



**FORUM ENGELBERG**

WISSENSCHAFT SCIENCE SCIENZA SCIENCE  
TECHNOLOGIE TECHNOLOGIE TECNOLOGIA TECHNOLOGY  
WIRTSCHAFT ECONOMIE ECONOMIA ECONOMY  
WERTE VALUES VALORI VALUES

# Tomorrow's energy challenges : How to deal with uncertainties ?

The benefits and limitations of nuclear fission for a low carbon economy



With the support of the  
European Union



20th Conference



**FORUM ENGELBERG**  
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TECHNOLOGIE TECHNOLOGIE TECNOLOGIA TECHNOLOGY  
WIRTSCHAFT ECONOMIE ECONOMIA ECONOMY  
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5 - 7 September 2012  
Engelberg-Switzerland

**ENERGY CHALLENGES 2012**

**20th Conference FORUM ENGELBERG 2012**  
Wednesday 5<sup>th</sup> - Friday 7<sup>th</sup> September, 2012 to be held in Engelberg – Central Switzerland

**MESSAGE**

**Dear Sir / Madam,**

Fukushima, on the 11th March 2011, triggered a widespread crisis of both confidence in the technical nuclear systems and emotional concern, plunging the Western world into uncertainty.

The Association FORUM ENGELBERG was strongly animated by its familiarity and expertise in the subject of energy to organise this international conference on the theme of: "Tomorrow's Energy Challenges", in order to restore a climate of confidence.

Independently of this decision, on the 28th June 2011, the European Union Council invited the European Commission to organize the "EU-2013 Symposium" in Brussels on the 26<sup>th</sup> - 27<sup>th</sup> February 2013 to "involve a broad spectrum of stakeholders to debate the benefits and limitations of a low-carbon economy."

These two events, by their nature, create a fruitful synergy.

The key point, which distinguishes the 20th Conference of FORUM ENGELBERG 2012 from other meetings, is that it bring together all stakeholders, not only in the field of fission (and fusion) but also of energy at large, of human development , political decision making, policy making, etc. This mix of competencies will allow throughout the 3 days to obtain a global picture, which will help decision makers to form an opinion on the topic of nuclear fission.

Presentations by internationally reputed speakers and round table panels (so called "Fireside-Talks") will help the audiences to understand all the aspects of this multifaceted problem, which cannot be reduced simply to either "pro fission" or "anti fission". The participation of NGOs, not necessarily in favour of fission (as Greenpeace), is a necessary ingredient for a democratic debate around fission and its societal acceptance.

It is a tradition of the FORUM ENGELBERG to open the Welcome Ceremony in the Abbey Church. This Ceremony will be held with a musical interlude led by the Choir Collegium Musicum of Luzern. Another tradition of the FORUM ENGELBERG is to hold a Public Meeting "Arena", opened to the general public.

With this message, I would not fail to thank the Association FORM ENGELBERG and the Scientific Committee of the FORUM ENGELBERG for the excellent quality of the proposed programme. I would also like to express my gratitude to all those who have contributed through their commitment to the establishment of the Conference and its funding.

The full and wide-ranging programme of the Conference reflects the complexity of the task facing us. I am sure that the spirit of the venue is guaranteed to enable the discussions to be conducted in a manner which is suited to the subject matter.

Engelberg and Brussels, August 2012

**Philippe Busquin**

Member of the European Commission (1999-2004)  
Deputy of the European Parliament (2004 - 2009)  
President of the Conference

**20th Conference FORUM ENGELBERG 2012**  
Wednesday 5<sup>th</sup> - Friday 7<sup>th</sup> September, 2012 to be held in Engelberg – Central Switzerland

**WELCOME**

I wish each and everyone a warm welcome to the FORUM ENGELBERG, which responds to the crucial need for in-depth discussions between experts from the worlds of Science, Technology, Economy, Policy, Civil Society and, implicitly, brings with it the moral responsibility of us all to find solutions.

In the Middle Ages, Engelberg was a remote valley in the Alps at the foot of the Titlis mountain. The monastery was founded around 1120 by the knight Konrad von Sellenbüren with the help of monks from the monasteries of Muri (in Freiamt) and St. Blasien (in the Black Forest). It was called Engelberg (Angel mountain). Under the leadership of Abbot Frowin (1143-78), a notable school of writing developed, from which many artistic manuscripts are preserved in the library of the Abbey and are accessible in digital form.

From the 12th century, the Abbot also governed the valley, but this secular role was handed over to the citizens of the valley in 1798. Despite some internal and external difficulties over the centuries, the monastery has stood without interruption for almost 900 years as a place of prayer, contemplation and training.

