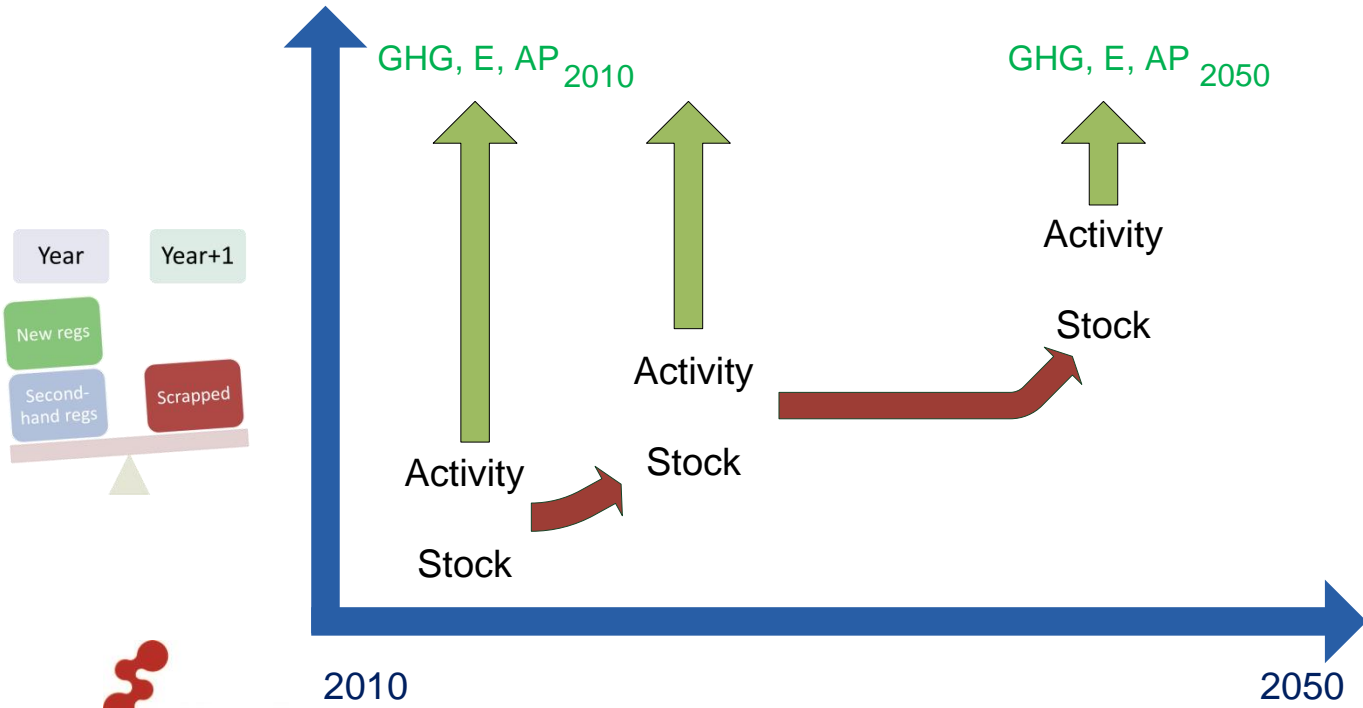
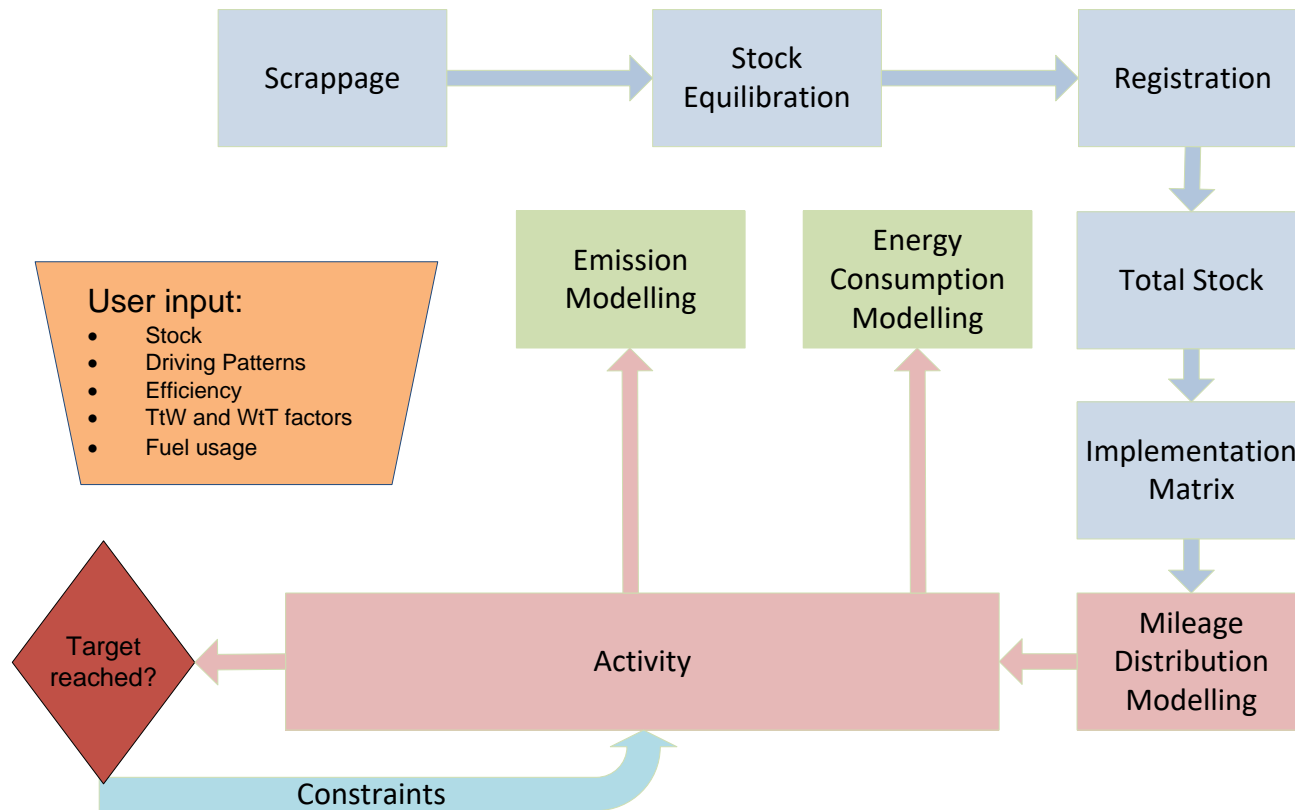


