

How Switzerland is rising to climate challenges, and how 9/11 influenced science



Whether it's contributing to research into next-generation batteries or implementing cutting-edge systems for the production and storage of clean energy, Switzerland is trying to meet the challenge of giving new generations hope for a sustainable future.

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Sara Ibrahim ▼
 Other language: 1 ▼

On September 2 and 3, the Swiss Green Economy Symposium is being held in Winterthur, Switzerland. It features discussions of renewable technologies and raw materials that could help us achieve the Sustainable Development Goals (SDGs) set by the United Nations.

“Development which enables present needs to be met without compromising the ability of future generations to meet their own needs”- that’s how Gro Harlem Brundtland, the former chairman of the then-World Commission on Environment and Development, defined sustainable development for the first time back in 1987 in a report. It made the United Nations aware of the importance of sustainability in choices concerning progress and the environment.

Today, the climate emergency is requiring us to quickly transition to an economy that is as green and clean as possible, reducing greenhouse gas emissions and decreasing dependence on polluting fossil fuels like oil, coal and gas.

So how do we do it? Renewable energies and the latest generation of batteries are some of the most promising technologies for curbing climate change. In Switzerland, several pioneering projects are aiming to advance these two sectors.

Swiss Green Economy Symposium

Come visit us at the [Swiss Green Economy Symposium 2021](#), or follow the developments [on Twitter!](#) As a media partner, SWI swissinfo.ch is co-organising and moderating a forum on sustainable communication, including a presentation on "solutions journalism".

At the forefront of hydropower production and storage

In the field of renewable energy, for example, one of the most powerful hydroelectric power stations in Europe was recently inaugurated in the Swiss Alps. The plant uses pumped-storage technology to react quickly to consumer needs and store excess energy. My colleague Luigi Jorio visited it in person and was impressed by this ecological piece of engineering in the middle of the mountains:

We are 2,225 metres above sea level and Alain Sauthier, director of the Nant de Drance pumped storage and turbines hydroelectric power station, wants to show us how one of Europe's most powerful "electric water batteries" works. With an output of 900 Megawatts, the power station could supply 200 villages of 4,000 inhabitants.

Alain Sauthier emphasises the special features of the six pump-turbines, among the few in the world of this size and technology. "In less than ten minutes we can reverse the direction of rotation of the turbine and switch from electricity production to storage. This flexibility is essential for reacting quickly to the needs of the grid and adapting electricity production and consumption."

Able to supply more than just Switzerland, the plant could help stabilise the electricity grid at European level, with an efficiency of over 80% and limited water consumption.

Watch swissinfo.ch for more on this story, available on the website in English very soon.

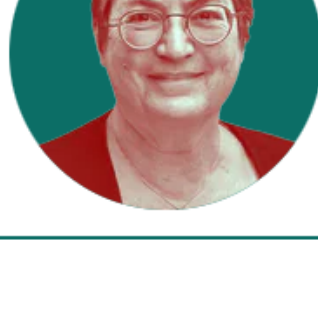
The quest for the perfect battery

There are many challenges regarding batteries too, from using materials that are less problematic in terms of extraction and supply, to finding technologies that can extend their life and improve their efficiency.

Major Swiss-European research initiatives are focusing on developing the latest generation of batteries that can store energy and last longer. [In an article](#), my colleague Simon Bradley explains how Switzerland is making a valuable contribution in this field:

Lithium-ion batteries have been the dominant storage technology for years, with demand expected to increase tenfold over the next decade. Over the past 30 years the price has fallen by almost 100%, but the technology has remained largely unchanged. Alternative solutions for batteries, such as longer-lasting components that store more energy, will be needed to meet future demand.

This is where the €40 million Battery 2030+ European research initiative comes in. Launched last year, the initiative comprises seven major research projects supported by nine European countries, including Switzerland. One of these projects is "HIDDEN", which aims to improve the average life of lithium-ion batteries and their energy density by 50%.



No room for discrimination or harassment

Aug 19, 2021 • Discrimination and harassment violate scientific integrity – but the damage they do goes beyond that, says Eawag director Janet Hering.

At the same time, another Swiss research group is coordinating "SENSE", a European research project that aims to produce a 'generation 3b' lithium-ion battery. The aim is to improve the energy density of the battery to give vehicles a longer driving range, speed up charging and use fewer rare metals.

