R'07 World Congress, Davos, Switzerland, September 3 – 5, 2007

Recovery of Materials and Energy for Resource Efficiency

WWW.r07.org

Invited Plenary Speakers

September 3: Thomas E. Graedel, Yale University, U.S.A.
Jinghai Li, Chinese Academy of Sciences, P.R. China
Friedrich Schmidt-Bleek, Factor 10 Institute, France
Alexander Wokaun, ETH and Paul Scherrer Institut, Switzerland

September 4: Gabi Hildesheimer, Swiss Association for Environmentally Conscious Management, Switzerland
Kit Strange, Resource Recovery Forum, United Kingdom

September 5: Migen Dibra, Migen Dibra Law Firm, Canada

The R’07 World Congress promotes innovative technologies and frameworks to improve material and energy efficiencies in the production, use, and recycling of materials.

R’07 addresses experts from science and engineering, from supply and recycling industries, from public authorities and international organizations in order to stimulate closer cooperation among the various disciplines and stakeholders across the materials’ life cycles.

Sustainable development and climate change mitigation require a substantial reduction in the life-cycle-wide resource demand per consumed service unit (dematerialization). Therefore, optimal solutions have to be found for the trade-off between closing material loops and saving energy for processing and transport. This may involve integrated resource management and improved information processing, as well as innovation at the level of technological processes, products, product-service systems, and institutional frameworks.
Preliminary Program

Sunday, September 2

15:00 – 19:00 Registration desk open

15:00 – 19:00 Get-together Party

Monday, September 3

08:00 Registration desk open

08:30 – 10:30 Opening Session

Welcome Address
Claudio Lardi, Member of the Cantonal Government of Graubünden, Switzerland

Welcome Address
Li, Jinghai, Chinese Academy of Sciences, P.R. China

Welcome Address
Xaver Edelmann, R'07 Congress Chairman, Empa, Switzerland

Material Productivity for a Future World
Schmidt-Bleek, Friedrich, Factor 10 Institute, France

The 2000 W Society – a Swiss Vision for the Energy Future
Wokaun, Alexander, ETH and Paul Scherrer Institut, Switzerland

10:30 – 11:00 Coffee Break

11:00 – 12:30 A1 Automotive Industry

State-of-the-art Design for Recycling of Automobiles
van Schaik, Antoinette, Netherlands

Achieving High Recycling Rates for Plastics?
Ignatenko, Olga, Netherlands

European Warranty Part Management and Workshop Disposal
Winter, Achim, Germany

11:00 – 12:30 B1 Energy Efficiency in Process Engineering

Energy Efficiency of Extraction and Recycling Processes and On-line Control, Optimization and Automation
Kongoli, Florian, Canada

Energy Efficiency of Photocatalytic Gas Cleaning
Krammer, Gernot, Norway

Catalysis for Environmental Processes, Efficient Energy Conversion and Increasing Efficiency of Fossil Fuel
Anikeev, Vladimir, Russian Federation

Energy Saving in Extractive Distillation Using Flowsheet Integration
Xiang, Shuguang, China
11:00 – 12:30  **C1 Waste Water Treatment**

- Thermo-chemical Treatment of Sewage Sludge Ashes Aiming at P-fertiliser Products
  Adam, Christian, Germany
- Treatment of Biodegradable Wash Waters with Simultaneous Recovery of Fuel Gas Using a New Upflow Granular Anaerobic Sludge Reactor (UGAS-R)
  Abbasi, S. A., India
- Constructed Wetlands – Ecohydrology Approach To Water Resources Management
  Belic, Andelka, Yugoslavia
- Recovery of Acrylic and Acetic Acid from Effluent
  Shan, Xinchang, China

11:00 – 12:30  **D1 Plastics Recycling**

- PET-Bottle-to-Bottle-Recycling – Key Success Factors – 6 Years Experience in Switzerland
  Geisselhardt, Patrik, Switzerland
- Tyres and Plastics Wastes Kinetic Study
  Miranda, Miguel, Portugal
- PVC Recovery from Electrical Cables
  Bevilacqua, Paolo, Italy
- The Recycling of Plastics Wastes from Discarded TV Sets in the Context of LCA: A Sensitivity Analysis to Find Alternatives for Lowering the Environmental Burden
  Dobdiba, Gjergj, Japan
- Effects of the Number of Reprocessing Passes on Polypropylene/Lignocellulosicfiber Composites
  Viksne, Armanda, Latvia