# METHODOLOGY

# From an idea to practical results



# SIBYL modular structure



# Scenario requirements

## Stock

- New regs
- Total stock
- Survival rates
- 2<sup>nd</sup> hand regs

## Activity

- Annual mileage
- Activity drop with age
- Trip patterns (mobility)

## Energy/emissions

- Energy/Emission factors
- Efficiency improvement
- EURO standards
- WtT factors

## Additional details

- Fuel effects
- Constants
- Details and other parameters

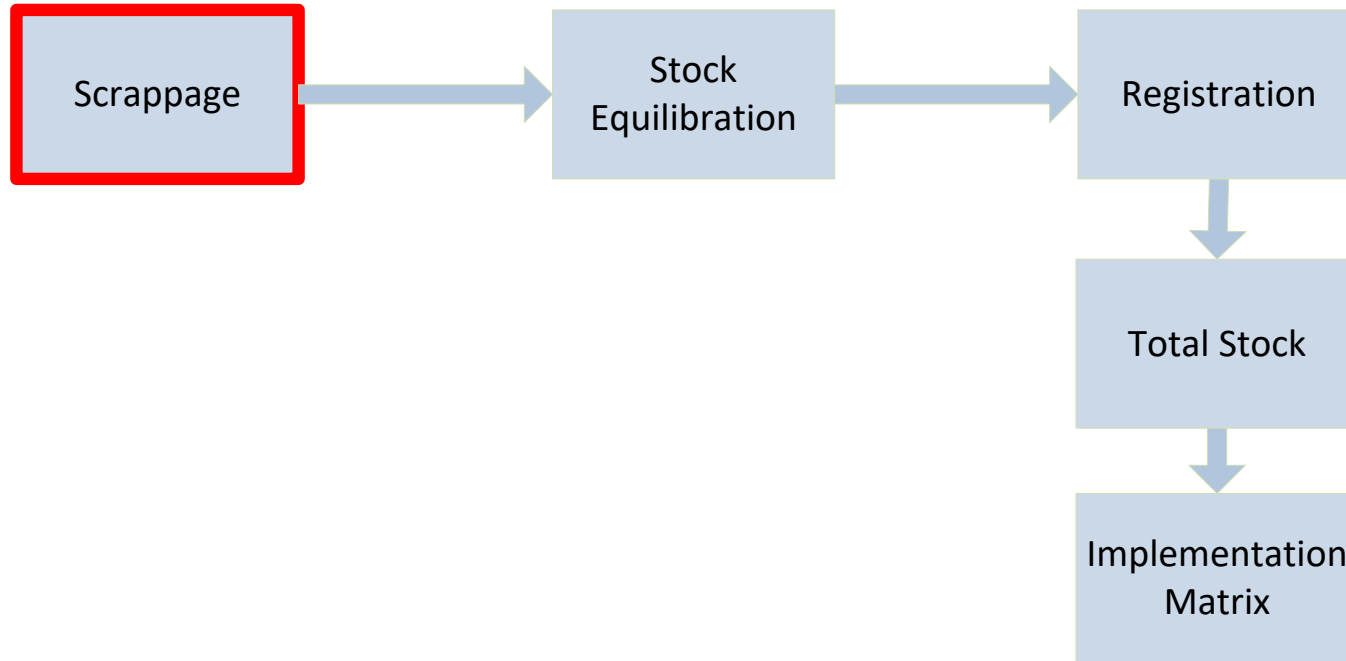


# EXAMPLE – STOCK

# Possible stock scenarios

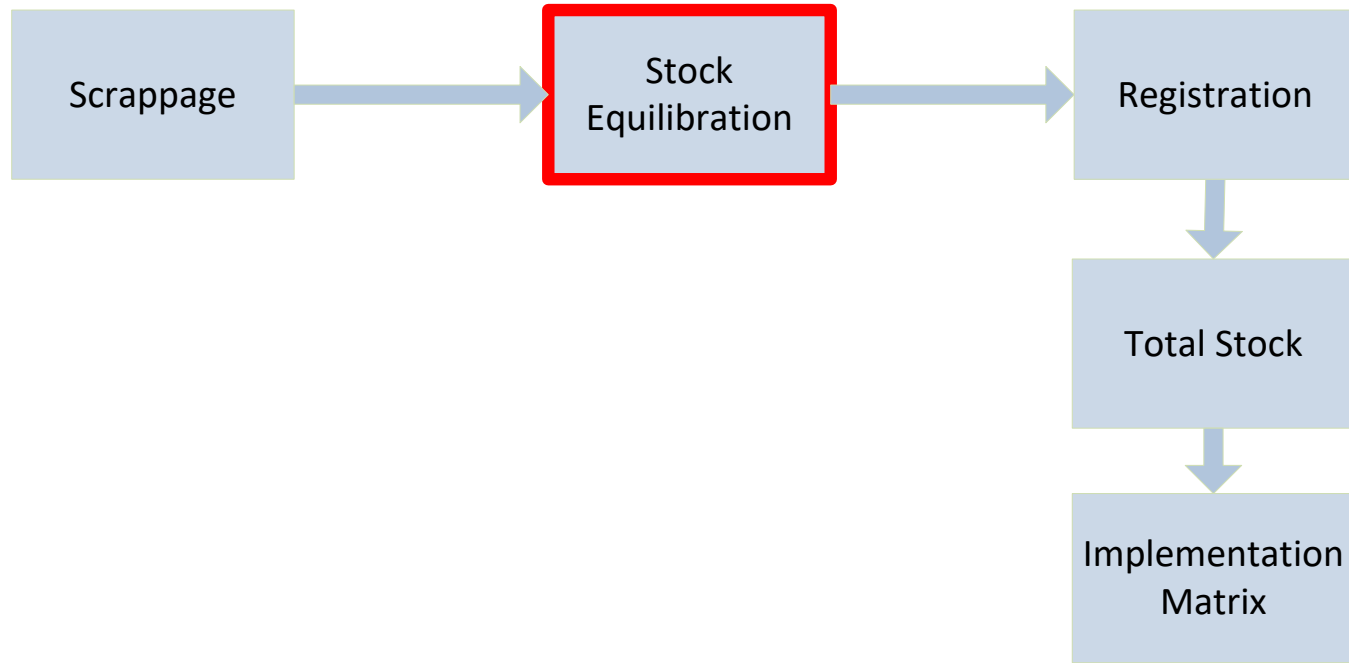
- Growth rate
- Market development
- **Accelerated scrappage**
- Technology replacement
- New category/technology

# Stock modification



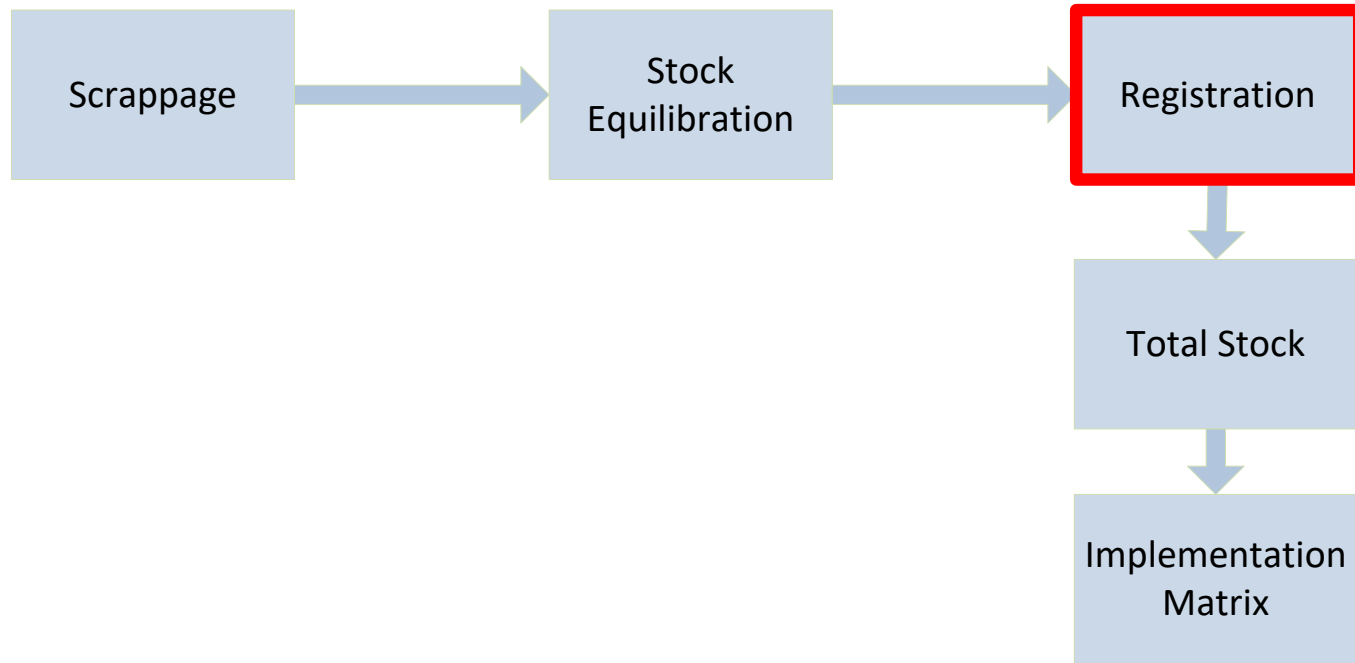
**Scrappage module:** calculates the total scrapped stock based on the base year stock and the survival rates.