The choice of site of the Abbey of Engelberg for this event is fundamental to understand the motivation of the Founder and Co-Founder of the FORUM ENGELBERG, who, in support of a proposal to the Federal Council in 1989, organized the first conference in 1990, in honour of Prof. Dr. Dr. h. c. mult. Herwig Schopper CERN Director General (1981-1988), on the theme of the Large Electron Positron (LEP) collider and the chances and risks of the Web technology discovered at CERN in 1989. Since the success of its first conference in 1990, the FORUM ENGELBERG has become a regular event.

May this 20th Conference with the theme: "Tommorrow's energy challenges", help find solutions to solve a crucial problem for the future of humanity.

Engelberg, August 2012

**Abbot Dr. theol. Berchtold Müller OSB**  
Abbot of the Engelberg Abbey (1988 - 2010)

## OBJECTIVES

Nuclear Power is the principal low-carbon source of base load electricity in the EU, totalling some 135 GWe of installed capacity and accounting for almost one-third of current electricity generation.

In recent months, various stakeholders have postulated a fundamental conflict between the further development of renewable energies and the continued operation of the existing nuclear plants in Germany and Switzerland. Some say that licensing extensions for nuclear plants will hamper the further development of renewable energies. Furthermore, nuclear plants are said to be too inflexible to be operated compatibly with large electricity supplies from wind and photovoltaic power plants.

The 20th Conference of FORUM ENGELBERG, entitled: "Tomorrow's Energy Challenges" will provide substantiated answers to pressing questions and will provide crucial input to Europe's energy and climate-change policy. Some issues that will be addressed include:

- How will an energy system be affected by the extension of nuclear operating licences; economically and in terms of CO<sub>2</sub> emissions?
- Replacing the Mühleberg nuclear power plant (Switzerland) by a natural gas power plant (G+D) of 400 Megawatts could increase CO<sub>2</sub> emissions by around 1 million tonnes per year.
- Except for Norway (producer of oil and gas), phasing out nuclear power will engender a geopolitical dependence of the Western Europe states on fossil energy, to foreign states in regions of the world known for their political instability.
- The safety of the nuclear plants remaining in activity must be guaranteed for all Member States of the European Union.
- The decommissioning of closed nuclear plants requires strengthening the training of engineers for at least two generations and the associated security - with public confidence in the radioactive waste storage.
- Renewable energy includes Geothermal Energy and the increase of dam capacity: What are the prospects of achieving these?
- "Désertec" (the plan from a German foundation to build in Morocco a solar energy plant, for producing electricity for Germany) has technological challenges and does it not engender a fundamental ethical question?
- New infrastructures for new high-voltage networks would incur further costs and meet resistance from objectors to the electromagnetic waves. What are the socio-economic costs of the change in energy policy?

The results of the Conference FORUM ENGELBERG 2012 will also contribute to the preparation of the "EU-2013 Symposium" to be held from 26th -27th February 2013 in Brussels on the benefits and limitations of nuclear fission energy for a low carbon economy, requested by the European Council as a part of the political agreement of 28th June 2011 on the EURATOM Framework Programme (2012 -2013). Indeed, the synergies between the results of the Conference FORUM ENGELBERG "Tomorrow's Energy Challenges" and the "EU-2013 Symposium" are of major importance for the European Commission to identify the programme of the "EU-2013 Symposium" which they will organize.

The input to the preparation of the "EU-2013 Symposium" will be achieved through a Scientific Report, produced at the end of November 2012.

Engelberg, 1st August 2012

**Association FORUM ENGELBERG**  
Bernard Ecoffey                      Pia Scherer

**Scientific Committee FORUM ENGELBERG**  
Wolfgang Kröger                      Minh Quang Tran

## Programme Structure

### CONFERENCE

First day, 5 <sup>th</sup> September 2012	Second day, 6 <sup>th</sup> September 2012	Third day, 7 <sup>th</sup> September 2012
<input type="checkbox"/> Opening Session <i>(5<sup>th</sup> September 2012 – 16:00                      Convention Centre Engelberg)</i>	<i>Morning</i> <input type="checkbox"/> Risk governance: Dealing with decision-making processes and shifts of opinion in society	<i>Morning</i> <input type="checkbox"/> Use of renewable energies on the way to more sustainability <input type="checkbox"/> Global strategies for the future
<input type="checkbox"/> Science and Spirituality <i>(5<sup>th</sup> September 2012 – 18:40                      Abbey Church Engelberg)</i>	<i>Afternoon</i> <input type="checkbox"/> The benefits and limitations of nuclear fission for a low carbon economy	<i>Afternoon</i> <input type="checkbox"/> Innovation and Education & Training
<input type="checkbox"/> Jubilee dinner <i>(5<sup>th</sup> September 2012 – 20:15                      Convention Centre Engelberg)</i>	<input type="checkbox"/> Medium term <input type="checkbox"/> Long term	<input type="checkbox"/> Closing Session

### FIRESIDE TALKS *(second day evening)*

Discussions over a buffet supper. Each Fireside-Talk (K1 - K9) will be held in a separate hotel. The Fireside-Talks are organised in collaboration with many institutions and private companies. The participants may choose to attend any of the different Fireside-Talk themes.

