

# The ageing society – an example of consequences for biomass use

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Increasing life expectancy results in an ageing society in parts of the world. The old of tomorrow are also expected to have higher comfort demands (Wuagneux 2006). One likely consequence is an increase in the need of such products as disposable incontinence diapers, which are today partly based on cellulose from forestry. A calculation of the potential increase for heavy incontinence care (assuming the use of disposable incontinence diapers) was made based on the demographic trends for Europe and on the yield from forestry performed under Nordic conditions. The calculation is shown here using a parameterization known from literature (Holmberg 1998):  $I = i * m * u * P$ . It expresses the impact (I, in our case, forest area in ha) as a product of four factors that humans have the ability to change, in our case,  $i$  = ha Nordic forest area / kg material (Swedish forest agency 2009),  $m$  = kg material / service,  $u$  = service / population in Europe, and  $P$  = population in Europe (United Nations 2009). The 'service' is to keep a customer with heavy incontinence dry for a year,

assuming that the same fraction of the population above 50 years as today will need heavy incontinence protection.

Under these assumptions, the forest area needed for heavy incontinence care in Europe will increase with about 75% until 2050. If also the oil-based material in the diapers were to be replaced by wood-based, this would further increase the needed forest area to 136%, assuming a 1:1 replacement ratio by weight. This is still a small share of the total European forest area (0,2%). However, such an increase in wood demand for only one product is not without problems, since forests to a large extent are already utilized, e.g. for timber and pulp and paper production, and since there is an expected increase in demand for bio-based fuels and materials for replacement of oil-based products, thus competing for either the yield from the forests or for the land area. At the same time, there are rising concerns regarding biodiversity and other ecosystem services in connection to forestry (MEA 2005; TEEB 2009).

**Table 1.** Estimation of forest area needed for disposable incontinence diapers for the ageing population in Europe.

Year	2010	2020	2030	2040	2050
<b>P / population</b>	732 759 000	732 952 000	723 373 000	708 489 000	691 048 000
<b>u / (service / population)</b>	0.011	0.013	0.015	0.020	0.021
<b>m / (kg material / service)</b>	84	84	84	84	84
<b>i / (ha forest area / kg material)</b>	0,0010	0,0010	0,0010	0,0010	0,0010
<b>I / ha forest area = i * m * u * P</b>	690 000	800 000	930 000	1 190 000	1 210 000

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