# Stock modification



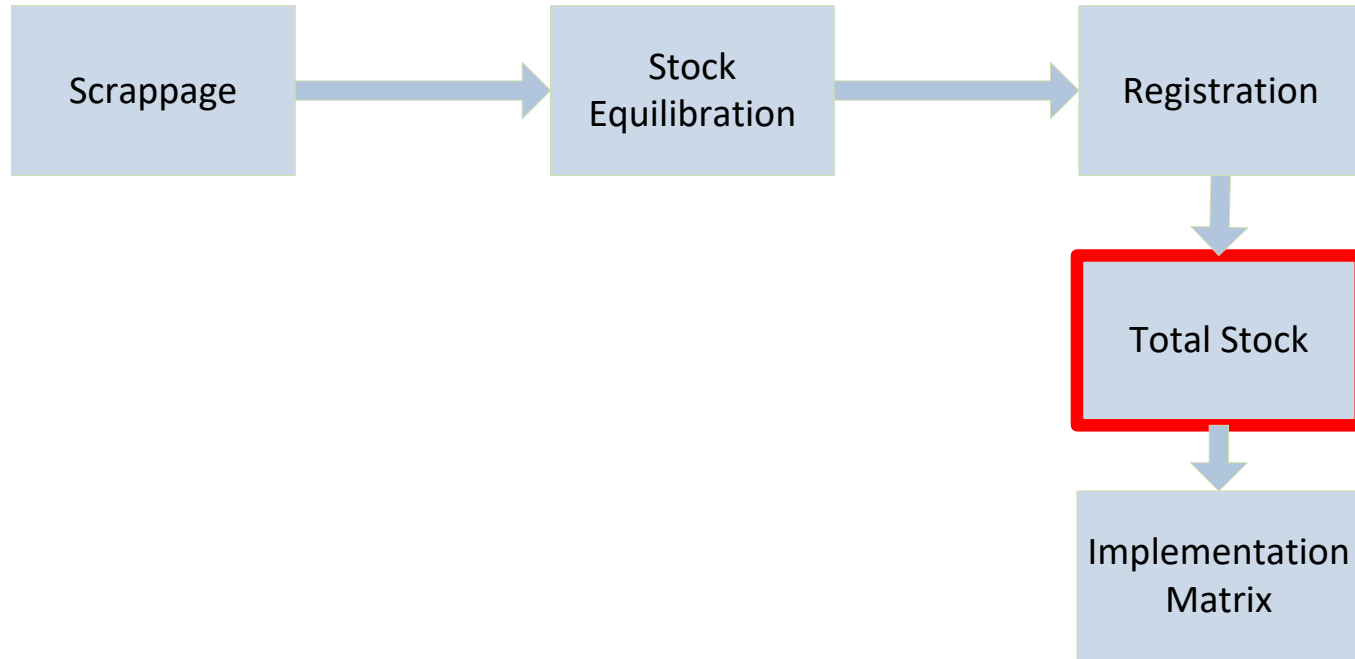
**Stock Equilibration module:** attempts to equalize the stock change.

# Stock modification



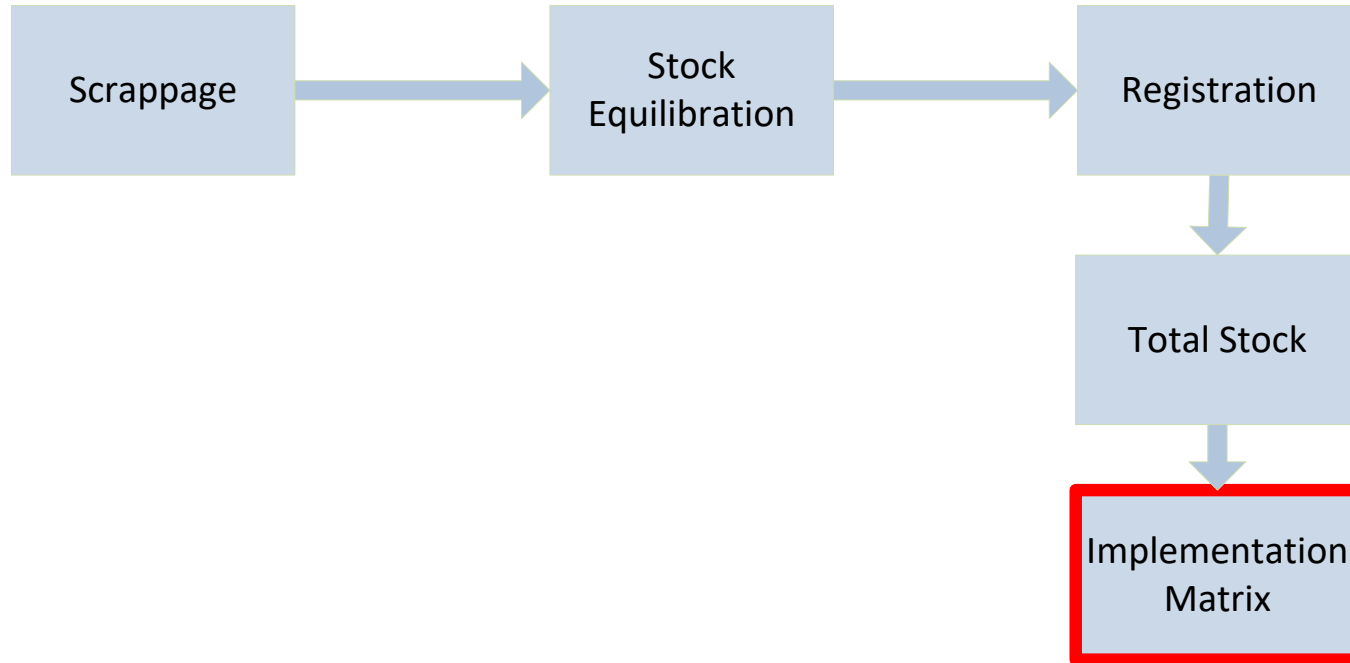
**Registration module:** distributes the new and second-hand registrations.