<input type="checkbox"/> K1 - EU: SET Plan Strategy, Energy, Technology	<input type="checkbox"/> K7 - Cities and Towns Network of Energy Networks Convergence of Power-Grid, Gas-Grid and Distance-Heating-Grid – A Key Factor for Future Energy Supply in Urban Areas	<input type="checkbox"/> K9 - Intermobility and Transport in a moving world  The role of innovative rolling stock as support to the rail transfer policy for Alpine traffic: intermodal and environmental friendly freight wagons, means to sustainable transport solutions.
<input type="checkbox"/> K2 & K3 Global Responsibility Dependence of the West	<input type="checkbox"/> K8 - Desertec or Hydropower? Interrelationship between Development and Energy - Desertec or Hydropower as strategy from the perspective of Ethical Values?	
<input type="checkbox"/> K4 - (EeB) Energy efficient Buildings		
<input type="checkbox"/> K5 - Materials Research is a key for Innovations		
<input type="checkbox"/> K6 - Energy and Mobility		

### ÖFFENTLICHER ABEND “Arena” *( in Deutsch, 2. Tag / Donnerstagabend)*

<b>PUBLIC MEETING “Arena”</b> <i>(in German; 2<sup>nd</sup> evening)</i>
6th September 2012 at 20:15 Convention Centre / Kursaal Engelberg
Radioaktive Abfälle - eine lösbare Aufgabe ?
Radioactive Waste Management - More convincing answers to overcome the problems?

### INFORMATION AREAS

<b>During the Conference:</b> Convention Centre / Kursaal Engelberg / Hotel Europe European Lounge / Euresearch's Corner (Information Kiosk for EU-financed projects in the energy sector) Economic Lounge / Sponsors Corner (Information Kiosk for Sponsors)
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## **TOMORROW'S ENERGY CHALLENGES: How to deal with uncertainties?**

The benefits and limitations of nuclear fission for a low carbon economy

### **President**

#### **Philippe Busquin**

Member of the European Commission (1999 - 2004)  
Deputy of the European Parliament (2004 - 2009)  
Member of the Council of the Foundation IRGC Genève  
Mayor of Seneffe, Belgium

### 1<sup>st</sup> day - Wednesday, 5<sup>th</sup> September 2012 / Afternoon

#### **Energy challenges for Switzerland, Europe and the world**

**16:00 Convention Centre (Kursaal) Engelberg – Central Switzerland**

#### **Opening Session**

- **Philippe Busquin**, President  
*Opening of the 20<sup>th</sup> Conference FORUM ENGELBERG "Energy Challenges 2012"*
- **Mauro Dell'Ambrogio**, Dr.iur., Secretary of State for Education, Research and Innovation  
*The new State Secretariat for Education, Research and Innovation: competences, challenges, objectives*
- **Peter Bieri**, MP, Dr.Ing.Agr.ETH, Member of the Swiss Federal Council of States,  
President of the information service for public transport LITRA  
*What can the public transport contribute to the Swiss energy policy in the future?*
- **Günther H. Oettinger**, European Commissioner for Energy (invited)
- **Urs Gasche**, MP, Member of the Swiss National Council, Chairman of the Board of BKW Ltd  
*Structural Changes in Energy Industry: Scenario for Policy Implementation*
- **Osama Motojima**, Prof.Dr.phys., Director General ITER, Cadarache, France  
*The fusion reactions in the sun and on earth*
- **Wolfgang Kröger**, Prof.Dr., Director of Risk Center, ETH Zürich, Founding Rector of IRGC  
*Distribution of Roles and Responsibility in Technological Risks and in Safety Management*

#### **18:40 Abbey Church Engelberg**

#### **Science and Spirituality**

#### **Public ceremony with musical interludes**

- **Abbot Berchtold Müller OSB**, Dr.theol., Abbot of the Engelberg Abbey (1988-2010)
- **Martin Leiner**, Prof.Dr.theol., Friedrich-Schiller-Universität, Jena
- **Patrick Ledergerber OSB**, Organist of the Engelberg Abbey
- **Markus Buholzer**, Chairman and **Pascal Mayer**, Conductor of the Choir Collegium Musicum Luzern
- **Patrizia Flury**, Sopran and **Elisabeth Zawadke**, Organ

#### **20:15 Convention Centre Engelberg**

#### **JUBILEE DINNER - 20<sup>th</sup> CONFERENCE FORUM ENGELBERG 2012 (on invitation)**

Addresses:

- **Frédéric Füssenich**, CEO Engelberg-Titlis Tourismus AG, Engelberg – Central Switzerland
- **Charles Christen**, Editor, Cultural Events Organizer, Engelberg – Central Switzerland

