

Adapting the Circular Economy Framework for Zoological Gardens

Dace Dance

Vidzeme University of Applied Sciences

Zoological gardens take care of planet's biodiversity and wildlife conservation and put strong effort into education of society, resource efficiency and reduction of environmental impact. These efforts are equally crucial to achieving sustainability targets. The public now wants activities that are sustainable in all aspects (Peng et al., 2025). When examining institutions such as zoological gardens, whose targets are strongly related to circular economy (CE) targets – biodiversity and conservation, it is necessary to frame the concept within this context.

Already a decade ago researchers from European association of zoos and aquariums (EAZA) declared "If zoo populations are not sustainable, neither are zoos themselves." (Leus et al., 2011). However, there is less focus on how institutions such as zoological gardens maintain their operations related to CE dimensions. Zoological gardens involved both technical and biological material flow, represented by the CE butterfly diagram (Ellen MacArthur Foundation, 2021). Recent studies emphasize plasticity and the variety of versions of how circular economy concepts coexist (Peris-Ortiz et al., 2025). Therefore, the adaptation of the circular economy framework is essential.

The research question is: How can circularity be viewed in the context of zoological gardens' primary goal to preserve wildlife? In other words, is it possible to be circular when guarding a planet's biodiversity, which itself is one of the CE targets?

Research methodology included combined data collection from literature review (keywords: "Circular economy", "Zoological gardens", "Wildlife conservation", "Adapting CE framework") as well as onsite visits (observation method) of 4 zoological gardens in Europe: Riga National Zoological Garden (Latvia), Fondazione Bioparco di Roma (Italy), Zoo Santo Inácio (Portugal), Saaremaa Zoo (Estonia).

The study frames the circularity concept for zoological gardens that focus on their main target to preserve wildlife, while operating under resource constraints. Results might be applied to the decision-making process on daily operations and further studies of the circularity of zoological gardens. The next step is to elaborate on a guide or roadmap on how to understand and organize various complex issues related to circularity in zoological gardens.

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circular economy, zoological gardens, wildlife conservation, Europe