# Stock modification



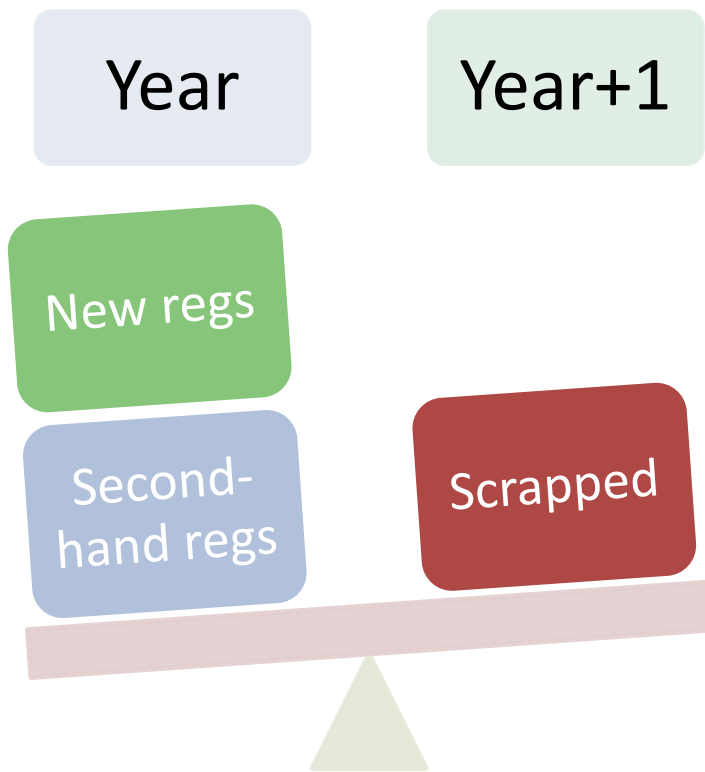
**Total Stock module:** combines all the previously calculated data, to yield the detailed stock.

