HUMANITARIAN ACADEMY · HUMANITAIRES JOBS

Mini MBA Humanitarian Logistics and Supply Chain: supplying fast, well and fairly

Course handout · Week 7 : Managing a fleet: costs, fuel, maintenance and road safety

A programme of exactly 3 months (12 weeks, 144 hours) to lead a humanitarian supply chain: mapping and landed cost, demand forecasting and safety stocks, procurement and competitive bidding, Incoterms and contracts, transport, warehouses and inventories, fleet and fuel, customs and exemptions, prepositioning and distributions, health products and the cold chain, performance, costs and the environment, constrained contexts and data protection. Corrected numerical exercises, three monthly exams with case studies, and a verifiable diploma from the Humanitarian Academy.

https://humanitairejobs.org/en/academy/mini-mba-logistique-supply-chain/semaine-7/

Free document from the Humanitarian Academy. It may be printed and shared freely for training purposes, without modification.

Week 7 : Managing a fleet: costs, fuel, maintenance and road safety

Objectives

- Calculate the full cost of a vehicle per kilometre and compare purchase, rental and pooling.
- Put fleet controls in place: logbooks, consumption, preventive maintenance, fuel management.
- Reduce road risk, the leading cause of death and serious injury among humanitarian staff in many contexts.

The full cost of a vehicle

A vehicle costs far more than its purchase price. The **cost per kilometre** combines:

- **Fixed costs**: depreciation (price − residual value, over the period of use), insurance, registration, driver's salary, equipment (radio, GPS tracking).
- **Variable costs**: fuel, tyres, maintenance and repairs.

Example. Off-road 4x4 bought for 55,000 USD, resold for 15,000 USD after 5 years, 30,000 km per year. Depreciation: 40,000 / 5 = 8,000 USD per year. Insurance and taxes: 2,000. Driver: 7,200. Equipment and tracking: 600. Fixed costs: 17,800 USD per year, i.e. 0.59 USD/km. Fuel: 14 l/100 km × 30,000 km = 4,200 l × 1.40 USD = 5,880 USD. Tyres and maintenance: 4,500 USD. Variable costs: 10,380 USD, i.e. 0.35 USD/km. **Full cost: 28,180 USD per year, about 0.94 USD/km.**

At only 15,000 km per year, fixed costs remain almost the same and the cost per kilometre climbs to more than 1.50 USD: an underused vehicle is very expensive.

Buying, renting or pooling

Three options:

- **Purchase**: worthwhile for a long (3 years or more) and intensive need, in a country where suitable vehicles are rarely available for rent. Beware of donor rules on vehicle purchases (often subject to prior approval, with origin rules) and on their disposal at the end of the project.
- **Rental** (with or without driver): flexible, no capital tied up, suited to short or variable needs; more expensive per kilometre in the long term, and the quality and safety of the vehicles must be checked.
- **Pooling and internal hire**: a pool of vehicles shared between projects, charged per kilometre or per day to each project according to the logbooks. This makes it possible to charge costs fairly to donors.

Comparison. Rental: 2,400 USD per month with driver, fuel extra. The vehicle bought above costs, excluding fuel, (28,180 − 5,880) / 12 ≈ 1,858 USD per month. Over 3 years or more, purchase is cheaper if use is heavy; on a 10-month project, rental avoids the purchase, the disposal and the customs formalities.

Logbooks and consumption

The **logbook** is the basic document: for each trip, date, driver, start and end mileage, destination, purpose, passengers, project charged, and fuel refills. It is checked every week by the fleet manager.

Consumption is calculated for each vehicle: litres consumed / kilometres travelled × 100. It is compared with the model's standard and with the previous month.

Control example. Vehicle 1: 2,800 km, 420 l, i.e. 15 l/100 km (standard 13 to 15). Vehicle 2: 2,100 km, 410 l, i.e. 19.5 l/100 km (same model, same area). A 30% difference: possible causes, to be checked before drawing any conclusion: a fault (injectors, filters, under-inflated tyres), trips over difficult terrain, a faulty odometer, or fuel theft. An excess of 4.5 l/100 km over 2,100 km represents about 95 litres per month.

> A logbook filled in at the end of the month, in a single hand and with the same pen, is not a logbook: it is a warning sign.

Fuel management

Fuel is one of the budget lines most exposed to fraud. Essential controls:

- **Supply** through a framework agreement with a filling station, with numbered fuel vouchers or fuel cards assigned to each vehicle.
- **Own storage** (drums or tank) only if necessary: receipts and issues register, meter, two keys, weekly inventory by dipping.
- **Monthly reconciliation**: filling station invoices, signed vouchers, logbooks and consumption per vehicle.
- **Generators**: hour meter and consumption per hour, reconciled in the same way.

