

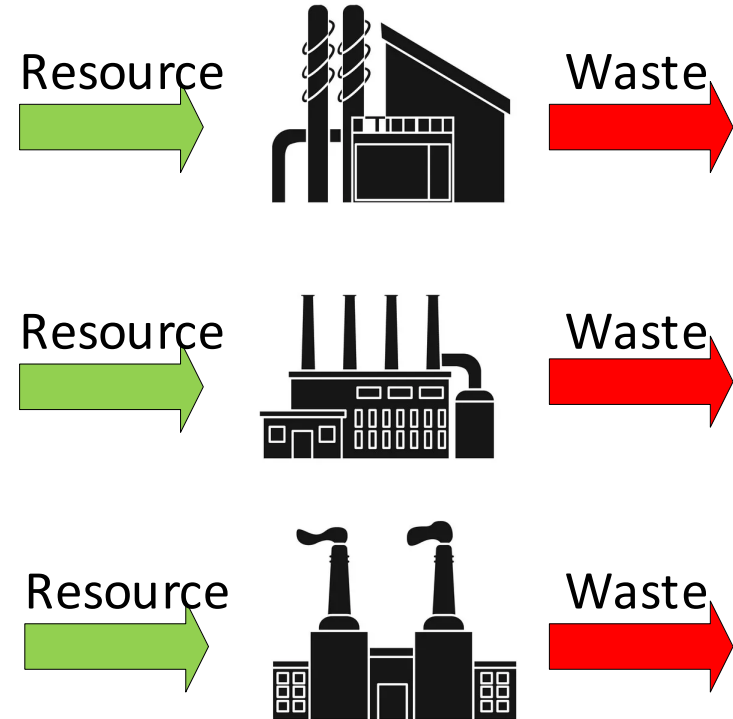
# GreenLab Designer Lite

GreenLab Summit 2022



# Traditional approach in industrial parks

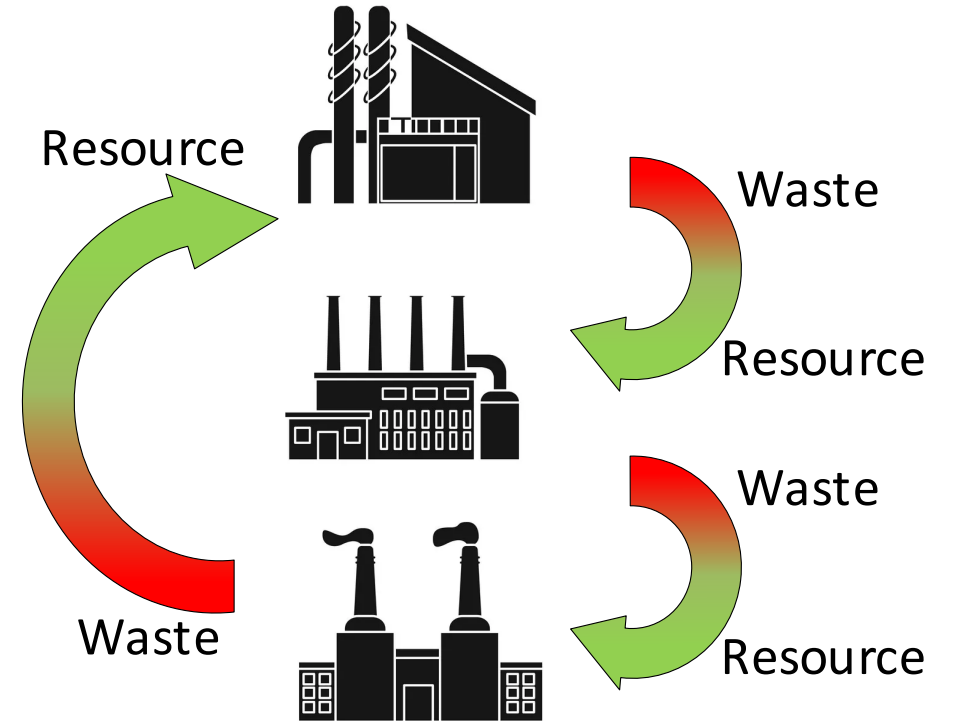
- Production follows a linear process
- Resources located far from the industry
- Industries operate in parallel
- Environmentally costly
- Economically costly



# Circular approach in eco-industrial parks

- Environmental awareness
- Good economic sense
- Waste or products of one recycled in resource of another

