

# Cost Comparison Tool Transportation Costs

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## Introduction

Introduction about the Project, TNO and the tool.

## 1 Installation

In this section the installation process for the Cost Comparison Tool will be explained. After this section the reader will have a proper version of the tool available for his usage.

## 2 Main Application

In this section the structure of the application will be explained in detail. The user can open the application in multiple ways, amongst which

1. Using the Shortcut generated on the Desktop
2. Using the Shortcut generated in the Start Menu
3. Running the .exe file generated in the used specified installation folder

After opening, the user will be presented the homescreen of the application. The home screen tool consists of different buttons and panels, as visualized in figure []. One can find the following buttons on the homescreen

1. Import dataset: use this button to import all the required variables, factors and constants.
2. Change parameters: use this button to change the primary variables of the system.

In the next sections, we will more thoroughly explain each of the requirements, functions and assumptions within each module.

### 2.1 Import dataset

As mentioned before, this button will allow the user to import all required (default) values of the variables, factors and constants. The imported file must be of an \*.xlsx-extension. The user is supplied with a default \*.xlsx file that may be used. The lay-out of the input file is visualized in figure [].



**Warning:** It must be noticed that none of the variables in the supplied dataset can be deleted. All inputs are used in the system, hence removing this data will lead to a system error. Next to this, the user is not allowed to change anything except for the values of the variables.

After a successful upload of the datafile, the user will be notified of this by a 'Upload successful!' statement. Else, the user is supplied with a 'Upload not successful!' statement. In this case the user should supply the tool with a different dataset.



**Warning:** The user must upload a dataset in order for the tool to work!

After successful uploading of

## 2.2 Change Parameters

By clicking on this button, the user is able to change any of the main variables of the program. The changeable inputs are

1. Project duration (years)
2. Pipeline length (km)
3. Design flow rate (Mt/a)
4. Discount- and Utilization Rate
5. Pipeline configuration
6. Terrain settings

The application will open a different window in which the parameters can be updated. The window representation is visualized in figure []. Each component of the screen shows the current value of the parameter. Each parameter may be adaptable within a certain range. You can change the values for the project duration, pipeline and design flow rate by sliding the corresponding slider into the required value. Turning the knob to the required value has the same effect for the Discount- and Utilization rate. To enable different configurations, press the switch. This enables the user to input different steel compositions. The user may, if desired, change the number of crossings or terrain composition.



**Info:** It may be, that the Update button is unavailable. If this is the case, then there is a fault in the user defined changes. Please make sure that the Pipeline configuration and Terrain settings add up to 100% in total for each category.

After the user is happy with the changes made, the user must confirm the changes by pressing the Update button. After a successful parameter adaptation the user can see the message 'Parameters updated successfully!'.



**Warning:** Closing the screen by clicking the (×) will not save the changes.

## 2.3 Theoretical viewpoint

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### Question 1

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- (a) Do this.
- (b) Do that.
- (c) Do something else.

## 2.4 Algorithmic issues

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**Algorithm 1:** FastTwoSum

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**Input:**  $(a, b)$ , two floating-point numbers

**Result:**  $(c, d)$ , such that  $a + b = c + d$

```
if  $|b| > |a|$  then
    | exchange  $a$  and  $b$  ;
end
 $c \leftarrow a + b$  ;
 $z \leftarrow c - a$  ;
 $d \leftarrow b - z$  ;
return  $(c, d)$  ;
```

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### Question 2 (with optional title)

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### 3 Implementation

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```
hello.py

#!/usr/bin/python

import sys
sys.stdout.write("Hello World!\n")
```

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#### Command Line

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$ chmod +x hello.py
$ ./hello.py

Hello World!
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