

# LIFE STYLE ASSESSMENT (LSA) OF PLASTIC ENGINEERING PRIOR TO LCA

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## Abstract

Chemical recycling of plastic wastes can reproduce technically the same materials by applying a much less energy than from petroleum. Thus, the recycling is equivalent to the resources management to mitigate plastic's socio-toxicity. To overcome the confronting resource stress caused by plastic production-consumption, a novel assessment method for plastic production, i.e., life-style assessment (LSA), is proposed here. Basic concept of the assessment and its development that are needed for social sustainability will be proposed and discussed.

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**Keywords:** *life style assessment (LSA), plastic recycling, resources management, chemicals management, smaller lifestyle*

## 1. Introduction

In theory, economy is not benign to the global environment. Obviously, unlimited inflation of humans' demands has obviously violated the border of the environment and resources that are essential to the human society. Little time remains for the mitigation of stresses on resources and the environment. Nevertheless, the crisis consciousness is still thin among the expanding global economy that rather stimulates the production and consumption. Plastic production is not an exception while campaigns of Green Chemistry and Green New Deal tend to avoid the issue of limited resources.

In this meeting, a novel assessment method for plastic production and people's life-style with plastic goods is proposed as a possible solution of the issue. It is "life-style assessment" (LSA).

## 2. Conceptual Bases

The basic concept of plastic recycling for sustainability consists of the followings.

- 2.1 Urgent paradigm shift of economy from economy-basis to environment- and resource-basis.
- 2.2 Less production, more recycling for active economy.
- 2.3 Proposal of life-style assessment (LSA) as a novel assessment tool for sustainable plastic industry.
- 2.4 Positioning of plastic recycling as the equivalent of resources and socio-toxicity management.

## 3. Development of Discussion

- 3.1 Finiteness of natural organic resources needed for plastic production is discussed in terms of oil and carbohydrates resources.
- 3.2 How to mitigate the stresses on the global resources and environment.

3.3 Less production, more recycling. To overcome the problem of excessive production and massive consumption, the necessity of mental vigor of austerity and gratitude for plastic products and consumption must be preached.

3.4 A new assessment tool, LSA, is needed prior to the LCA. It consists of the measurement of (1) CSR concept of the environment and natural resources, (2) purpose, necessity, scale of plastic production, (3) defect of plastic production on the resource depletion and energy, (4) materials' vs. goods' lifespan, (5) network of plastic reproduction, (6) impact on promoting smaller life style.

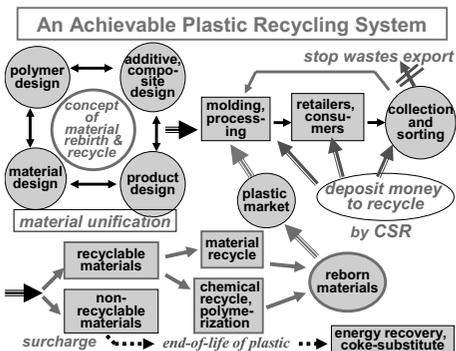
3.5 The results of LSA will appear in (1) elongation of resources lifespan, (2) reducing massive production, consumption and wasting, (3) learning of mentally richer but smaller lifestyle in energy and materials, (4) posterity education of correct environment- and resource-consciousness.

3.6 Chemical recycling of plastic wastes reproduces the same materials by applying much less energy than from petroleum. Therefore, it is equivalent to an oil resource management and chemical socio-toxicity management for mitigating the stress caused by plastic production,

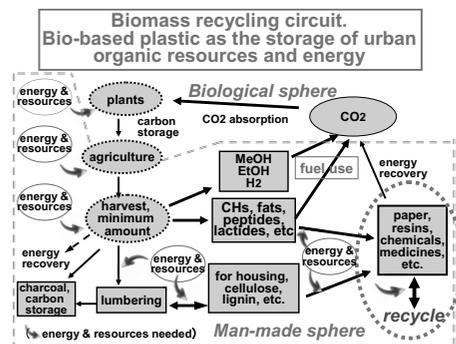
3.7 Sensuous and deceiving words such as "green" and "benign to the environment" anesthetize people to forget the real reason of environment and resource problems. Indeed, the reason bases on our hypertrophied lifestyle abundant in materials and energy. Therefore, the problems are unsolvable simply by shifting the resources from fossil to biomass, the energy from fossile or atomic to solar or biomass.

## 4. Plastic as Recyclable Urban Resources

Two schemes shown in the next page will be discussed for the present resource and environment issues.

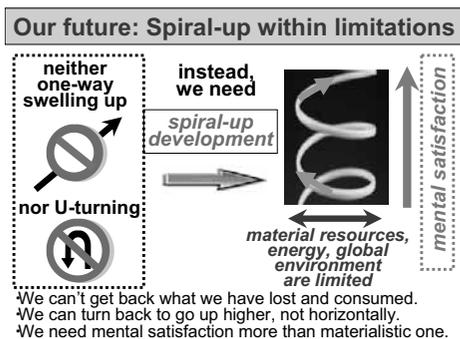


[2] A. Oku. Creative production within the limitations of resource and environment—Is there any science-technology to suppress people’s deep demands? (*Japanese Journal of Synthetic Organic Chemistry*, Japan 69 (2010) 1071-1075.



**5. Conclusions**

We can't take back what we have excavated and consumed. We can't further expand our lifestyle along the axes of limited resources and energy. However, our future will be enriched by other ways to go spiraling up along the axis of mentality.



- We can't get back what we have lost and consumed.
- We can turn back to go up higher, not horizontally.
- We need mental satisfaction more than materialistic one.

**References**

[1] A. Oku. Biomass: future view from the resources and environment (*Japanese*). *Chemistry & Chemical Industry*, 63 (2010) 12-14.