## 20th Conference FORUM ENGELBERG 2012

Wednesday 5<sup>th</sup> - Friday 7<sup>th</sup> September, 2012 to be held in Engelberg – Central Switzerland

### 2<sup>nd</sup> day – Thursday, 6<sup>th</sup> September 2012 / Morning

#### 09:00 - 12:30 Risk governance: Dealing with decision-making processes and shifts of opinion in society

Chairperson:

**Robert Cramer**, MP, Former Member of the Government, République et Canton de Genève, Member of the Swiss federal Council of States

Speakers:

- **Rudolf Rechsteiner**, Dr.rer.pol., Member of the Swiss National Council (1995-2010), Lecturer of the Universities of Basel, Bern, ETH - Zürich  
*Transformation of energy systems: dynamics and risks of renewable and non-renewable energies.*
- **Hans Wicki**, lic.oec., Member of the Government of the Canton Nidwalden  
*Legal Framework and the Use of Risk in Public Policy Decisions*
- **Piet Sellke**, M.A. / M.A. Institute of Social Sciences, University Stuttgart  
*Demand and Acceptance of Energy Technologies*
- **Urszula Narkiewicz**, Prof. Dr., West Pomeranian University of Technology, Szczecin/Stettin, Poland  
*Can Nanotechnology offer viable solutions to energy issues?*

#### Coffee Break

- **Aleardo Cattaneo**, lic.H.E.C., University of Lausanne, Président-Directeur-Général Ferriere CATTANEO SA, Giubiasco, Vice President SWISSMEM, Zürich  
*The entrepreneur and the implementation – just in time – of the bifurcation – theory*
- **Farooq Abdullah**, Dr., Minister of New and Renewable Energy MNRE, New Delhi / India  
*Interrelationship between Development and Energy*
- **Judith Simon**, Dr., Senior Researcher, Karlsruher Institute of Technology KIT  
*Energy Futures: Diversity, Transparency & Responsibility*
- **Michael Graetzel**, Prof.Dr.,Dr.h.c.mult. EPFL, Laureate of the Albert Einstein World Award of Science (2012)  
*Light and energy, how to mimic plants photosynthesis*
- **PANEL**
- **Alexander Höchli – Delèze**, Former Landammann of the Canton Obwalden, President of the Pioneers of FORUM ENGELBERG

12:30 - 13:50 **Lunch** (not included in the registration fee)

### 2<sup>nd</sup> day – Thursday, 6<sup>th</sup> September 2012 / Afternoon

#### 14:00 - 18:30 The benefits and limitations of nuclear fission for a low carbon economy

##### Medium Term: Challenges and Risks of the Technology

Chairperson:

**Hervé Pero**, Prof. Dr., Director of Energy, Directorate-General for Research & Innovation, European Commission

Speakers:

- **Urs Meister**, Dr.oec.publ., Project Leader, Management of Avenir Suisse  
*Nuclear power phase-out in Switzerland: Strategies and Costs*
- **Ed Davey**, Secretary of State Department of Energy and Climate Change, UK (invited)  
*Recent assessment of energy options in the UK*
- **Steven E. Koonin**, Former Under Secretary for Science in the United States Department of ENERGY, Head of Science and Technology Policy Institute (STPI) Washington (invited)
- **Jean- Marc Cavedon**, Dr.phys., Paul Scherrer Institute PSI and Swiss Nuclear Safety Commission KNS  
*Risk and acceptance: a technical issue with a social dimension*
- **PANEL**

#### Coffee Break

##### Long term: Which Concepts (Fission and Fusion) for the Future ?

Chairperson:

**Minh Quang Tran**, Prof.Dr. EPFL, General Director of the Centre de Recherche en Physique des Plasmas CRPP Association EURATOM Confédération Suisse

Speakers:

- **Sibylle Günter**, Prof.Dr., Director, Max-Planck Institute Garching / Plasmaphysik
- **Eric van Walle**, Prof.Dr., Director General Belgian Nuclear Research Centre SCK-CEN, Mol  
*Accelerator Driven Systems : a support to maintain competitiveness in fission technologies, together with long-term waste management solutions.*
- **Harald Bolt**, Prof.Dr. Ing., Member of the Board of the Forschungszentrum Jülich  
*Materials for Energy: Essential for new energy technologies and for innovation in existing energy technologies*
- **PANEL – Discussion with speakers and**
- **Osamu Motojima**, Prof.Dr. phys., Director General ITER, Caravache, France
- **Robert Aymar**, Prof.Dr., Former Director General ITER, Former Director General CERN



**2<sup>nd</sup> day – Thursday, 6<sup>th</sup> September 2012 / Evening**

**20:15 – 22:15 FIRESIDE-TALKS**

Discussions over a buffet supper. Each Fireside-Talk (K1 - K9) will be held in a separate Hôtel. The participants may choose to attend any of the different Fireside-Talk themes. The Fireside-Talks are organised in collaboration with many institutions and private companies.

