http://www.novatlantis-argovia.ch)

More information about the projects in the pilot region Basel is available at:

[www.2000-watt.bs.ch](http://www.2000-watt.bs.ch)

More information on *brenet* is available at:

[www.brenet.ch](http://www.brenet.ch)

More information about *novatlantis* and its projects and activities is available at:

[www.novatlantis.ch](http://www.novatlantis.ch)

Sustainability at the ETH domain

**novatlantis**



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