



Sustainable Future of the PVC Industry

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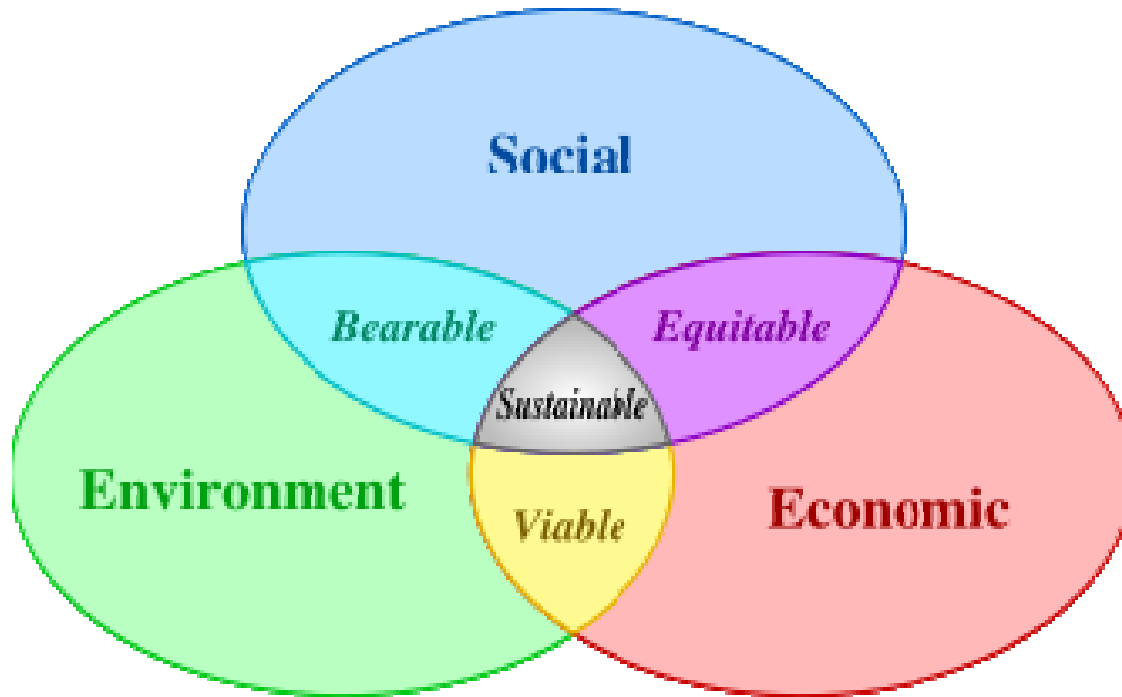
Sustainability : What's that ?

- In 1987, the World Commission on Environment and Development (the Brundtland Commission), agreed a definition of sustainable development that is now generally recognised as the standard: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
- **The Brundtland definition does not help a lot to answer the question !!!**

A lot of confusion between :

- The objectives and level of ambition of sustainability
 - Focus on the ultimate goal: Zero negative impact on environment/health ? Use exclusively renewable resources?
 - Is progress towards sustainability enough?
- The objectives and the means
 - Implementation of best available technologies /techniques/practices (BAT/BAP)
 - Responsible Care
 - Product stewardship
 - Voluntary Commitments /Agreements
 - Substitution
 - Eco-labels
- How best to achieve sustainable development ?
 - Step by step progress
 - Continuous progress

The key question : how to achieve this ?



The key questions for the PVC Industry

- **Availability of resources: Oil, raw materials, energy**
- **Climate change / CO2 emissions**
- **Impact of production**
- **Additives**
- **Waste management**
- **Producer responsibility (CSR) / Social responsibility (workers / consumers)**
- **Competing materials face the same issues, but their relative importance may be different**

Forecast 2050

- Do we have at global level a common understanding of what " sustainability " means / will mean for the PVC industry in 2050 ?
- Will the PVC industry be able to achieve " sustainability " in 2050 ?
- How ?

Climate change / Energy consumption / CO2 emission

- **Global warming: a threat or an opportunity for PVC ?**
- **Impact of PVC on climate, compared to alternatives (Eco-profile issue)**
- **Energy sources (renewable ?)**
- **Durability of PVC products seen both as a strength (saving resources) and a threat (persistence in the environment)**

Oil availability / Resources /Raw materials

- 43% oil / 57 % chlorine, but energy consumption for chlorine production
- Carbon based raw material: coal, ethane, syngas, recycled material , renewables (e.g. corn, sugar cane, sugar beet, others...)
- Could there be a move of the industry to countries producing the agricultural raw materials?
- Chlorine from incineration?
- Connected environmental and energy balance compared to the current situation?
- Impact on climate and costs?

Emissions at production plant level

- Ethylene versus acetylene process
- Potential for making acetylene process cleaner?
- Lowest emission levels achieved and achievable
- Toxicity of emissions, greenhouse gases emissions
- What is the longer term achievable reduction in energy and raw materials usage, compared to the theoretical minimum resulting from thermodynamics?

Additives

- **Will tin additives face the same attacks as lead now?**
- **Which plasticisers in the future ?**
- **Should additives be determined with recycling in mind?**
- **Development of risk perception / acceptance, cost / benefit thinking?**

Waste management

- **Will PVC waste be a significant resource in the future ?**
- **What will be the impact of recycling on demand for virgin resin ?**
- **Can we imagine retrievable storage of PVC waste which cannot be recovered today?**
- **Should we design products specially for recycling?**
- **Will composites be hampered by the difficulty of recycling, or will technical progress allow recycling composites without major problems?**

Producer responsibility (CSR) / Social responsibility (workers / consumers)

- **PVC industry taking the lead and showing the way**
- **How to ensure jobs for our workers ?**
- **How to ensure customers needs and satisfaction ?**
- **Need for low cost technically good products (affordability).**

Future structure of the PVC industry

- Fewer players ?
- Higher average production capacity ?
- Localisation ?

Conclusion

- **Move to sustainability = a must and an opportunity to ensure the future of the business**
- **Need for a global understanding and a global approach, in order to avoid unbalanced development**
- **Global voluntary commitment to be envisaged**



Thank you for your attention