- **K1 EU: Strategic Energy Technology (SET) Plan, hosted by the European Commission** **HOTEL EUROPE**  
Chairperson:  
**Gilles Lequeux**, Dr., Head International Cooperation, Directorate-General for Research & Innovation, European Commission  
Speakers:
  - **Rudolf Rechsteiner**, Dr.rer.pol., Member of the Swiss Parliament (1995-2010), Lecturer on energy at the universities of Basel, Bern and ETHZ
  - **Harald Bolt**, Prof.Dr., Member of the Board of the Forschungszentrum Jülich
  - **Jean-Marc Cavedon**, Dr.phys., Paul Scherrer Institut PSI and Swiss Nuclear Safety Commission KNS
  - **Urs Meister**, Dr.oec.publ., Project Leader, Management of Avenir Suisse
  - **Markus Aufleger**, Prof.Dr.Ing., habil., University Innsbruck
  - **Joseph Safieh**, Prof.Dr., Institut National des Sciences et Techniques Nucléaires –CEA, Saclay, Paris
  - **Arne Graue**, Prof.Dr., University of Bergen, Norway
  
- **K2 Global responsibility in the Future of Energy and Climate** **HOTEL EDELWEISS**
- **K3 The dependence of the West**  
Chairperson:  
**Judith Simon**, Dr., Senior Researcher, Karlsruhe Institute of Technology KIT  
Speakers:
  - **Paul Krueger**, Colonel General Staff (ret.), Consultant for Strategic Intelligence SCALARIS AG  
*Threat and security of energy supply – a strategic view.*  
*The threat to the sources, transport routes and the distribution*
  - **Michael Dittmar**, Dr.phys., ETH Zürich / CERN Genève  
*The Future use of Energy Switzerland & Europe:*  
*Knowing about yesterday and today what are the realistic resource based options and their limitations for tomorrow ?*
  - **Minh Ha-Duong**, Dr., Director; CIRED, CNRS/EHESS, Nogent-sur-Marne (invited)  
*Actuarial risk assessment of expected fatalities attributable to carbon capture and storage 2050*
  
- **K4 Energy efficient Buildings (EeB)** **HOTEL EDELWEISS**  
**The Case of Central Switzerland**  
Chairperson:  
**Peter Kuhn**, Host / Managing Owner / Hotelier graduate SHV/VDH, Hotel Edelweiss Engelberg AG  
Speakers:
  - **Jean-L. Scartezzini**, Prof.Dr. phys., Head of Solar Energy and Building Physics Laboratory EPFL
  - **Christophe Ballif**, Prof. Dr. phys., Head of the Photovoltaics and thin film electronics Laboratory, EPFL
  
- **K5 Materials Research is a key for Innovations** **BÄNKLIALP**  
Chairperson:  
**Rodrigo Martins**, Prof.Dr., President of European Materials Research Society E-MRS  
Speakers:
  - **Urszula Narkiewicz**, Prof.Dr., West Pomeranian University of Technology, Szczecin / Stettin, Poland
  - **Thomas K. Lippert**, Dr., Vice-President of European Materials Research Society E-MRS



**2<sup>nd</sup> day – Thursday, 6<sup>th</sup> September 2012 / Evening**

**20:15 – 22:15 FIRESIDE-TALKS**

Discussions over a buffet supper. Each Fireside-Talk (K1 - K9) will be held in a separate Restaurant The participants can choose to attend any of the different Fireside-Talk themes. The Fireside-Talks are organised in collaboration with many institutions and private companies.

- **K6 Energy and Mobility: a Feature of Human Civilisation** **SPORTING CENTER**  
Chairperson:  
**Kaspar Schuler**, Campaign Director Climate & Energy, Greenpeace Switzerland  
Speakers:
  - **Sven Teske**, Engineer, Renewable Energy Director, Greenpeace International, Amsterdam
  - **Piet Sellke**, M.A. / M.A., Institute of Social Sciences, University Stuttgart
  
- **K7 Network of Energy Networks: Convergence of Power-Grid, Gas-Grid and Distance-Heating-Grid – A Key Factor for Future Energy Supply in Urban Areas** **HOTEL ENGELBERG**  
Chairperson:  
**Mrs Renate Amstutz**, lic.rer.pol., CEO Swiss Union of Cities and Towns  
Speakers:
  - **Hajo Leutenegger**, Dr, President of the Association of the Swiss Gas Industry VSG
  - **Michael Sarbach**, CEO, Rohrsysteme Kabelwerke Brugg
  - **Daniel Schafer**, CEO EnergieWasser Bern ewb
  - **Ivo Schillig**, CEO, St.Galler Stadtwerke
  - **Companies:** Swiss Power Netzwerk AG, Association of the Swiss Gas industry, Union Suisse du Chauffage à distance
  