11:00 – 12:30  **E1 Life Cycle Thinking and Management**

- **Keynote Lecture:** The Challenge of Open Cycles – Barriers to a Closed Loop Economy Demonstrated for Consumer Electronics and Cars
  Hagleüken, Christian, Germany
- A Life-Cycle Inventory Tool for the Treatment of Alternative Fuels and Raw Materials in the Cement Industry
  Boesch, Michael, Switzerland
- History and Methodology of the Sankey Diagram
  Schmidt, Mario, Germany
- Optimization of the Waste Management System of an Italian Industrial Area by Life Cycle Assessment
  Tarantini, Mario, Italy; Speaker: Scalbi Simona, Italy
- Study on China’s Implicit Energy Exported in the Last Decade
  Li, Zhou, China

12.30 – 14:00  **Lunch Break**

14:00 – 14:30  **Invited Plenary Session**

- Metal Stocks and Sustainability
  Graedel, Thomas E., Yale University, U.S.A.

14:30 – 16:00  **A2 Cement Industry**

- Combined Manufacturing of Portland Cement and Slag Cement
  Shi, Daming, Canada
- Simulation, Evaluation and Optimisation of Alternative Fuels
  Kääntee, Ursula, Finland
- The Use of Alternative Fuels and Raw Materials in Swiss Cement Industry – A Commitment to Industrial Ecology
  Monteil, Michel B., Switzerland
Experience with Co-processing Waste Material in Cement Kilns in Developing Countries  
Mutz, Dieter, Switzerland

A Metabolism Analysis of Typical Production Systems in the Cement Sector in China  
Li, Xiaoqing, China

14:30 – 16:00  
**B2 Energy Recovery and Power Generation**

Energy Recovery from Solid Waste Using Non-combustion Processes  
Worrell, William, U.S.A.

Thermal Energy Recovery from Municipal and Industrial Reclaimed Water – An Important Approach for Circular Economy in P.R.China  
Zan, Cheng, China

Evaluation of Efficiency of Power Plants Using Hydrothermal Oxidation  
Hirosaka, Kazuma, Japan; Speaker: Hasegawa Tatsuya, Japan

Online Trace Elemental Analysis of Process Gases – A Key to Optimization and Assessment of Renewable Power Plants  
Wochele, Jörg, Switzerland

The Way for the Future: Information Technologies and the Energy of the Sun  
Zhelonko, Nikolai, Ukraine

14:30 – 16:00  
**C2 Toxic Waste Treatment**

Thermochemical Conversion of Asbestos Containing Radionuclides and Toxic Metals  
Timmons, Dale, U.S.A.

Investigation of Heat and Mass Transfer Processes in Plasma Shaft Furnace for Toxic Waste Treatment  
Mosse, Alfred, Belarus

Experimental Quantification of Contaminant (Im)Mobilization Kinetics - Uranyl Sorption/Desorption from Iron Oxides  
Regenspurg, Simona, Switzerland

14:30 – 16:00  
**W1 Workshop: Plastics Recycling in the North-South Context, Part I**

Responsible: REDOLO GmbH  
Patrik Geisselhardt, Switzerland, Raymond Schelker, Switzerland  
see separate workshop program at www.r07.org

16:00 – 16:30  
**Coffee Break**

16:30 – 18:00  
**A3 Coal Combustion Products**

**Keynote Lecture:** Coal Combustion Products – Valuable Raw Materials for the Construction Industry  
vom Berg, Wolfgang, Germany

Recycling of Coal Dust and Coal Tar in Blast Furnaces – SAIL’s Experience  
Das, Asok Kumar, India

Recultivation of Landscape by Coal Combustion Products Utilisation  
Svoboda, Miroslav, Czech Republic

16:30 – 18:00  
**B3 LCA in Waste Treatment and Recycling**

**Keynote Lecture:** Avoided Burden Approaches Applied on Recycling of Materials in View of the ISO Standards and the Eco-efficiency Concept  
Frischknecht, Rolf, Switzerland

