Use case scenarios

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UC1: Calculate GLEC Framework Scope 1 emissions

Name	**Calculate GLEC Framework Scope 1 emissions**
Description	As a User, I would like to calculate the GHG emissions produced by the assets owned or controlled by the company I work for
Actors	User
Pre-Conditions	User logged in.
Scenario	1. User provides necessary information to perform the Scope 1 emissions calculation. The minimum information needed consists of: ◦ The type of transport (Transport mode) ◦ The fuel in `kg` or `l` used during transport ◦ The type of fuel used during transport ◦ Emission type (Well-to-Tank, Tank-to-Wheel, Well-to-Wheel) 2. User requests Scope 1 emissions calculation 3. System checks if enough information has been provided 4. System performs calculation 5. System sends result to the User in `kg of CO2-equivalent`
Results	User gets the desired Scope 1 emissions calculation
Exceptions	3. a. System doesn't have enough information to perform calculation 3. b. System informs User and ends request 4. a. System encounters errors while performing the calculation 4. b. System informs User and ends request
Extensions	1. a. User provides detailed information to perform Scope 1 emissions calculation, which can consist of: ◦ The different vehicle types ◦ The amount of fuel used by each vehicle in `kg` or `l` ◦ The fuel type used by each vehicle 2. b. Continue with the scenario until step 4 3. a. System performs a detailed GHG emissions calculation, which is described per vehicle used

UC2: Calculate Scope 2 Emissions

Name	**Calculate Scope 2 Emissions**
Description	The user wishes to calculate the Scope 2 Emissions from the GLEC-Framework
Actors	User
Pre-Conditions	User has been authenticated
Scenario	1. User enters basic information 2. User sends request to the application 3. System processes request 4. System sends result back to the User
Results	The system should calculate and return the correct Scope 2 Emissions value.
Exceptions	1. a. The user does not give all the necessary information
Extensions	Additional information to improve and return a more detailed calculation

UC3: Calculate Scope 3 Emissions

Name	**Calculate Scope 3 Emissions**
Description	As a user, I want to calculate Scope 3, the Supply chain emissions, based on the GLEC Framework. These are the emissions the company is not directly responsible for them, but they are part of the company's value chain.
Actors	User
Pre-Conditions	• User is authenticated. • Users have the relevant data available.
Scenario	1. The Software User initiates the emission calculation process through the software. 2. The user specifies the minimum set required data. This is required per transport mode and includes: ◦ The type of transport (Transport mode) ◦ The fuel in `kg` used during transport ◦ The type of fuel used during transport ◦ The distance in `km` the goods are transported. This should be, in the worst case, at least the **Network distance**. ◦ The weight in `tonnes` of the goods transported 3. The software processes the input data and calculates emissions in accordance with the GLEC Framework. 4. The results are returned to the user, providing an overview of greenhouse gas emissions in `kg of CO2-equivalents`. 5. User reviews the calculated emissions and may choose to save them for later use.
Results	The software generates accurate greenhouse gas emissions calculations based on the provided data. Users gain insights into their emissions on Scope 3 level.

Name	Calculate Scope 3 Emissions
Exceptions	1. 1 ◦ The user provides insufficient data. ◦ The software returns an error message to the user. 2. 1 ◦ The system cannot find the correct emission factors for the calculation. ◦ The system returns an error message to the user. 3. 2 ◦ System encounters and error while performing the calculation. ◦ The system returns an error message to the user.
Extensions	1. 1 ◦ The user provides a more precise distance in `km` the goods are transported. In the best case, this is the **Actual distance**. ◦ The system calculates more accurate emissions. 2. 2 ◦ The user provides the CO2-equivalent intensity factor for the fuel used during transport. ◦ The system calculates the total emissions based on the provided intensity factor and the tonne kilometers. 3. 3 ◦ The user provides its own emission factors for the calculation process. ◦ The system calculates the total emissions based on the provided emission factors.

UC4: Edit emission factors

Name	**Edit emission factors**
Description	Admin wants to edit emission factors
Actors	Admin
Pre-Conditions	• User is authenticated • User has admin permissions
Scenario	1. Actor invokes the API call to edit emission factor and provides the new value 2. System sends the request with the provided value
Results	Emission factor has been edited

UC5: Add emission factor

Name	**Add emission factor**
Description	Admin wants to add an emission factor
Actors	Admin
Pre-Conditions	• User is authenticated • User has admin permissions
Scenario	1. The Administrator sends a request to add an emission factor 2. The system processes the request 3. The system adds the emission factor 4. The Administrator gets a success message
Results	The emission factor has been added to the application
Exceptions	1. a. The Administrator inserts an invalid value 2. a. The emission factor already exists