# Stock modification



**Implementation matrix module:** produces the Euro standard attribute for the stock.

# Stock equilibrium

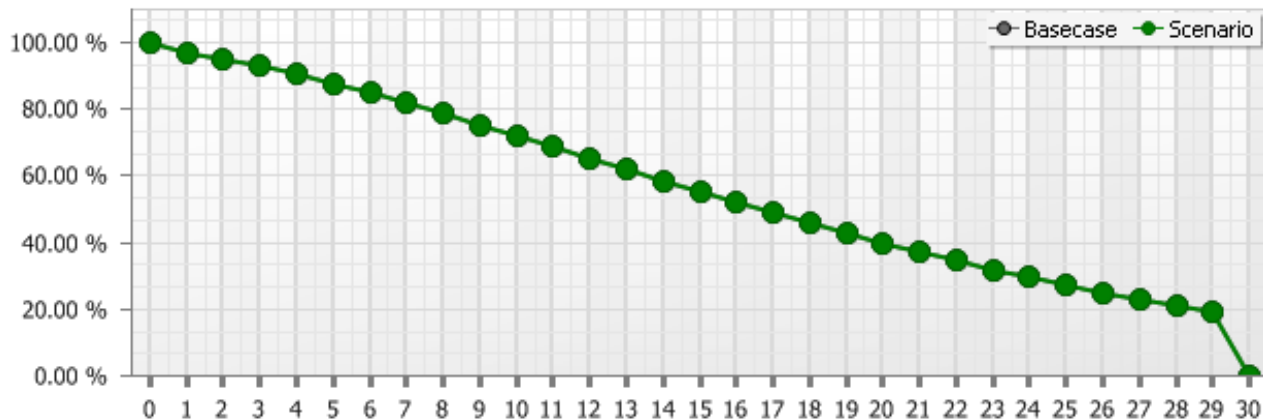


# EXAMPLE – ACTIVITY

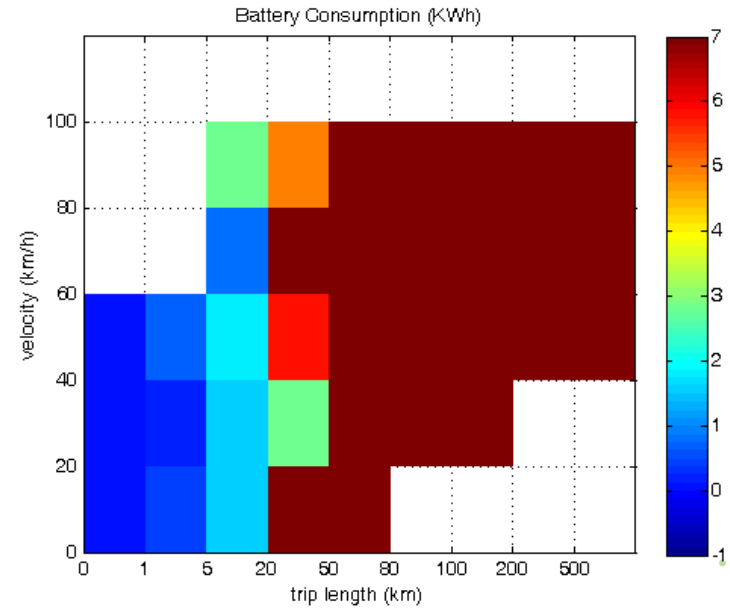
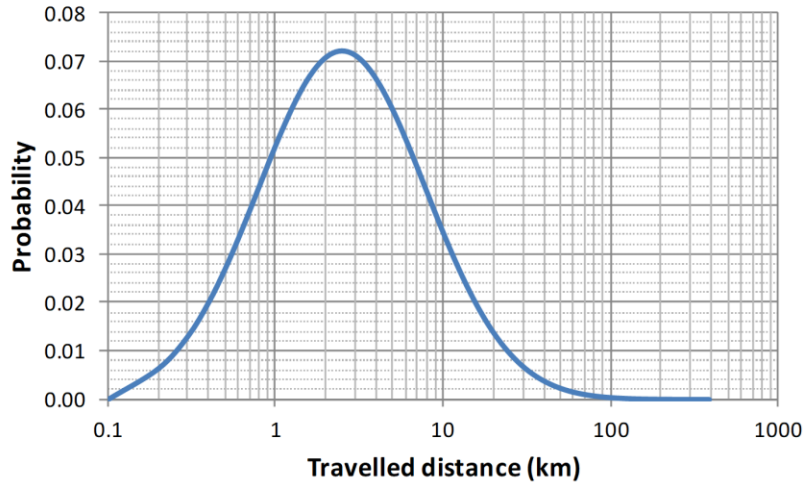
# Possible activity scenarios

- Growth rate
- Distribution per vehicle type
- Dropping activity with age
- eMobility
- **Bifuel activity per fuel**

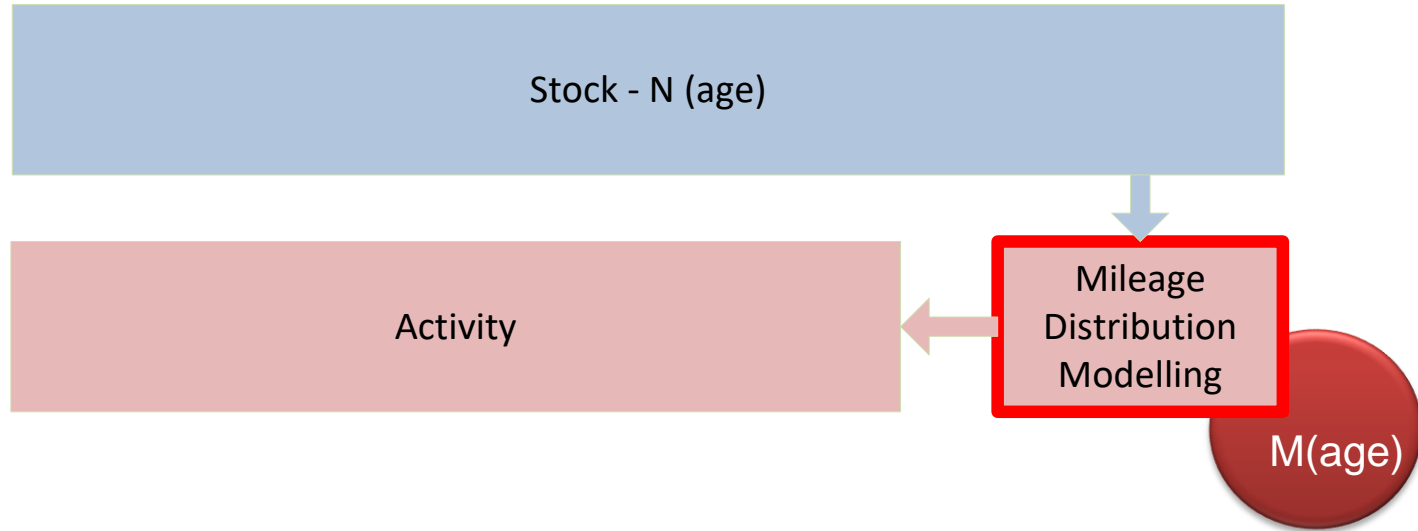
# Activity drop with age



# eMobility



# Activity



**Mileage Distribution Modelling Module:** processes the mileage-related data and produces the exact mileage per vehicle and age.

