Basic Utility Vehicle

Bed/Body

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Purdue University
Agricultural Systems Management

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What is a Basic Utility Vehicle?

A basic utility vehicle (BUV) is vehicle designed to withstand rough conditions and have the ability to perform a variety of tasks. BUVs are affordable and easily maintained for use in underdeveloped countries.

L to R: Tom Nesbitt, Lee Fordice, John Hobbs, Adam Bell

Challenge

Design the bed/body section of the BUV that can hold a payload of 1200 pounds and incorporate a dumping mechanism. This bed must be able to haul a variety of materials including sand, rocks, water, and people.

Solution

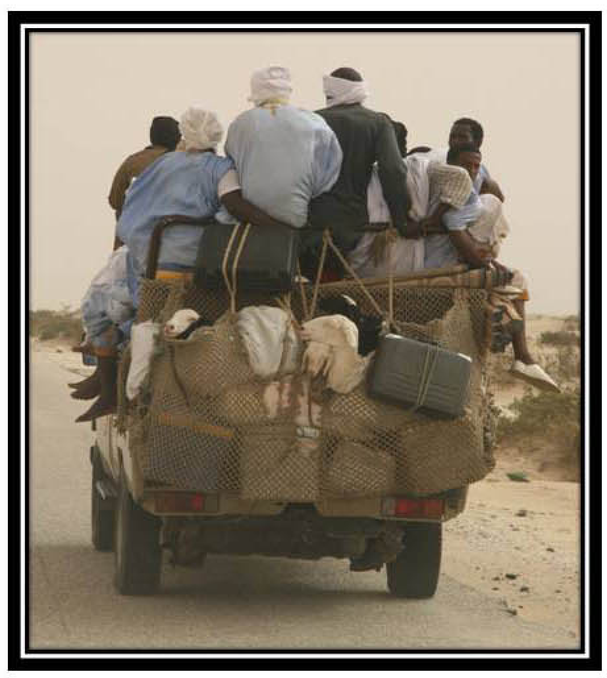
A bed completely made of wood that has the specified hauling capacity, a dumping mechanism, removable sides, swinging rear tailgate, and bench seating.

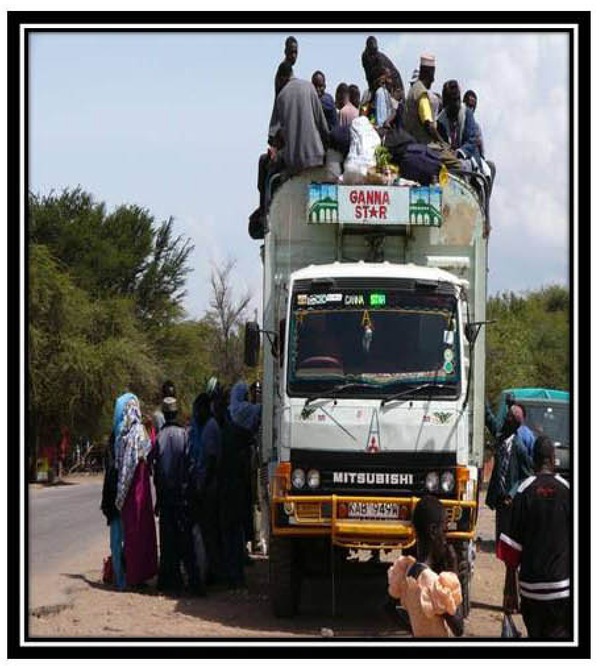
Special Thanks to: ABE Department, Scott Brand, Gary Williams, BUV Design Team

Transportation in Cameroon

Problems

- Lack of affordable vehicles
- Low income
- Poor Economy
- Poor infrastructure





Why BUV?

- Made of local resources
- Simple Design
- Easy to build and maintain
- Affordable

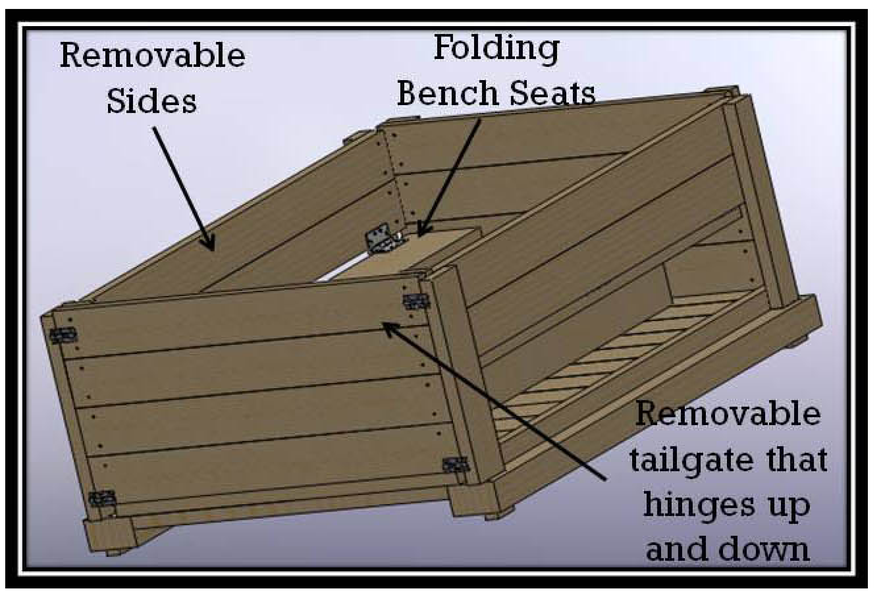
Solving the Problem

Research:

- Visited BUV microfactory in Indianapolis
- Contacted ACREST for specific design requests
- Analyzed previous BUV design

Design:

- Specifications from ACREST and what they needed
- Collaborated with overall BUV design team
- Drawn in *Solidworks*



Affordability:

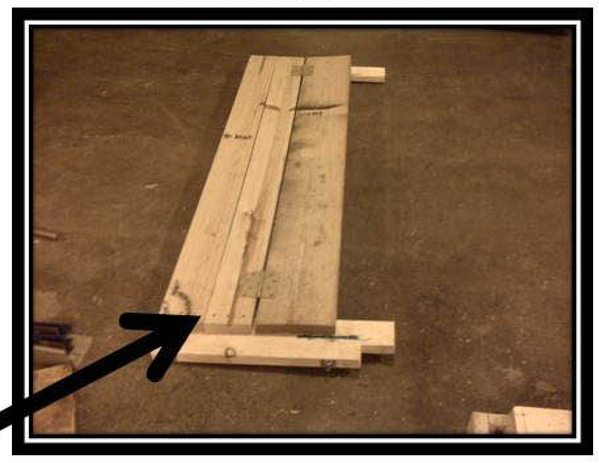
- Overall budget of vehicle was $250.
- Actual cost of build was $244.59.
- Steel was donated through ABE shop.

Features of the Bed

Flatbed Feature

Bench Seating

Removable Sides



•Pine was chosen due to cost, availability, and similarity to local wood in Cameroon

•Final product allows for multiple uses based on what task the operator is performing

Bolt Locks Used to Hinge Tailgate

•Majority of construction used wood screws for cost saving and ease of use
•Bolts used on high load areas such as hinge points and reinforcements

Dumping Mechanism

10th Annual Competition/Testing

•55 Gal. drum filled w/ water carried throughout the entire competition
• Competition tests all aspects of vehicle

•Group of six children on one bench
•Up to 1000 lbs. test with no failure
•Will hold approximately 31 cu. ft. of material