

Innovative treatment for recycling difficult plastic waste streams.

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Plastic is an inexpensive, lightweight and durable material that can be easily moulded into a variety of products used in a variety of applications. As a result, plastic production has increased significantly over the last 60 years. However, the current level of their use and disposal causes some environmental problems. About 4% of the world's oil and gas production, non-renewable resources are used as raw materials for plastics, and an additional 3-4% is used to power their production. Many of the plastics produced each year are used to make disposable packages and other short-lived products, which are discarded within a year of manufacture. These two observations alone indicate that current plastic use is unsustainable. In addition, due to the durability of the polymers involved, a significant amount of waste plastic is accumulated as waste in landfills and natural habitats around the world. Recycling is one of the most important means currently available to mitigate this impact and is one of the most dynamic areas of the plastics industry today [1].

Recycling offers the opportunity to reduce oil consumption, carbon emissions, and the amount of waste that needs to be disposed of. Here we briefly describe other waste reduction strategies: reducing material consumption through down calibration or product reuse, using alternative biodegradable materials, and recycling in the context of fuel energy recovery. .. Plastics have been recycled since the 1970's, but the amount of recycling varies geographically depending on the type and use of the plastic. Recycling of packaging materials has expanded rapidly in many countries over the last few decades. Advances in technology and systems for collecting, sorting and reprocessing recyclable plastics are creating new opportunities for recycling. The joint action of the general public, industry and government could potentially divert most of the plastic waste from landfills to recycling. In the coming decades. Plastic recycling is a way to reduce environmental impact and resource depletion [2]. Fundamentally, high levels of recycling, as with reduction in use, reuse and repair or remanufacturing can allow for a given level of product service with lower material inputs than would otherwise be required.

Recycling can therefore decrease energy and material usage per unit of output and so yield improved Eco efficiency. However, it should be noted that the ability to sustain energy input and the impact of external impacts on the ecosystem, in

addition to residual levels of material input, determines the ultimate sustainability of the entire system [3].

This paper briefly discusses current systems and technologies for plastic recycling, life cycle proof of the eco-efficiency of plastic recycling, and issues related to economic and public concerns. Focus on package manufacturing and disposal as it is Europe's largest single source of plastic waste and a region where recycling efforts have expanded significantly in recent years. Forty years ago, it was common to reuse post-consumption packages in the form of glass bottles or bottles. The restrictions on a wide range of applications for rigid container reuse are logistic, at least in part, because distribution and collection points are far from centralized product bottling plants and backhaul distances are quite long. In addition, the variety of containers and packaging available for branding and marketing purposes makes direct collection and replenishment impractical. Collection and replenishment schemes exist in some European countries, such as PET bottles and glass, but elsewhere, for local businesses rather than realistic large-scale strategies to reduce packaging waste [4]. It is considered a niche activity. There is great Potential for the reuse of plastic used to transport goods, and for the reuse or reprocessing of some plastic parts in high value consumer products such as vehicles and electronic devices. This is evident in an industrial scale with reuse of containers and pallets in haulage. Some shift away from single use plastic carrier bags to reusable bags has also been observed, both because of voluntary behavior change programs, as in Australia and as a consequence of legislation, such as the plastic bag levy in Ireland, or the recent banning of lightweight carrier bags, for example in Bangladesh and China.

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