Cascading utilisation of post-consumer wood waste has recently gained increasing attention in the European Union, aiming for a society in which the resource's properties are optimized through sequential uses. To date, material utilisation of wood waste has been limited to particleboard production, with additional niche alternatives being restricted by quality requirements for wood waste. In this consequential life cycle assessment focusing on post-consumer wood collected at Danish recycling centres, Global Warming Potential (GWP) impacts from quality-driven choices for cascading management of wood waste were compared with those from handling mixed wood waste qualities. GWPs were modelled by considering the dynamic profile of greenhouse gas emissions (including biogenic carbon dioxide) for two time horizons (100 and 500 years). The robustness of the results was tested by varying modelling assumptions with respect to electricity system, wood sourcing and associated rotation period, and impacts from indirect land use changes. The results demonstrated that valuing quality over quantity in wood waste management can ensure larger GWP savings, especially if recycling applications have a long lifetime and/or substitute energy-intensive products; such results were confirmed under all scenario analyses. Inclusion of land use changes credited land-intensive products. More cascade steps of the wood waste resource ensured larger savings; however, assumptions on the electricity mix, on the source of the wood alongside the choice of the time horizon for GWP greatly influenced the results on cascading management.