# Activity



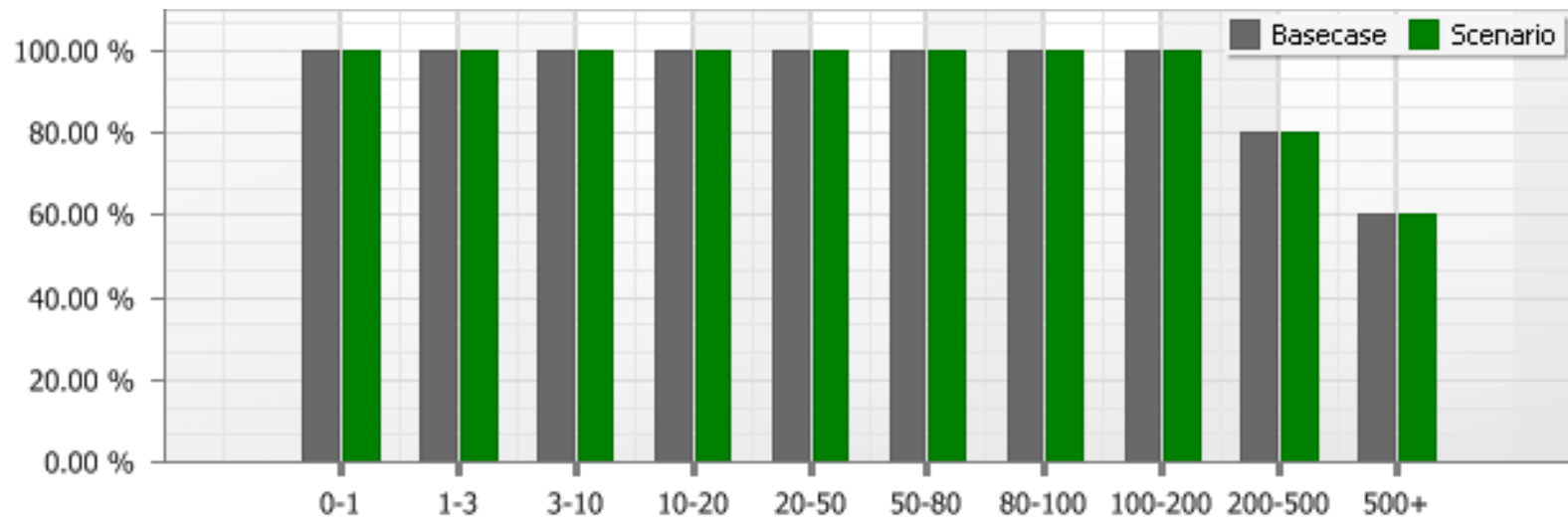
**Activity Module:** combines stock and mileage data to produce the detailed activity. The activity/stock can be set to match baseline values on a sector basis

# EXAMPLE – FUELS

# Possible fuels scenarios

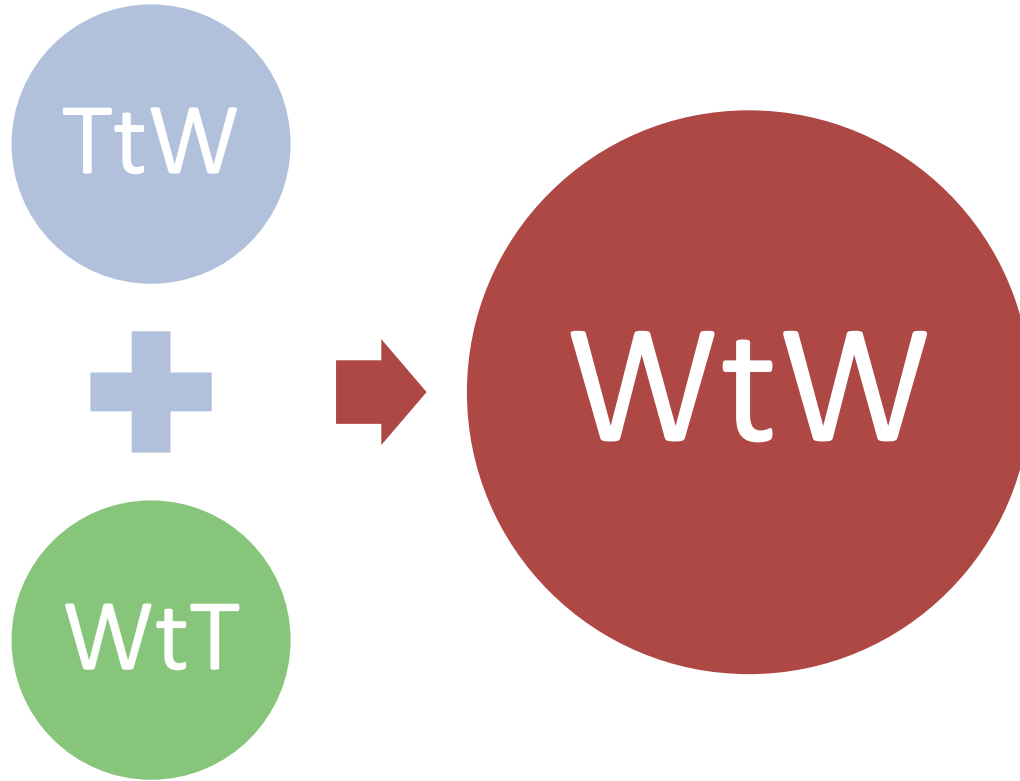
- Blends
- Bifuel definition
- Fuel replacement
- **FFVs**