Goal - achieve industrial symbiosis

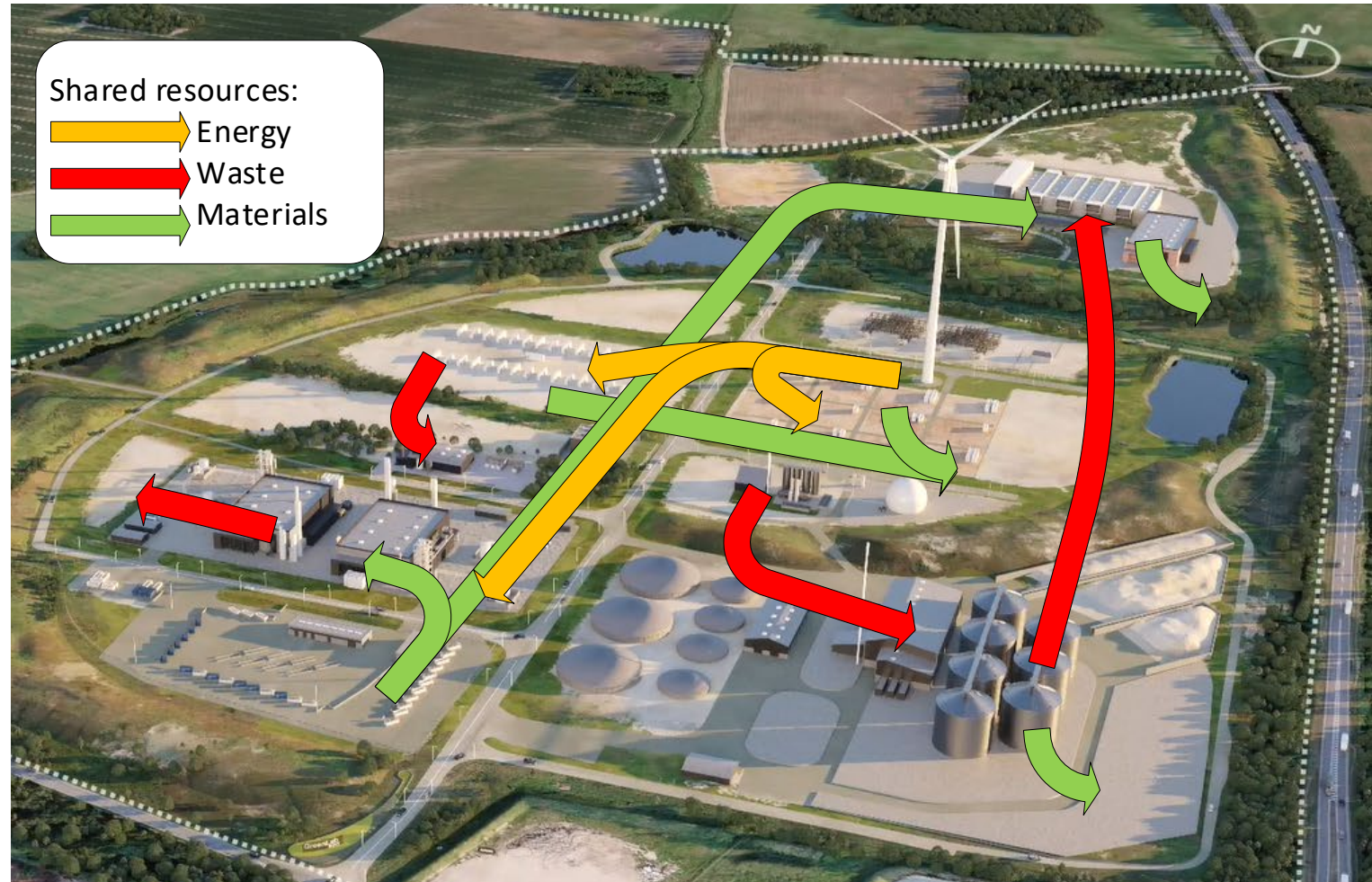


# Achieving perfect symbiosis is not that easy

Facilities within the eco-park

- Resource needs
- Energy requirements
- Goods manufactured
- Wastes or by-products
- Operation schedules

How to conduct and evaluate eco-industrial park designs?



