



5th
INTERNATIONAL WORKSHOP
ADVANCES IN CLEANER PRODUCTION

“CLEANER PRODUCTION TOWARDS A SUSTAINABLE TRANSITION”

Why do YOU think YOU/WE can make Improvements in Society?

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The presenter will explore the possibilities of holistic and integrated approaches to achieve equitable, post-fossil carbon societies, which are truly sustainable. He will pose fundamental questions we need to answer in seeking ways of making urgently needed changes: *What can we learn from history? What roles have crises had as motivators for making changes? What are roles of 'good examples' as motivators for making changes? What roles can alternative paradigms and values have as motivators for making changes. What can be accomplished if we integrate all four approaches to guide and stimulate the transformations that are needed?*

The presenter will explore the following illustrative challenges we must address:

- **Increasing global warming and pollution:** It is estimated that net quantity of GHG (Greenhouse Gases – including CO₂, NH₃, NF₃, CFS, NO_x and O₃, which collectively are being added to the atmosphere at the rate of 100,000,000 to 1,000,000,000 t/d!) The global GHG equivalents continue to increase rapidly, thus catalyzing present and future climatic and eco-system changes with numerous anticipated and unanticipated consequences.
- **Continuing growth of the human population: The global population is increasing at the rate of more than 70,000,000 people per year.**
- **Shrinking of the Earth's bio-capacity:** Annually, 9 million hectares of forests are being cut and 104 species become daily.
- **Economic disparities:** The largest part of the world's income is distributed among 20% of the richest people, 25 % of the world's population is impoverished and malnourished.

Despite these threatening figures, there is hope as more and more preventive environmental protection concept, tools, processes and products are implemented, among them: pollution prevention pays, the Melbourne Principles, sustainable consumption and production, the Equator Principles for Sustainable Finance, The Earth Charter, Corporate Social Responsibility, Ethical Investments, and many exciting 'Bottom-up changes.'

Given the trends around productivity and the lack of equitable employee remuneration, numerous models are evolving to create more equitable and sustainable communities such as: place-based companies, worker ownership, social enterprises, traditional Co-ops, B-corporations, community development corporations, land trusts. More and more crowdfunded creative solutions are emerging, supported by websites like Indiegogo and Kickstarter.

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Important approaches that are helping to catalyze societal changes are enhanced energy and material's efficiency due to process integration, which increasingly rely upon advances in bio-mimicry, green chemistry, green engineering, green buildings, green investments in renewable energy and advanced engineering approaches.

The easiest and most effective approaches for reducing GHG footprints and to improve equity for present and future generations in materials, energy and water are focussed upon preventing or reducing their wastage. Shifting from fossil carbon-based energy systems to renewable energy systems is essential but because they also have GHG footprints, only expanding their usage without integrated approaches for prevention or reduction of wastage during all phases of product and service life cycles will not be sufficient to effect the changes that are urgently needed.

Therefore, governmental and industrial policies and practices must integrate concepts and approaches such as the 'Circular Economy' and must make systematic, 'Carbon Structural Adjustments' throughout all industrial and societal sectors.

Our educational systems must become more multi-disciplinary to educate scholars of today and tomorrow in holistic and integrative educational, research and out-reach approaches designed to stimulate finding, testing and implementation of innovative ways of meeting short and long-term societal needs to live equitably within our global eco-system's boundaries.

Each of us must become role models for change and change agents to catalyze others to also become change agents to help to make the essential societal changes that are needed to make in order to transition to truly sustainable, equitable, post fossil-carbon societies.