LCA Applied to Innovative Solutions for Recovery and Recycling Waste  
Scalbi, Simona, Italy

Ecosolvent: A Tool for the Environmental Assessment of Waste-solvent Treatment in Chemical Industry  
Capello, Christian, Switzerland
16:30 – 18:00  **C3 Organic Municipal Solid Waste**

Ecological and Energetic Comparison of Different Technologies to Treat the Organic Fraction of Municipal Solid Wastes  
Edelmann, Werner, Switzerland

Solid Waste Disposal of Colombo Municipal Council (CMC) / Sri Lanka  
Herath, Malani, Sri Lanka

Organic Waste Separation at Sources the Key Success of AD Plant in Thailand  
Vanapruk, Pireeyutma, Thailand

Ganesh, P. Sankar, India

Bioconversion of Municipal Solid Waste to Quality Compost Employing Bioinoculants  
Sharma, Satyawati, India

16:30 – 18:00  **W1 Workshop: Plastics Recycling in the North-South Context, Part II**  
Organized by: REDOLO GmbH  
Patrik Geisselhardt, Switzerland; Raymond Schelker, Switzerland  
see separate workshop program at www.r07.org

18:00 – 20:00  **Welcome Reception and Poster Award**
Tuesday, September 4

08:15 – 09:00  **Industrial Plenary Session**

Promoting Sustainability: A One Stop Shop for Efficiency Tools
Hildesheimer, Gabi, Swiss Association for Environmentally Conscious Management, Switzerland

09:00 – 10:30  **Construction Materials I**

Agent Based Modeling (ABM) for Analyzing Demand for Recycled Mineral Construction Material
Knöri, Christof, Switzerland

Potentials for Mineral Construction Wastes as Secondary Resources in Switzerland – a Case Study on Concrete Wastes
Seyler, Christina, Switzerland

Self Compacting Concrete with Powdered Construction and Demolition Waste
Seifert, Gabi, Germany

Use of Recycled Aggregate for the Production of Structural High Performance Concrete Elements
Bassan, Mario, Italy

09:00 – 10:30  **Greenhouse Gas Reduction**

CO₂ Sequestration by Carbonation of Minerals and Industrial By-products in Finland
Zevenhoven, Ron, Finland

Energy integration for ethanol production by pinch analysis and heat pump
Guo, Surong, China

09:00 – 10:30  **Materials and Energy from Biomass**

Biomass Refinery System under Closed Environmental Situation, Case Study at Miyako-Island, Japan
Shinogi, Yoshiyuki, Japan

Lignin: An Alternative Source for the Production of Chemicals?
Voitl, Tobias, Switzerland; Speaker: Rudolf von Rohr, Philipp

Potentials and Challenges of Bioplastics – Insights from a German Survey on "Green" Future Markets
Beucker, Severin, Germany

Material Flow Management of Biomass Residues
Krause, Susann, Germany

Comprehensive Utilization of Process Residues in Light Industry: The Technological Scheme in China
Xu, Guangwen, China

09:00 – 10:30  **Electrical/Electronic Waste and Producer Responsibility**

**Keynote Lecture:** Producer Responsibility for E-Waste
Hieronymi, Klaus, Germany

WEEE Treatment in Europe – Facts and Figures
Kolba, Helmut, Austria

Costa Rica’s first EPR Model towards a Sustainable Management of E-Waste
Roa-Gutierrez, Floria, Costa Rica

The Role of Computer Refurbishing in Green Industrial Parks
Seldman, Neil, U.S.A.

The "Green E-Waste Channel" as an Environmental Friendly and Social Responsible Concept to Manage E-Waste In Emerging Economies
Bondolfi, Anahide, Switzerland
09:00 – 10:30 **E4 Political and Legal Frameworks**

The Ecology of Wasting
Huls, J. Michael, U.S.A.