[Get the full story here:](#)

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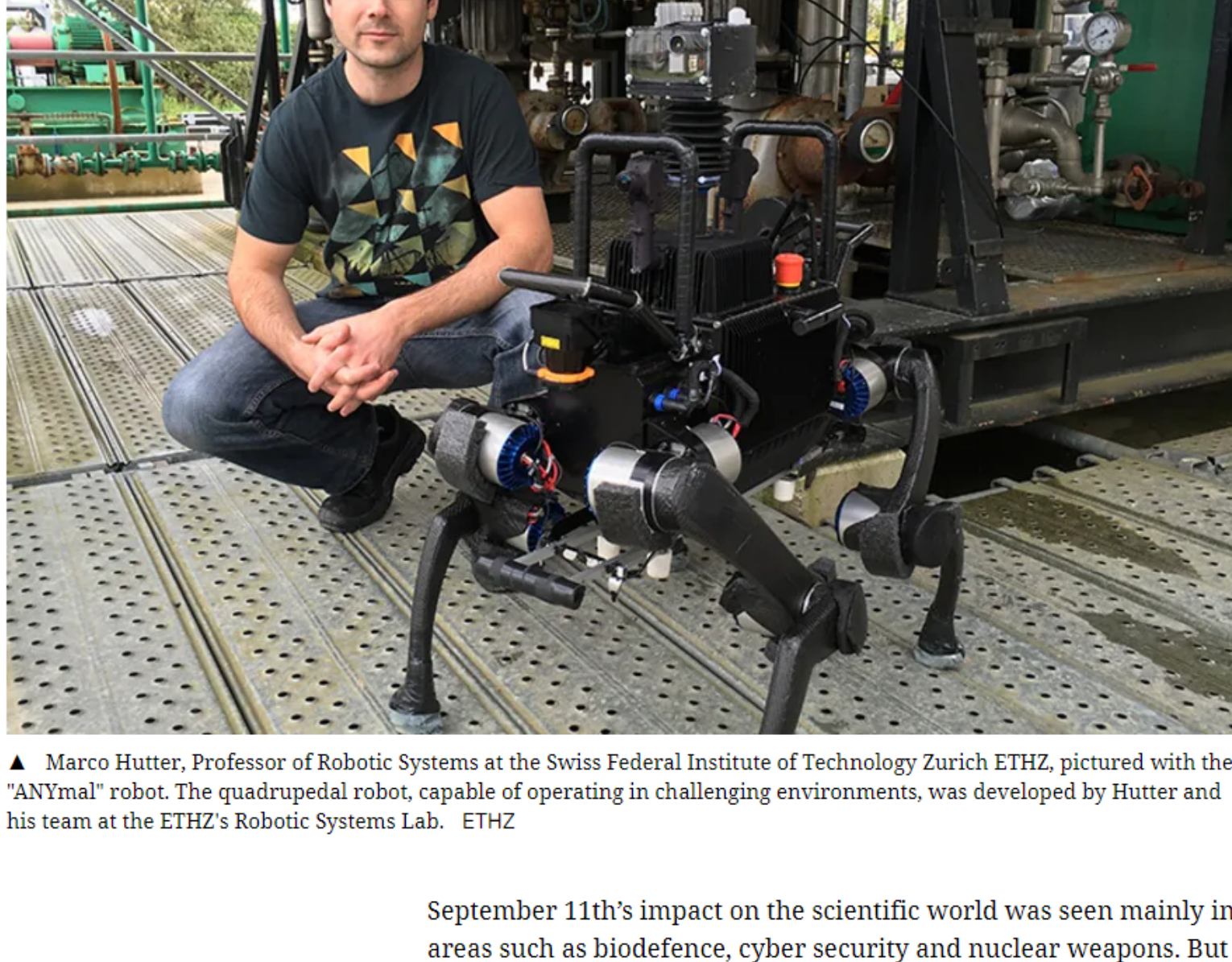


Next-gen batteries: Swiss researchers help lead the charge

Sep 1, 2021 • Major European and Swiss research initiatives are trying to meet demand for battery innovation and energy storage.

How September 11 changed science

Internationally, we are approaching the 20th anniversary of September 11 2001, an event that changed the world forever, causing nearly 3,000 deaths in the US alone and thousands of civilian and military casualties in the ensuing war in Afghanistan.



▲ Marco Hutter, Professor of Robotic Systems at the Swiss Federal Institute of Technology Zurich ETHZ, pictured with the "ANYmal" robot. The quadrupedal robot, capable of operating in challenging environments, was developed by Hutter and his team at the ETHZ's Robotic Systems Lab. ETHZ

September 11th's impact on the scientific world was seen mainly in areas such as biodefence, cyber security and nuclear weapons. But robotics, a leading sector for Switzerland, was also affected, especially in the development of disaster prevention and containment systems. We spoke about this with Marco Hutter, Professor of Robotic Systems at the Swiss Federal Institute of Technology Zurich ETHZ, who believes that research in the field of rescue robotics is very important. We anticipate an excerpt of the interview to be published next week as part of our special coverage of the 20th anniversary of the September 11 attacks:

What we are doing in Switzerland is trying to improve the efficiency and effectiveness of robots in disasters through the "ARCHE" project, which stands for "Advanced Robotic Capabilities for Hazardous Environments". This is a one-year programme that aims to test and improve the support of robots to human search and rescue activities, also to understand more precisely what advanced robot rescue interventions will be possible in the future.

This is a rather unique project in Europe, at least on this scale. There are also similar programmes in Austria and Germany, but ARCHE is an umbrella programme that brings together all the research in this field, not only in Switzerland but also in the rest of the world.