- **K8 Interrelationship between Development and Energy** **HOTEL EUROPE**  
***Desertec or Hydropower as strategy from the perspective of Ethical Values?***  
Chairperson:  
**Jyoti Gupta**, Prof.Dr., Former Dean of the Asian Institute of Technology Speakers:
  - **Ajay Mathur**, Dr., Director General, Bureau of Energy Efficiency Ministry Of Power, Govt..of India
  - **Ashok Khosla**, Dr., Co-President of the Club of Rome (invited)
  - **Alberto Bondolfi**, Prof.Dr. theol. emerit. of the Universities Geneva, Lausanne et Neuchâtel
  
- **K9 Intermobility and Transport in a moving world** **HOTEL BELLEVUE**  
Chairperson:  
**Claude Béglé**, Dr.rer.pol., Entrepreneur and DG Symbioswiss, Lausanne and Genève  
***The rail transfer policy***  
***The role of innovative rolling stock as support to the rail transfer policy for Alpine traffic: intermodal and environmental friendly freight wagons, means to sustainable transport solutions***  
Speakers :
  - **Aleardo Cattaneo**, lic. H.E.C., University of Lausanne, CEO Ferriere CATTANEO SA, Giubiasco
  - **Eugenio Moro**, Dr.Ing., Technical Director Freight Wagons, Ferriere CATTANEO SA, Giubiasco
  - **Markus Liechti**, PhD, Economics, Head of Section, Swiss Federal Office of Transport, Bern
  - **Company:** Ferriere CATTANEO SA, Giubiasco / Switzerland

**PUBLIC MEETING “Arena”**  
(in German)

**ÖFFENTLICHER ABEND “Arena”**  
(in Deutsch)

20:15 Convention Centre

Kursaal

**Radioactive Waste Management**  
**More convincing Answers to Overcome the Problems?**

***Radioaktive Abfälle-eine lösbare Aufgabe ?***

**Moderator and Political Representation:**

will shortly appear in the program

**Moderator und politische VertreterInnen:**

werden demnächst im Programm erscheinen

**Experts:**

***Experten:***

- **Thomas Ernst**, Dr., CEO of NAGRA Foundation
- **Michael Adrian Aebersold**, Dr.phil.nat., Swiss Federal Office of Energy BFE
- **Urs Achermann**, Dr.iur. RA, Secretary of the Direction of Building, of Canton Nidwalden
- **Rolf Glünkin**, Spatial planning of Canton Solothurn, Project Manager of geological repository of Canton Solothurn
- **Peter Steiner**, Dr.iur., Chairman of MNA
- **Olivier Lateltin**, Dr.sc.nat., Head of the Swiss Geological Survey, swisstop

**Public Debate**

***Öffentliche Debatte***

## 20th Conference FORUM ENGELBERG 2012

Wednesday 5<sup>th</sup> - Friday 7<sup>th</sup> September, 2012 to be held in Engelberg – Central Switzerland

### 3<sup>rd</sup> day – Friday, 7<sup>th</sup> September 2012 / Morning

#### **08:30 – 10:00 Dealing with technological options and uncertainties involved – Use of renewable energies on the way to more sustainability**

Chairperson:

**Robert Aymar**, Prof.Dr., Former Director General ITER, Former Director General CERN

Speakers:

- **Christophe Ballif**, Prof.Dr. EPFL, Head of the Photovoltaics and thin film electronics Laboratory, Neuchâtel  
*Photovoltaics: myths and true potential for clean electricity production.*
- **Markus Aufleger**, Prof.Dr..Ing.habil., University Innsbruck  
*Hydropower in the Alps, in Europe and around the World*
- **Olivier Lateltin**, Dr.sc.nat., Head of the Swiss Geological Survey, swisstopo  
*Geoscience knowledge with 4D thinking*
- **Hans B. Püttgen**, Prof.Dr., Director Energy Center EPFL  
*What can be learned from the Japan's post-Fukushima electric energy situation?*
- **PANEL**

#### **Coffee Break**

#### **10:30 -12:30 Global strategies for the future**

Chairperson:

**Steven Chu**, Nobelprize for Physics, Secretary for Energy (DOE), USA (invited)

Speakers:

- **Véronique Sordet**, MBA in International Management, Euresearch head office Switzerland  
*Switzerland: a key player in European research and innovation*
- **Stefan Hirschberg**, Dr., Paul-Scherrer-Institut PSI, Head Energy Systems Analysis  
*How sustainable are Energy Technologies*
- **Georges Van Goethem**, Dr. Ing., Directorate-General for Research and Innovation /  
Energy (Euratom), European Commission  
*The EU emphasizes research and innovation as well as education and training in Energy*
- **Martin Tschirren**, lic.phil., Deputy Director, Swiss Union of Cities and Towns  
*Responsible and close to the citizens: Cities and municipalities are the pacemakers of the energy turnaround*
- **Sven Teske**, Engineer, Renewable Energy Director, Greenpeace International, Amsterdam  
*Energy (R)evolution 2012 - A sustainable Energy World Outlook.*
- **Jakob Baumann**, Major General , CEO Natural Gas, East Switzerland, Zürich  
*Energy – A geopolitical power*
- **PANEL**