Trade in Used Goods – the Environmental Impact
Kahlenborn, Walter, Germany

Factor Analysis to Decrease Municipal Waste and to Convert City to 3R Society
Okayama, Tomoko, Japan

Recovery Rates as a Tool for Goal-oriented Treatment of Cooling Appliances
Rechberger, Helmut, Austria

10:30 – 11:00 **Coffee Break**

11:00 – 12:30 **A5 Construction Materials II**

Mechanical Properties of Crumb Rubber Modified Asphalt
Pasetto, Marco, Italy

Study of Treated Rubber Waste in Soil Stabilised Blocks
Parasivamurthy, Prakash, India

Effect of the Addition of Woodwork Activity Waste and Aggregate Crushing Waste on the Thermo-Mechanical Properties of Sand Concretes
Bederina, Madani, Algeria

11:00 – 12:30 **B5 Municipal Solid Waste Incineration**

Thermal Treatment of Esp Ash from a Municipal Solid Waste Incinerator
Xiao, Yanping, Netherlands

Removal of Chloride and Recovery of Valuable Metals from Bottom Ash for Recycling
Ito, Ryoji, Japan; Speaker: Dodbiba, Gjergj, Japan

Characterization of a New Adsorbent Developed from Waste Ash
Zhang, Fu-Shen, China

11:00 – 12:30 **C5 Biofuels**

Hydrothermal Methane from Biomass
Haiduc, Anca Gabriela, Switzerland; Speaker: Dr. Christian Ludwig, Switzerland

Optimization of Bio Methanation and Composting for Managing Sugar Processing Waste
Ariyaratne, Hiromi, Sri Lanka

NOx Emissions Control by Decoupling Combustion Technique during Biomass Combustion
Gao, Shiqiu, China

Characterization and Optimization of Animal Manure for Biogas Production
Eze, Ifeanyi, Nigeria

Transesterification of Soybean Oil to Biodiesel Using CaO as a Solid Base Catalyst
Wang, Yujun, China

11:00 – 12:30 **D5 Electrical/Electronic Waste Recycling**

From Dismantling-factories to Dismantling-parks: Improving the Technology of Manual Dismantling Processes of Small Electric and Electronical Appliances via Software Modules and Product Analysis
Spitzbart, Markus, Austria

Electronic Waste Management Systems in India – a Case Study.
Kuppusamy, Ranganathan, India

Assessment of Gold Recovery Processes for Printed Wiring Boards in Bangalore, India
Rochat, David, Switzerland
Streicher-Porte, Martin, Switzerland

11:00 – 12:30 **E5 Socio-economic Aspects**

From System Theory to Practical Implementation - a Transdisciplinary Approach to Develop a Nationwide Systemic Landfill Rating
Lang, Daniel J., Switzerland

Evaluating Social Impacts of Projects, Products and Organisations
Carabias-Hütter, Vicente, Switzerland

Miniaturization Puts Raw Material Prices under Pressure
Rohner, Nicolas, Switzerland

Re-Approaching the Environmental Problem with Supply Chain Re-engineering towards Global Sustainability
Malindretos, George, Greece

12.30 – 14:00 **Lunch Break**

14:00 – 14:30 **Invited Plenary Session**

Key Trends in European Municipal Solid Waste Management – Policy and Practice
Strange, Kit, Resource Recovery Forum, United Kingdom

14:30 – 16:00 **A6 Construction Materials III**

Dredged Sediments Characterization and Contaminant Speciation after Phosphate Treatment
Yacoubi, Nadia, France

Impact of Waste Co-incineration on Heavy Metal Concentration of the Clinker in Japan
Takahashi, Fumitake, Japan

Comparative Studies about the Properties of C&D Recycled Aggregates from Different Sources
Müller, Anette, Germany

14:30 – 16:00 **B6 Metal Recovery**

Keynote Lecture: Recovery of Metals from Solid Industrial Wastes
Mishra, Brajendra, Kroll Institute for Extractive Metallurgy, Colorado School of Mines, U.S.A.

Resource Recovery of Rare Metals from Cemented Carbide by Hydrothermal Nano-Process
Itoh, Hideaki, Japan

Assessment of the Resource Efficiency of Remelting and Refining of Coated Magnesium.
Meskers, Christa, Netherlands

Recycling of Aluminum Scrap
Zhang, Lifeng, Norway

Pyro-metallurgical Systems for Recycling and Thermal Treatment of Industrial and Municipal Wastes
Ye, Guozhu, Sweden

14:30 – 16:00 **W3 Workshop: Biofuels and Biomaterials, Part I**

Co-Chairs: Zah, Rainer, Switzerland; Ludwig, Christian, Switzerland
see separate workshop program at www.r07.org

