

Summary of Day 2

Q10: Recycling Allocation and Material “Down-cycling”

- Pavement materials may be recycled on-site or through an off-site recycling system. In either case, allocating the burdens of recycled materials or repurposed to a specific pavement system is challenging. The following methods have been proposed in the LCA literature to address this challenge.
- One study considered allocation of recycled materials and assumed that each construction event is responsible for the materials it uses.
- a 50/50 method that allocates half the burden of producing and disposing of virgin materials to the first construction event and half to the final construction event, which uses recycled forms of the virgin material.

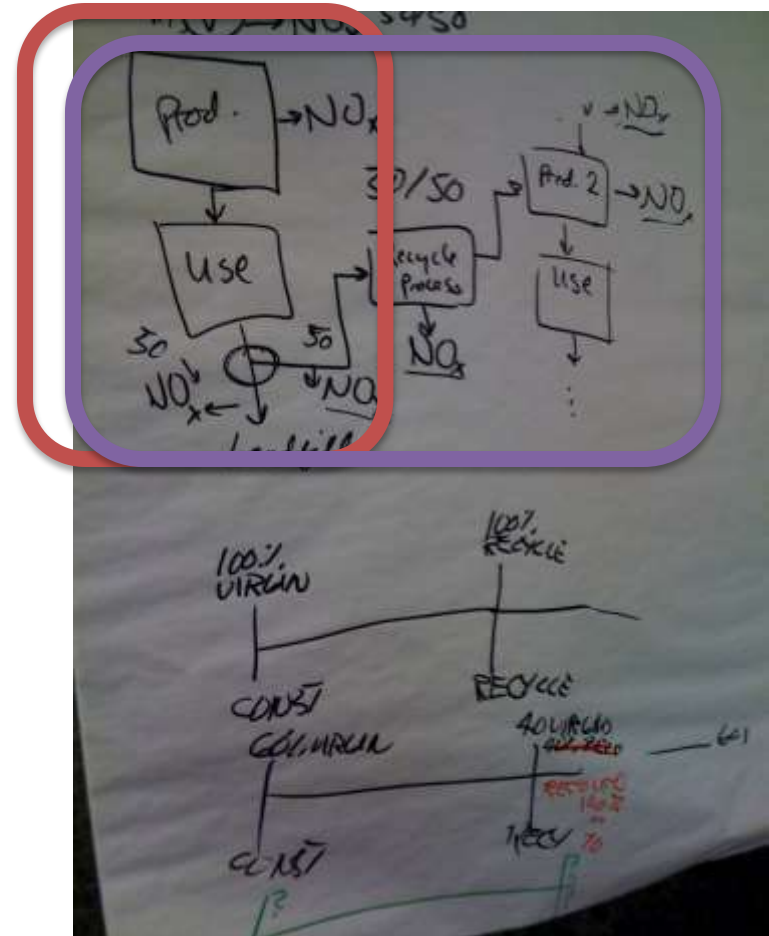
Q10: Summary

- Arbitrary allocation (e.g., 50/50) is not defensible
- Groups came up with different approaches and questions

Group 1

Recycling Allocation and Materials “Down-cycling”

- Allocation in 90 minutes!!
- Basically two philosophically approaches
 1. Product 1's output is allocated to Product 2, (discourages raw material options, encourages recycling)
 2. More system approach (more holistic “fair” approach)



Recycling **Allocation** and Materials “Down-cycling”

- Recycling options (many!)
 - In-place (milling – materials)
 - On-site recycling
 - Off-site recycling
 - Transportation logistics
 - Various product streams
 - Subbase and base products
 - Recycled asphalt pavement (RAP)
 - Recycled concrete aggregate
 - Chip seal products....
 - All have different footprints

Recycling **Allocation** and Materials “Down-cycling”

- Recommendations (general philosophy)
 - Recommend approach #2
 - Refine allocation (no longer 50/50) due to various products and logistics scenarios + optimization based cost
 - Use a case study approach incorporating enough data to refine allocation
 - Base example
 - Huge, significant - LCA issues

Group 6

Recycling Allocation and Materials “Downcycling”

- The environmental impact of recycled materials should be accounted for at the stage that they are introduced.
- This method may not adequately recognize variations in future recyclability.
 - We need to resolve the issue of how to account for the recyclability of a pavement that includes the quality of the product that it is recycled into in the future.
- Fixed or arbitrary allocation methods (e.g., 50/50) are inappropriate to allocate the impacts of recycling