PlasticsEurope
Association of Plastics Manufacturers

STUDY HIGHLIGHTS HOW PLASTICS CONTRIBUTE TO ENERGY SAVINGS AND ASSOCIATED REDUCTIONS IN GREENHOUSE GAS EMISSIONS

A comprehensive study has shown that substituting plastics where possible by more traditional materials throughout Western Europe would require additional energy equivalent to 22.4 million tons of crude oil and result in additional greenhouse gas emissions of around 97 million tons, equivalent to 30% of the EU-15 Kyoto target in the period 2000-2012.

The peer reviewed study was commissioned by Plastics*Europe* and conducted by the GUA GmbH, the Vienna based consultancy which has made numerous environmental studies for European institutions, companies and national authorities.

The aim of the study was to demonstrate how plastics contribute to significant energy savings in numerous applications and how they have an important role to play alongside other materials in reducing the relative impacts of products on the environment while maintaining economic growth.

At the launch of the results of the peer reviewed study at the bi-annual Identiplast conference held in Brussels on 18-19th April, Nancy Russotto, the CEO of Plastics*Europe* stated "Conclusions from this and related studies are extremely important in guiding European policy in relation to current discussions around EU Thematic Strategy for the sustainable use of resources. In particular they underline the importance of assessing the impact of materials and products across their whole life-cycle. Improving fossil fuel energy efficiencies and associated climate change effects will be key factors in achieving the stated aim of decoupling growth from negative environmental consequences".

The basis of the study was to consider a total of 174 examples of plastics products which are representative of all the major applications, such as packaging, car components, electrical equipment, building materials and medical appliances. Energy balances and associated climate change effects were calculated for the life-cycle phases of production, use and end-of-life treatment for both the plastic component as well as for an alternative material (or combinations of materials) which could fulfil the same function. Energy efficiencies are important at all stages of the life-cycle, from production through the use phase to end-of-life recovery (where plastics can be recovered as either a material or as a source of energy).

It was estimated that 19% of plastics applications were not readily substitutable by other materials. Examples of this category include airbags in cars, insulation for cables and medical blister packaging. In those applications where plastics could be substituted, it was calculated this would require 26% overall more energy. Plastics packaging is the sector giving the greatest contribution to energy savings, but virtually all other areas show benefits, whether in transport, electronic goods, or construction products such as plastic pipes.

Commenting on the results, Harald Pilz of GUA, who led the study, said "There are clearly many areas of uncertainty in the absolute figures, but we have taken a conservative view for areas where data was lacking and it is clear that plastics products do provide significant energy savings and reduced climate change effects across the whole life-cycle compared to using alternative materials".

For end-of-life treatment the average current actual levels of recycling and recovery in Europe were assumed, but sensitivity analyses show the benefits of increasing diversion from landfill.

The GUA studies have also demonstrated that while further substitution of other materials by plastics could provide additional benefits, inter-material substitution is not the way to achieve absolute decoupling between "economic growth "and environmental impacts. It is calculated that 40% of the energy use of products in general is related to the use phase, and it is here that the most significant improvements can be made. As an example the additional insulation

of housing can have a major impact on the decoupling of growth from climate change effects and this is valid whatever insulation material is used. In the presentation for the Identiplast conference, GUA demonstrated that if just 5% of plastics insulation is used to improve insulation standards, the subsequent energy savings are three times higher than that needed for the additional production energy of plastics growing at 3% per year.

NOTES TO EDITORS:

1. The full GUA study "The contribution of plastics to resource efficiency" is available on the Plastics*Europe* website (www.plasticseurope.org) under Presentations / Technical reports
2. The total energy needed to produce, use and recover plastics in W. Europe estimated at 3900 million GJ/a. The additional energy needed if plastics products in W. Europe were to be substituted wherever possible by other materials is 1020 million GJ/a (+26%).
3. This additional energy is equivalent to 22.4 million tons of crude oil (equivalent to 190 ultra large crude oil tankers lined up in a row 87kms long). In energy terms this is also equivalent to ten 1000 MW nuclear power stations, or the heating and hot water requirements of 40 million people.
4. A presentation summarising the results of the GUA studies was presented by Harald Pilz. at the Identiplast conference held in Brussels on 18-19th April 2005.
5. Plastics*Europe* is aware that the release of the study "The contribution of plastics to resource efficiency" could lead to some misunderstandings among other material groups as to the intent of the conclusions being drawn. The study concludes that in the current existing market of applications using plastics, replacement of the plastics by other materials would lead to the need for more energy (and associated greenhouse gas emissions, from both fossil fuel energy sources and landfilled waste). The main objective was to highlight the importance of considering the whole life-cycle of products, and that plastics do play an important role in contributing to energy efficiency and associated climate change effects, despite being mainly made from non-renewable resources and with often lower recycling rates than other materials. It was never the intention to claim improved "sustainability" over other materials but rather to avoid any discrimination against the use of plastics because of their perceived negative environmental credentials. In fact it is recognised that many of the most environmentally sustainable products consist of complex combinations of materials, whereby synergies between the different materials provide reduced overall environmental impacts throughout the life-cycle.
6. One very important conclusion that can be generally drawn from the study is that the degree of diversion from landfill is an important criterion for most materials, in order to either conserve resources or reduce greenhouse gas emissions.
7. Another important observation, as indicated above, is that a focus on materials alone cannot deliver the desired absolute decoupling of growth from negative environmental impacts. For this, a more fundamental change in systems and approaches is required. Nevertheless, in striving towards a more sustainable use of natural resources, a key objective must be to innovate with all materials and products to ensure a minimum use of fossil fuel resources with the associated greenhouse gas emissions at all stages of the life-cycle.

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