

## Editorial to the Proceedings of the ISES EuroSun Congress 2014

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Many positive headlines appeared during summer 2014 highlighting the opportunities of Renewable Energy Supply and Solar Energy in particular: For instance, there were several new reports describing the growth, the possibilities and necessity of Renewable Energies, e.g. the latest IRENA report (IRENA Remap 2030: A renewable energy roadmap, June 2014) or the REN 21 Renewables Global Status Report that was released in 2014 including a contribution from ISES. Just before the ISES EuroSun 2014 Congress took place in September 2014, the newly elected EU Commission President Jean-Claude Juncker presented his new team of Vice Presidents, announcing that the two Vice Presidents for “Energy Union” and the one for “Climate Action and Energy” will define actions to follow the priority: to increase the share of Renewable Energy providing higher investments for infrastructure, innovation and research in this sector.

However, there have also been a number of negative headlines which are bringing back the threads to our minds: The World Meteorological Organization published in September 2014 that, far from falling, the concentration of carbon dioxide in the atmosphere actually increased last year at the fastest rate for nearly 30 years. On the global scale, the amount of CO<sub>2</sub> in the atmosphere reached 396 parts per million in 2013. At the current rate of increase, the global annual average CO<sub>2</sub> concentration is set to cross the symbolic 400 parts per million threshold in 2015 or 2016. We still have to reverse this trend. However, in spite of the positive trends for many Renewable Energy technologies worldwide, in Europe we still have a lot of countries where Renewable Energies are not reaching higher shares of the energy supply at the moment.

Clearly, the transition of the energy supply to 100% renewable energy is still far from where it should be. Therefore, we have to continue or even increase our effort doing excellent research work and present results that are helping to make the energy transition come true and come fast. The ISES EuroSun 2014 Congress was one important step on the path leading to a coherent and sustainable transition of the energy supply. Throughout the Congress, several core questions have been discussed in plenary discussion, keynote lectures and topic sessions: How do we reach a 100% renewable energy society? When could this vision come true? What can, will and has to be done to achieve high(er) shares of Renewable Energies as quick as possible? Clearly, renewable heat supply and fuels made from renewable energy will play a major role for the transition to a fully renewable energy supply. As energy consumption is strongly related to population density, one of the challenges will be to supply renewable energy in urban areas as there is a trend of population growth primarily in the cities [Source: [www.irena.org/remap](http://www.irena.org/remap)].

Some of the conclusions of the ISES EuroSun Congress 2014 can be highlighted:

- A 100% Renewable Energy Society will be possible and affordable, combined with energy efficiency measures and realized by an intelligent mix of all renewable energy technologies
- The timeframe for the transition into an energy system based 100% on renewables can be achieved within 40..50 years from a technical point of view, but important developments have to be initiated now, especially regarding market and policy aspects
- On global scale an average renewable energy share of the total energy consumption of 35% is possible by 2030 if respective policy measures are taken
- The flexible combination of energy supply grids (electricity/heat/gas) is necessary to cope with all fluctuating renewables

The ISES EuroSun Congress 2014 gathered more than 300 scientists, engineers, decision-makers, industry representatives, students and energy practitioners, from 48 nations around the world. The majority (about 80%) of the participants came from European countries, but also from many countries out of Europe, e.g. China and Japan, Nigeria and Ghana, Argentina and Brazil, the United States and Mexico, and also from Australia. The highest numbers of participants were from Germany, France, Spain and Switzerland.

The papers presented at the congress and published in these proceedings were carefully selected and reviewed by the Scientific Committee. For the Proceedings of ISES EuroSun 2014, a full paper review was carried out. Finally, 162 papers out of 202 achieved the approval for publication. For the first time in the history of ISES, the proceedings are published by ISES with a Digital Object Identifier for each paper.

We would like to express our gratitude to the reviewers and members of the Scientific Committee of the ISES EuroSun 2014 Congress and to all the authors and participants who contributed to the Congress' quality of scientific excellence. Also, we want to thank all members of the Organizing Committee that helped to make this Congress a great success.