# CNG/LPG utilisation



# EXAMPLE – ENERGY & EMISSIONS

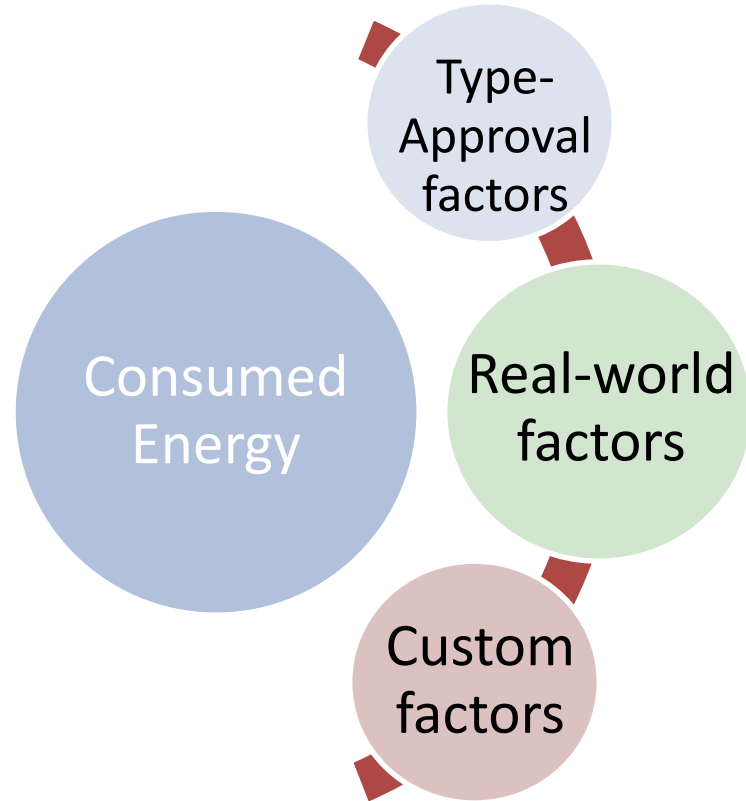
# Energy consumption in SIBYL



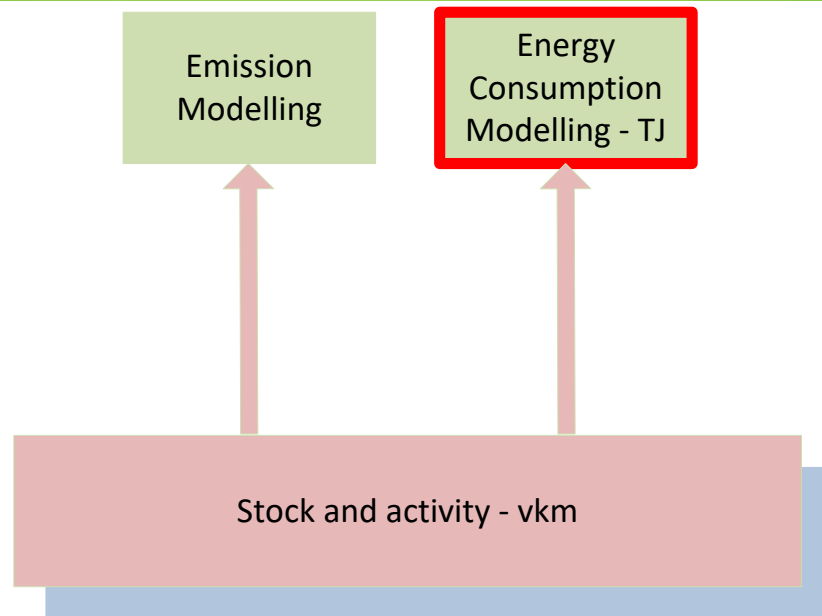
# Energy calculation - TtW



# Energy consumption factors - TtW

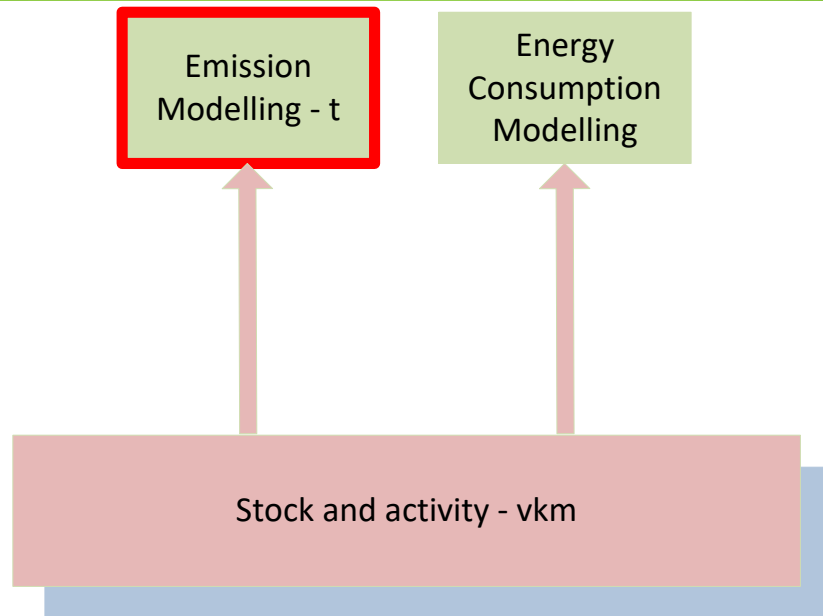


# SIBYL modules



**Energy Consumption Modelling Module** : combines activity data with consumption functions to produce the detailed energy consumption.

# SIBYL modules



**Emission Modelling Module** : similar to the previous module but uses the emission factors instead.

# Possible energy/emission scenarios

- Energy consumption factor type selection
- **Efficiency development**
- WtT CO<sub>2</sub> /energy factor setting