Avoid plastic banners

'Only when the last tree has been cut down,
Only when the last river has been poisoned
Only when the last fish has been caught
Only then will you find that money cannot be eaten.'

Cree Indian proverb

Attractively printed plastic banners indicating the dates and venues of conferences, public events, etc. are ubiquitous. Such banners are commonly made of poly(vinyl chloride) (PVC)[1], but acrylic and polypropylene are also used for some applications. After the event is over, the banners are discarded, either ending up in landfills, or being burnt. Both methods of disposal are undesirable, the former because the plastic may not degrade for years, and the latter because toxic gases may be released. For example, Otake *et al.*[2] found that PVC cables buried under a garden soil did not degrade for over 32 years. Klrbas *et al.*[3] found a slight degradation of low molecular weight PVC over a period of 30 days by white rot fungi in laboratory experiments. Incineration or burning of PVC leads to the release of dioxins[4], a class of persistent organic pollutants that are carcinogenic and have other adverse health effects. Some of the inks used for printing on vinyl banners, such as true-solvent inks and eco-solvent inks, release volatile organic compounds into the atmosphere[5]. Can we stop using plastic banners and revert to ones made of cloth, as was the practice a few decades ago? As an alternative to cloth, banners made of biodegradable polymers can be used, but they are likely to be more expensive. It would be desirable to reduce our assault on the environment, even if it entails some inconvenience.

1. https://www.piedmontplastics.com
2. Otake, Y., Kobayashi, T., Asabe, H., Murakami, N. and Ono, K., *J. Appl. Polym. Sci.*, 1995, **56**, 1789–1796.
3. Klrbas, Z., Keskin, N. and Guner, A., *Bull. Environ. Contam. Toxicol.*, 1999, **63**, 335–342.
4. Kim, S. H., Kwak, S.-Y. and Suzuki, T., *Polymer*, 2006, **47**, 3005–3016.
5. https://sdgmag.com/tips/best-inks-vinyl banners

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Global Knowledge Index 2017

An inaugural Global Knowledge Index (GKI) has been released to the public recently[1]. This is a joint exercise between the United Nations Development Programme (UNDP) and the Mohammad Bin Rashid Al Maktoum Knowledge Foundation (MBRF), Dubai. This first edition has profiled 7 sectors in 131 countries and is intended to help as a guide to track knowledge wealth for stronger nation-building and achieving sustainable development. Switzerland (with a total score of 72.8 out of 100), Singapore (69.5) and Finland (68.3) take the top three positions in this first ranking. India is ranked 82.

The GKI is a composite index structured around seven sectoral indices, namely pre-university education; technical vocational education and training; higher education; research, development and innovation; information and communication technology; economy and general enabling environment. Altogether 133 variables from reliable and updated international data sources are integrated into a single weighted score. The report is available at the following links:

Country results: http://knowledge4all.com/uploads/files/KI2017/Country_Results_en.pdf

Executive report: http://knowledge4all.com/uploads/files/KI2017/Summary_en.pdf

Table 1 displays the seven sectoral indices and the composite Knowledge Index (KI) score for India and its rankings among the 131 countries for 2017. An interesting exercise that could be carried out is to see how the KI score varies with the per capita gross domestic product in

Table 1. The seven sectoral indices and composite Knowledge Index for India and its rankings among 131 countries for 2017

Sectoral indices and Knowledge Index	Rank	Value
Pre-university education	113	41.8
Technical vocational education and training	43	55.8
Higher education	63	39.1
Research, development and innovation	52	25.6
Information and communications technology	89	42.7
Economy	73	42.0
General enabling environment	111	50.6
Knowledge index	82	42.1