#### **12:30 - 13:50 Lunch** (not included in the registration fee)

### 3<sup>rd</sup> day - Friday, 7<sup>th</sup> September 2012 / Afternoon

#### **14:00 – 15:30 Innovation and Education & Training**

Chairperson:

**Georges Van Goethem**, Dr. Ing., Directorate-General for Research and Innovation /  
Energy (Euratom), European Commission

Speakers:

- **Joseph Safieh**, Prof.Dr., President European Nuclear Education Network Association, Institut National des  
Sciences et Techniques Nucléaires – CEA, Centre d'Etudes de Saclay
- **Arne Graue**, Prof.Dr. phys., University of Bergen  
*Energy Research Perspectives from the University Sector in Norway as a Major Oil and Gas Producer -  
Alternative Energy Resources with Zero Carbon Emission*
- **Rodrigo Martins**, Prof. Dr., University of Lisbon, President of European Materials Research Society E-MRS  
*Solar tiles, a new building construction commitment*
- **PANEL**

#### **Coffee Break**

#### **16:00 – 17:30 Closing Session**

Chairperson:

**Philippe Busquin**, President

Speakers:

- **Gianni Biasiutti**, Dr.sc.techn., Director / CEO Kraftwerke Oberhasli KWO  
*In the future: Electricity – From fire to electrical grids – draft of the transformation of the energy system*
- **Steven Chu**, Nobelprize for Physics, Secretary for Energy (DOE), USA (invited)
- **N.N.**, Philosopher

## GENERAL INFORMATION

### CONFERENCE SITE

ENGELBERG (Central Switzerland)  
Engelberg Abbey and Convention Centre / Kursaal Engelberg (<http://www.engelbergcongress.ch>)

PL = PLENARY LECTURES: Convention Centre / Kursaal Engelberg  
Science and Spirituality: Engelberg Abbey

K = KAMINGESPRÄCHE/FIRESIDE-TALKS: at various Hotels  
PM = Public Meeting "Arena" (in German), Kursaal Engelberg

### ACCESS FACILITIES

**BY AIR:** Zürich or Basel Airport

Fast trains to Luzern from Zürich Airport and Basel with immediate connection to Engelberg.

At Zürich Airport, a Shuttle coach service is available for FORUM ENGELBERG participants from Zürich to Engelberg.

**BY RAIL:** International links to Luzern with immediate connection to Engelberg.

**BY CAR:** Take the N2 Motorway (Basel 1 Gotthard), to Stans-Süd (exit) then follow signs for Engelberg. Parking spaces are available at the hotel in Engelberg.



### Transport from Zürich Airport to Engelberg and from Engelberg to Zürich Airport

Please contact:

**Mr Peter Kuhn / Mrs Susanne Kuhn**

Hotel Edelweiss, Terracestrasse 10, CH-6390 Engelberg, Phone: +41 (0)41 639 78 78 Fax: +41 (0)41 639 78 88, [www.edelweissengelberg.ch](http://www.edelweissengelberg.ch), [kuhn@edelweissengelberg.ch](mailto:kuhn@edelweissengelberg.ch)

### ACCOMMODATION AND BREAKFAST

Reservations must be made in advance. Please contact **Mr Peter Kuhn / Mrs Susanne Kuhn**

Hotel Edelweiss, Terracestrasse 10, CH-6390 Engelberg, Phone: +41 (0)41 639 78 78  
Fax: +41 (0)41 639 78 88, [www.edelweissengelberg.ch](http://www.edelweissengelberg.ch), [kuhn@edelweissengelberg.ch](mailto:kuhn@edelweissengelberg.ch)

Participants are requested to settle their hotel bills before leaving Engelberg.

### MEALS

**Jubilee Dinner** Wednesday 5<sup>th</sup> September 2012 at 20:15. **On Invitation only**

**Lunch:** Thursday 6<sup>th</sup> September 2012 and Friday 7<sup>th</sup> September 2012 at the expense of each participant (you can buy meal tickets at the conference secretariat for the price of CHF 25. - / €20. -)

**Evening Thursday 6<sup>th</sup> September 2012 / 20:15 – 22:15**

Discussions over a Buffet Supper. The Buffet Suppers are offered by our Sponsors

**Important!** Do not forget to choose one FIRESIDE-TALK on your registration form.

## CONDITIONS FOR PARTICIPATION

### INFORMATION

E-mail: [forum.engelberg@bluewin.ch](mailto:forum.engelberg@bluewin.ch)  
Tel. +41 (0)41 370 75 05  
Fax +41 (0)41 370 75 16  
[www.forumengelberg.eu](http://www.forumengelberg.eu)

