# Solutions to Tutorial Questions

**Chapter 14 Economics of household waste and recycling**

**14.1 why would we predict that market failures will occur with respect to the production and disposal of solid wastes?**

*This is because the production and disposal of wastes generate externalities. For instance, if a mining company simply dumped the by-products from extracting and processing ores, this could lead to water pollution. If a household throws empty Coke bottles away, these could end up as marine plastic waste, and make coastlines look ugly. Externalities mean that those responsible for producing and/or disposing the solid wastes do not incur all of the costs that these produce, since these costs occur to other people and to non-human animals.*

**14.2 what are the differences between “purchase-relevant” and “discard-relevant” waste reduction policy options?**

*For purchase-relevant policy options, we are trying to change the purchasing behaviour of (usually) consumers in a way which will reduce waste problems. A great example is the plastic bag tax which many countries (eg Ireland, the UK) operate in supermarkets. Here, we are trying to get people to re-use shopping bags rather than continuing to issue single-use bags which end up in the waste stream. A discharge-relevant policy option, in contrast, changes the disposal behaviour of firms and households. For instance, the UK landfill tax has made it relatively more expensive to dispose of waste to landfill sites, encouraging local authorities and firms to think about alternatives such a more recycling of household and commercial wastes. A deposit-refund scheme is a policy option which is relevant to both the purchase and the discard decision.*

**14.3 what factors would expect to be most important in explaining the variation in household waste production over time within a given geographic region?**

*Empirically, changes in consumer incomes over time seem important (richer households generating more wastes), along with changes in household composition and size (eg a reduction in average household size). The nature of the waste collection and recycling scheme in a region could also be important, for example whether/when “collect” recycling schemes were introduced.*

**14.4 Thinking about your answers to (14.3), what factors are most likely to explain variation in recycling rates across cities in Europe?**

*Variation in per capita incomes are likely to matter, but also the nature of the recycling schemes operated in different cities (which might depend on population density), and whether there is an increasing change for waste collection as a function of the volume of waste produced. The frequency of waste collection also matters, but so will variations in the consumption habits of households, since some types of waste are harder to recycle. Finally, the nature and frequency of information campaigns run by local government might matter.*

**14.5 how could a “nudge” be used to encourage households to recycle more?**

*A nudge could be implemented in a number of ways. One would be the use of messages which encourage “responsible” behaviour in a visible manner, for instance the use of labelling of “high recyclers” by stickers on their bins. Another would be the use of a social norm treatment, whereby we try to nudge those who recycle less than the average by informing them about the behaviour of those who recycle more than the average. Changing the default for waste collection could also be effective, for example asking people to opt out rather than opt in to a food waste collection service.*