Drum stock example. Opening stock 3,000 l; receipts 8,000 l; recorded issues 9,400 l; final dip reading 1,350 l. Theoretical stock = 3,000 + 8,000 − 9,400 = 1,600 l. Discrepancy = −250 l, i.e. 2.7% of issues: above a tolerance for evaporation and handling of about 0.5%, an investigation is needed.

Maintenance and life cycle

Preventive maintenance follows a mileage-based schedule (for example an oil change every 5,000 km in severe conditions) and a weekly check by the driver (tyres, brakes, fluid levels, lights, safety equipment). It costs far less than breakdowns on the road, which immobilise a team and can put it in danger.

Replacement takes place according to age and mileage (often 5 years or 150,000 to 200,000 km on difficult terrain), or when the cost of repairs exceeds a threshold. **Disposal** at the end of the vehicle's life or of the project follows the donor's rules: transfer to another project, to a partner, auction or donation, with an official report and, if the vehicle was imported duty-free, payment or regularisation of the duties.

GPS tracking helps with security (location in the event of an incident) and control (unauthorised trips), but must respect the staff data protection policy and be explained to drivers.

Road safety

In many contexts, road accidents are a major cause of death and serious injury among humanitarian staff, often more so than violence. The measures that reduce the risk the most:

- **Seat belts** mandatory for everyone, in every seat, without exception.
- Internal **speed limits** (for example 80 km/h on the road, 40 in built-up areas), monitored through GPS tracking.
- **No night driving** outside towns, except for approved emergencies.
- **Drivers** recruited through a practical test, trained (defensive driving, first aid), with rest periods (no more than 8 to 10 hours of driving per day).
- **Zero alcohol** and no phone use at the wheel.
- **Equipped vehicles**: first aid kit, fire extinguisher, means of communication, spare wheel, warning triangle.
- **Incident analysis**: every accident or near miss is reported and analysed, without a blame culture, to correct the causes.

Exercise: a fleet that costs too much

Situation. A field office manages 8 purchased vehicles. Four travel 32,000 km per year; four only 9,000 km. Fixed costs per vehicle: 16,000 USD per year. Variable cost: 0.35 USD/km. A rental agency offers vehicles with drivers at 2,300 USD per month, fuel extra (fuel accounts for 0.20 USD/km of the variable cost). The logbooks of one vehicle show 21 l/100 km against 14 l/100 km for the other vehicles of the same model.

Tasks. 1) Cost per km of the two groups. 2) Should the 4 underused vehicles be kept? 3) What should be done about the vehicle at 21 l/100 km?

Answer. 1) Heavily used group: 16,000 / 32,000 + 0.35 = 0.85 USD/km. Underused group: 16,000 / 9,000 + 0.35 ≈ 1.78 + 0.35 = 2.13 USD/km. 2) Annual cost of an underused vehicle: 16,000 + 9,000 × 0.35 = 19,150 USD. Rental at 2,300 × 12 = 27,600 USD + fuel 9,000 × 0.20 = 1,800 USD = 29,400 USD: renting for the whole year is more expensive. But the 4 vehicles together only cover 36,000 km, barely more than the work of one well-used vehicle: pool them (a single pool with trip planning), dispose of 2 or 3 vehicles in accordance with donor rules and rent occasionally for peaks. 3) First check the mechanical condition and the odometer, compare the trips; if nothing explains it, reconcile fuel vouchers, logbook and GPS, and if there is suspicion, report in accordance with the anti-fraud policy without confronting the driver.

Key takeaways

- Cost per km = annual fixed costs / km + variable costs per km; an underused vehicle is very expensive.
- Pool the fleet and charge each project per kilometre, based on the logbooks.
- Consumption per vehicle every month: a difference of more than 20% is explained before drawing conclusions.
- Fuel: numbered vouchers or cards, monthly reconciliations, dipping of stocks.
- Seat belts, speed, no night driving, driver rest, zero alcohol: road safety saves lives.

Quiz

1. Fixed costs 18,000 USD per year, 24,000 km, variable cost 0.30 USD/km. Cost per km:
   A. 0.75 USD
   B. 1.05 USD
   C. 0.30 USD
   D. 1.25 USD

2. 1,600 km travelled with 272 litres. The consumption is:
   A. 14 l/100 km
   B. 15 l/100 km
   C. 17 l/100 km
   D. 16 l/100 km

3. Opening stock 2,000 l, receipts 5,000 l, issues 6,200 l, dip reading 700 l. The discrepancy is:
   A. −100 l
   B. +100 l
   C. −800 l
   D. 0

4. Purchase 50,000 USD, residual value 10,000 USD after 4 years. Annual depreciation:
   A. 12,500 USD
   B. 8,000 USD
   C. 15,000 USD
   D. 10,000 USD

5. Which measure most directly reduces the severity of road accidents?
   A. GPS tracking
   B. Mandatory seat belts in every seat
   C. A logo on the vehicle
   D. Filling up every day

Quiz answers : 1. B · 2. C · 3. A · 4. D · 5. B