### REGISTRATION

- **Before the Conference:**  
Registration form (available at [www.forumengelberg.eu](http://www.forumengelberg.eu))
- **During the Conference:**  
Convention Centre, Hotel Europe, Hotel Edelwiess (<http://www.engelbergcongress.ch>)

### COMMUNICATION PRESS OFFICE

#### FORUM ENGELBERG:

P.O.Box 139  
CH- 6045 Meggen  
E-mail: [forum.engelberg@bluewin.ch](mailto:forum.engelberg@bluewin.ch)  
Tel. +41 (0)41 370 75 05  
Fax +41 (0)41 370 75 16  
[www.forumengelberg.eu](http://www.forumengelberg.eu)

#### EURESEARCH

**Communication Manager: Mrs Veronique Sordet**  
Euresearch Head Office  
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CH-3008 Bern  
Phone : + 41(0)31 380 60 23  
E-mail : [veronique.sordet@euresearch.ch](mailto:veronique.sordet@euresearch.ch)

#### During the Conference:

Convention Centre / Kursaal Engelberg / Hotel Europe  
European Lounge / Euresearch's Corner (Information Kiosk for EU-financed projects in the energy sector)  
Economic Lounge / Sponsors Corner (Information Kiosk for Sponsors)

### ENROLMENT FEES

Since the Association FORUM ENGELBERG is a Scientific Interdisciplinary Non-Profit Organisation (Association under Art. 60 of the Swiss Civil Code), participants' fees have been kept at an absolute minimum.

- **Euro:** 440.-- per participant
- **CHF:** 520.-- per participant

#### Accompanying Person (not attending lectures)

- **Euro:** 100.-- per person
- **CHF:** 120.-- per person

#### Reduced Rates:

FORUM ENGELBERG applies reduced rates to participants who

- belong to an Institution subsidizing the Association FORUM ENGELBERG
- belong to a Government Administration making contributions to the same
- Member of the Swiss Union of Cities and Towns, Registration by [info@staedteverband.ch](mailto:info@staedteverband.ch)
- are affiliated to a firm sponsoring the Association FORUM ENGELBERG

For further details, please contact by E-Mail: [forum.engelberg@bluewin.ch](mailto:forum.engelberg@bluewin.ch)

#### Young Scientists:

Free of charge (The number of participants is limited and on the recommendation of their institutes).

- Registration via: Prof.Dr. Minh Quang Tran / EPFL E-Mail: [minhquang.tran@epfl.ch](mailto:minhquang.tran@epfl.ch)

**Public Meeting "Arena":** Free of charge

#### Payment:

In Euros or in Swiss francs at reception of the invoice (the bank account will be mentioned on the invoice)

#### Legal Entity:

Association FORUM ENGELBERG (Art. 60 CCS)  
c/o KRÜGERrecht  
Theaterplatz 2  
CH-3011 Bern

## **ACKNOWLEDGEMENT**

On the occasion of the 20<sup>th</sup> FORUM ENGELBERG Conference, the Founder and the Co-founder would like to thank very warmly all the pioneers of the FORUM ENGELBERG who believed in the novel concept back in 1990 and developed it initially under the leadership of Hubert Curien (1924 – 2005, Minister of Research and Technology (1984 - 1986 and 1988 - 1992), Minister of Research and Space (1992 - 1993), President of the FORUM ENGELBERG (1992 - 2005).

The Association FORUM ENGELBERG expresses its gratitude to all those who continued the work of the original pioneers and especially those who brought their knowledge and know-how to ensure the success of this 20<sup>th</sup> Conference from 5<sup>th</sup> to 7<sup>th</sup> September, 2012 on the topic: "Tomorrow's energy challenges: How to deal with uncertainties? The benefits and limitations of nuclear fission for a low carbon economy", in short: "Energy Challenges 2012". The names of some of the involved persons and the identities of the financial sponsors appear in the list of the participants and in the press and media material. The event would also not have been possible without the support of the Swiss Scientific and Educational institutions and the many people who gave up their time voluntarily for this prestigious and worthy event.

Finally, we express our very special thanks to the Abbey of Engelberg, particularly to the Abbot Berchtold Müller OSB, Abbot of the Abbey of Engelberg (1988 - 2010) and to the European Commission which has supported the Association FORUM ENGELBERG since 1995.

Thank you all very much indeed.

1st August 2012

### **Association FORUM ENGELBERG**

Bernard Ecoffey  
Founder

Pia Scherer  
Co-Founder

In collaboration with:

- Euresearch Bern, Vizerektorat Forschung Universität Bern
- Euresearch Head Office, Bern Switzerland
- Martel GmbH, Gümligen Switzerland

Multimedia:

- Edouard de Chambrier  
(adaptation of the graphics from the previous FORUM ENGELBERG programmes, graphic designer: Oliver Schneider)