# GreenLab Designer Lite

Decision support software for eco-industrial parks

- Design
- Energy management

Features

- Customizable eco-park
- Visualization tool (energy production/consumption)
- Calculates overall energy balance
- Scenario analysis

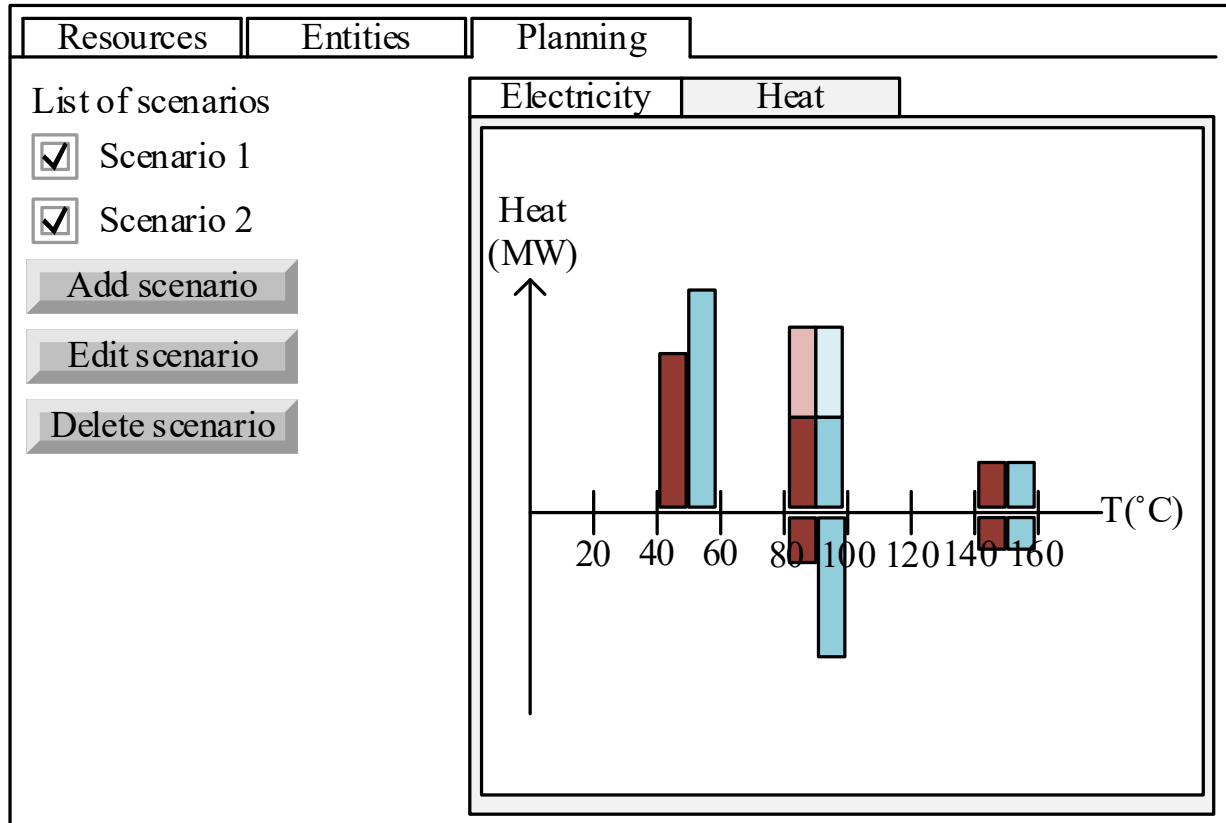
Case study for demonstration – GreenLab Skive



# GreenLab Designer Lite

## Decision support

- Predict energy consequences of future investments or park prosumers
- Optimize internal energy balance
- Help reduce park energy peak loads



# How does it work?

## 1. Creating the park

### Customizable eco-park

- Producers
- Consumers
- Prosumers
- Storage
- Existing or potential companies

Resources	Entities	Planning
<input checked="" type="checkbox"/>	Solar energy site	
<input type="checkbox"/>	Wind energy site	
<input type="checkbox"/>	Current prosumer 1	
<input type="checkbox"/>	Current prosumer 2	
<input type="checkbox"/>	Potential prosumer	
<input type="button" value="Add entity"/>		
<input type="button" value="Edit entity"/>		
<input type="button" value="Delete entity"/>		

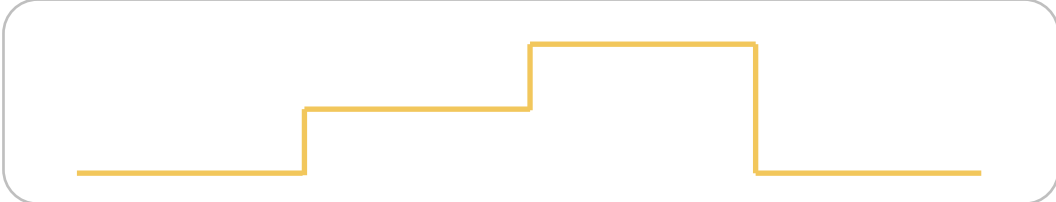
# How does it work?