UC6: Remove an emission factor

Name	**Remove an emission factor**
Description	As an Admin, I would like to remove any unused or wrong emission factor from the available dataset
Actors	Admin
Pre-Conditions	• User is authenticated • User has admin permissions
Scenario	1. User requests to remove a certain emission factor 2. System checks if given emission factor exists 3. System removes the desired emission factor 4. System notifies the User
Results	The emission factor is removed from the System
Exceptions	1. a. System can’t find the given emission factor 2. b. System informs User and ends request

UC7: User wants to read emission factors

Name	**User wants to read emission factors**
Description	As a user, I want to read the emission factors used by the software. As an administrator, I want to read the emission factors used by the software in order to maintain them.
Actors	Users, Administrators
Pre-Conditions	• The user is authenticated. • The user has access to the emission factors.
Scenario	1. The user makes a request to read the emission factors. 2. The software returns the emission factors to the user. 3. The user can read the list of emission factors.
Results	The user gains insights into the emission factors used by the software.
Extensions	1. 1 ◦ The user requests to read the emission factors for a specific transport mode. ◦ The system returns the emission factors for the specific transport mode. 2. 2 ◦ The user requests to read the emission factors for a specific fuel. ◦ The system returns the emission factors for the specific fuel.

UC8: User authentication

Name	**User authentication**
Description	User wants to authenticate themselves
Actors	User
Pre-Conditions	-
Scenario	1. Actor invokes the authentication API call and provides credentials 2. System checks credentials 3. System authenticates user
Results	Actor has been authenticated
Exceptions	1. Authentication credentials were invalid

UC9: Store emission calculation results

Name	**Store emission calculation results**
Description	The users wishes to store the result of their calculation for later use and/or review
Actors	User
Pre-Conditions	• The Actor has been authenticated • The Actor has completed an emission calculation
Scenario	1. The Actor sees the result of their calculation 2. The Actor sends a request to the system to save the calculation 3. The system processes the request 4. The system stores the request 5. The system returns a success message to the Actor
Results	The calculation result has been stored within the application
Exceptions	1. a. The calculation failed

UC10: Check for past GHG emissions calculations

Name	**Check for past GHG emissions calculations**
Description	The users wish to store the result of their calculation for later use and/or review
Actors	User
Pre-Conditions	• The Actor has been authenticated • The Actor has completed an emission calculation
Scenario	1. The Actor sees the result of their calculation 2. The Actor sends a request to the system to save the calculation 3. The system processes the request 4. The system stores the request 5. The system returns a success message to the Actor
Results	The calculation result has been stored within the application
Exceptions	1. a. The calculation failed

UC11: User wants to manage the previously stored emission calculations

Name	User wants to manage the previously stored emission calculations
Description	As a User, I want to manage the previously stored emission calculations. This includes deleting calculations and editing calculation's metadata.
Actors	Users, Administrators
Pre-Conditions	• The user is authenticated. • The user has access to the emission calculations. • The user has the rights to manage the emission calculations.
Scenario	1. The user requests to manage a certain previously stored emission calculation. 2. The system returns the previously stored emission calculation. 3. The user edits the metadata of the emission calculation. 4. The user saves the changes. 5. The system updates the previously stored emission calculation.
Results	The previously stored emission calculations are updated to the user's preferences.
Exceptions	1. 1 ◦ The requested emission calculation does not exist. ◦ The system returns an error message to the user.
Extensions	1. 1 ◦ The user requests to delete the previously stored emission calculation. ◦ The system deletes the previously stored emission calculation.

UC12: API overview

Name	**API overview**
Description	User wants to have an overview of the endpoints available within the API
Actors	All Users
Pre-Conditions	User logged in.
Scenario	1. Actor invokes the API call to get the information about the API 2. The information is returned in a specified format
Results	Actor can see the explanations of the different API calls

UC13: Batch calculations

Name	**Batch calculations**
Description	As a User, I would like to calculate the GHG emissions produced by multiple transport activities from different scopes in one batch
Actors	User
Pre-Conditions	User logged in.
Scenario	1. User provides all necessary information to perform any of the calculations in the use cases UC1, UC2 and UC3 2. User requests batch calculation 3. System checks if enough information has been provided 4. System performs calculation 5. System sends result to the User in `kg of CO2-equivalent` and detailed results obtained for each calculation
Results	User gets the desired batch calculation report
Exceptions	1. a. System doesn't have enough information to perform calculations 2. b. System informs User and ends request 3. a. System encounters errors while performing the calculations 4. b. System informs User and ends request