14:30 – 16:00 **W4 Workshop: Electrical/Electronic Waste Recycling, Part I**

Chair: Schluep, Mathias, Switzerland
see separate workshop program at www.r07.org

Business Models for Sustainable E-Waste Recycling in LAC Countries
Boeni, Heinz, Switzerland
14:30 – 16:00 **W5 Workshop: Zero Waste, Part I**

see separate workshop program at www.r07.org

16:00 – 16:30 **Coffee Break**

16:30 – 18:00 **A7 Steel Industry I**

**Keynote Lecture:** Generation and Utilization of Residues and By-products in the German Steel Industry  
Endemann, Gerhard, Germany

Integrated Planning of the Recycling of EAF dusts  
Froehling, Magnus, Germany

The Use of EAF Steel Slags in Hydraulically Bound Mixtures for Road Foundations: A Laboratory Characterization  
Pasetto, Marco, Italy

Treatment and Characterization of Electric Arc Furnace Slag for Cementitious Properties  
Muhmood, Luckman, India; Speaker Vitta, Satish, India

16:30 – 18:00 **B7 Separation Technologies**

Solid Waste Material Characterization and Recognition by Hyperspectral Imaging Based Logics  
Bonifazi, Giuseppe, Italy

Energy Production Systems with a Low Environmental Impact: The Case of the Polymer Electrolyte Membrane Fuel Cells (PEMFCs)  
Fontananova, Enrica, Italy

16:30 – 18:00 **W3 Workshop: Biofuels and Biomaterials, Part II**

Co-Chairs: Zah, Rainer, Switzerland; Ludwig, Christian, Switzerland  
see separate workshop program at www.r07.org

16:30 – 18:00 **W4 Workshop: Electrical/Electronic Waste Recycling, Part II**

Chair: Schluep, Mathias, Switzerland  
see separate workshop program at www.r07.org

16:30 – 18:00 **W5 Workshop: Zero Waste, Part II**

Responsible: California Resource Management Training Institute (CRMTI).  
see separate workshop program at www.r07.org

19:30 – 23:30 **Congress Banquet**

**Wednesday, September 5**

In parallel with the R’07 Congress, the SATW Annual Congress “Relations with Industrialized Countries in Asia” will take place. This Congress is open to R’07 participants.

08:30 – 09:00 **Invited Plenary Session**

Overview of Current Mergers and Acquisitions in Recycling and Metal and Materials Processing Industries – their Legal Status and Perspective  
Dibra, Migen, Quebec Court of Appeal, Canada
09:00 – 10:30 **A8 Cleaner Production**

Preparation and Properties of CaO-Fe2O3-SiO2 Compounds Considering for Re-using of Steel Slag, Paper Sludge and Coal Fly Ash
Okada, Kiyoshi, Japan

Energy Management: Optimisation of the Use of Steam in the Textile Industry in Mauritius
Elahee, Khalil, Mauritius

Cleaner Production of Ionic Liquids in Large-Scale
Zhang, Yanqiang, China

Green Process for Methacrolein Separation in Methyl Methacrylate Production
Yan, Ruiyi, China

09:00 – 10:30 **B8 Industrial Symbiosis**

Industrial Symbiosis – A Viable Strategy for Resource Efficiency?
Hertwich, Edgar, Norway

Why Resource Recovery Parks?
Anthony, Richard, U.S.A.

Case Studies to Recycle Materials in the Manufacturing Industry
Stucki, Gerhard, Switzerland

A Regional Industrial Symbiosis Methodology and its Implementation in Geneva, Switzerland
Massard, Guillaume, Switzerland

Agro-industrial symbiosis and population’s living condition improvement in North Nigeria
Schwab Castella, Pascale, Switzerland

09:00 – 10:30 **C8 Battery Recycling and IT Energy Use**

Lead Recycling and Battery Grid Making in a Single Emission-free Process
Warlimont, Hans, Germany

Integral Evaluation of Treatment Scenarios for Waste Batteries (Alkaline and Zinc-Coal Fraction) Collected in Belgium
Briffaerts, Katleen, Belgium

Waste of Energy in Information Technology: Sustainability Considerations
Broda, Hellmuth, Switzerland

09:00 – 10:30 **W6 Workshop: Emerging Technologies and Scarce Metals, Part I**

Chair: Wäger, Patrick, Switzerland
see separate workshop program at www.r07.org

10:30 – 11:00 **Coffee Break**

11:00 – 12:30 **A9 Sustainable Resource Management**

Saving $ Saving Resources with "Zero Waste" as a Goal
Strauss, Nancy, U.S.A.

Management of Options for Sustainable Waste Management in Switzerland
Spörri, Andy, Switzerland

Life Cycle Management Strategies Applied to Waste Prevention
Morselli, Luciano, Italy

Using a Landfill as Construction Site – a Geochemical Risk Assessment at Smokey Mountain
Regenspurg, Simona, Switzerland
Evaluation on Progress of Building a Resource-Efficient and Environment-Friendly Society in China
Wang, Yi, China

11:00 – 12:30  **B9 Management Methods**

Business Process Design in Extended Supply Chains
Herrmann, Christoph, Germany

Green Design of Process Industries on the Basis of Ecological Concept
Zhang, Xiangping, China

Scheduling and Remanufacturing: An Approach with Simulation Techniques.
Guizzi, Guido, Italy

Resource Management Audits – A Proven Tool to Develop P3 in Municipalities and Industries
Huls, J. Michael, U.S.A.

Rational Energy Use and Waste Minimization Goals Based on the Use of Production Data
Posada, Enrique, Colombia

11:00 – 12:30  **C9 Resource Statistics and Material Flow Analysis**

Energy and Material Stream Mapping
Schmidt, Mario, Germany

Waste Input-Output Material Flow Analysis of Metals and Plastics in the Japanese Economy
Nakamura, Shinichiro, Japan

Accounting for Steel Stock in Japan
Daigo, Ichiro, Japan

Patterns of Historic Iron Stocks in Use and Implications for Primary and Secondary Resource Use
Mueller, Daniel, U.S.A.

The Study of Copper Cycle in China
Yue, Qiang, China

11:00 – 12:30  **W6 Workshop: Emerging Technologies and Scarce Metals, Part II**

*Chair:* Wäger, Patrick, Switzerland

see separate workshop program at www.r07.org

12.30 – 14:00  **Lunch Break**

14:00 – 14:30  **Invited Plenary Session**

14:30 – 16:00  **A10 Rump Session**

*The RUMP SESSION will provide conference attendees with an opportunity to briefly present their ideas on any aspect of the congress topics in an informal setting.*

14:30 – 16:00  **B10 Information Systems for Resource and Waste Management**

Metadata Driven Acquisition, Search and Procurement of Secondary Material within an Internet-based Market
Bremer, Jörg, Germany

The Role of Smart Labels for Resource and Waste Management
Binder, Claudia, Switzerland

Certificate Market Based EPR for WEEE Recycling
Herrman, Christoph, Germany

Efficient Organization of WEEE Material and Information Flows Considering Interfaces in the Extended Supply Chain of the Electronic Industry
Hottenroth, Heidi, Germany
14:30 – 16:00  **C10 Education for Material Efficiency and Recycling**

Material Efficiency in Higher Education – Requirements on Teaching and Practical Realisation in a New Simulation Game
Keil, René, Germany

"I Have an Idea" – from an Illiterate
He, Yan, China

Nicolas, Jose, Philippines

Eco-Literacy in Solid Waste Recovery at Community
Sadhana, J., India

14:30 – 16:00  **W7 Workshop: Ecological and Social Footprint of Electronics**

Chair: Eugster, Martin, Switzerland
see separate workshop program at www.r07.org

16:00 – 17:00  **Closing Session**

Reports from Workshops

Summary Report SATW Congress

17:00 – 19:00  **Farewell Reception**

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**Thursday, September 6**

08:30 – 16:00  **Post Conference Tour 1**
Factory tour: Misapor/Tegra/Stallinger/Ems-Chemie/Holcim

08:30 – 15:00  **Post Conference Tour 2**
Plant visit: Visit of Kompogas biowaste processing information center

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**General Information**

Registration  [www.r07.org/](http://www.r07.org/)

Congress Fee  € 500

reduced rates and accommodation see: [www.r07.org](http://www.r07.org)

Information  [info@r07.org](mailto:info@r07.org)

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