## 2. Creating energy profiles

Each entities have their own profiles

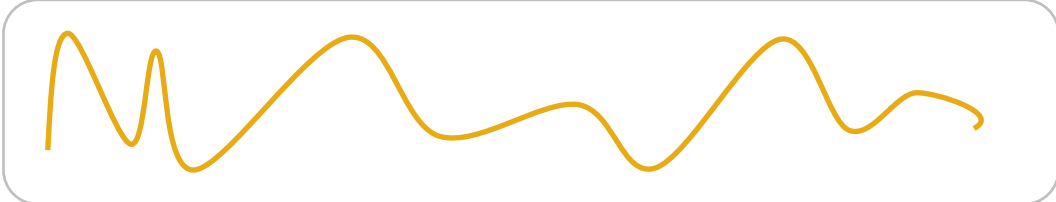
- Event-based energy profiles

Electricity - Demand / Production



- Time series data from the companies

Electricity – Demand / Production



Entity 1

	Type	Balance	Amount	Units	Availability
<input checked="" type="checkbox"/> Ressource 1:	Electricity	Cons.			
<input checked="" type="checkbox"/> Ressource 2:	Heat	60°C	Prod.		

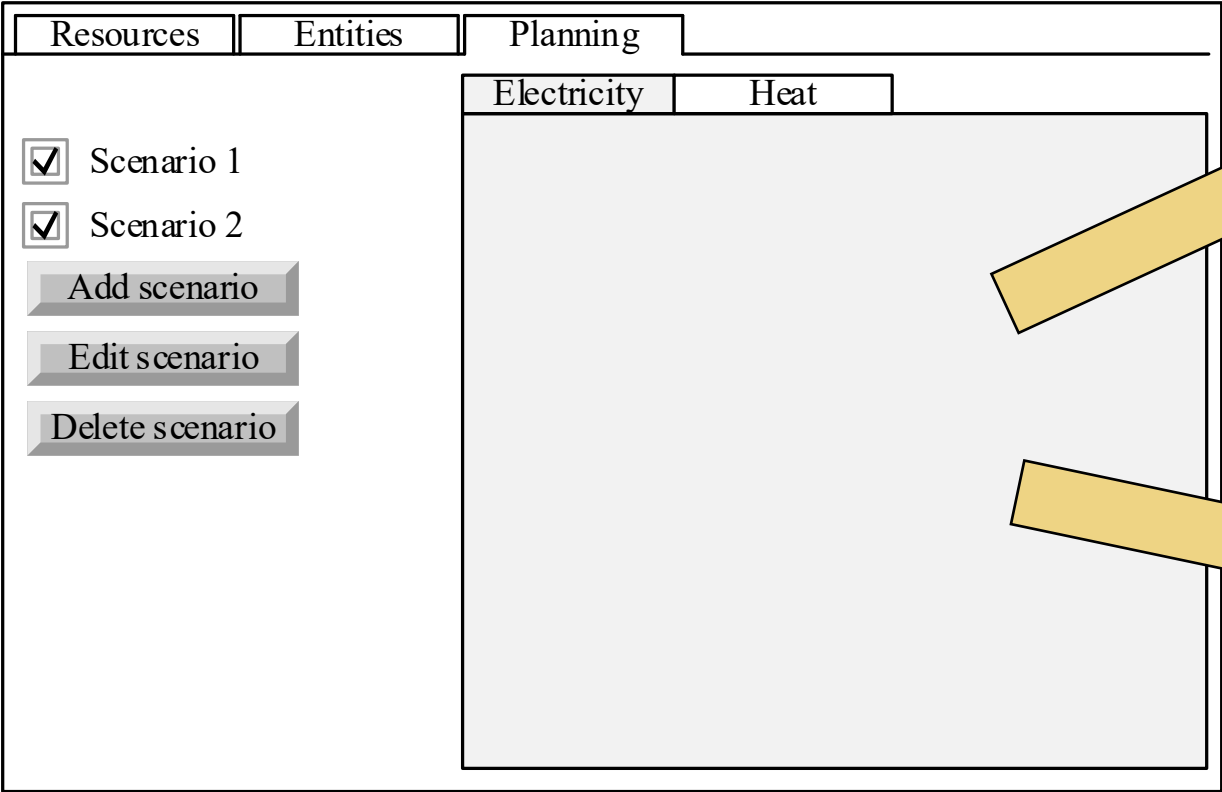
Add resource   Delete resource   Plot resource   Save entity



# How does it work?

## 3. Design and energy management of the eco-park

### Scenario analysis



### Scenario 1:

- Solar energy site
- Wind energy site
- Current prosumer 1
- Current prosumer 2

### Scenario 2:

- Solar energy site
- Wind energy site
- Current prosumer 1
- Current prosumer 2
- Potential prosumer

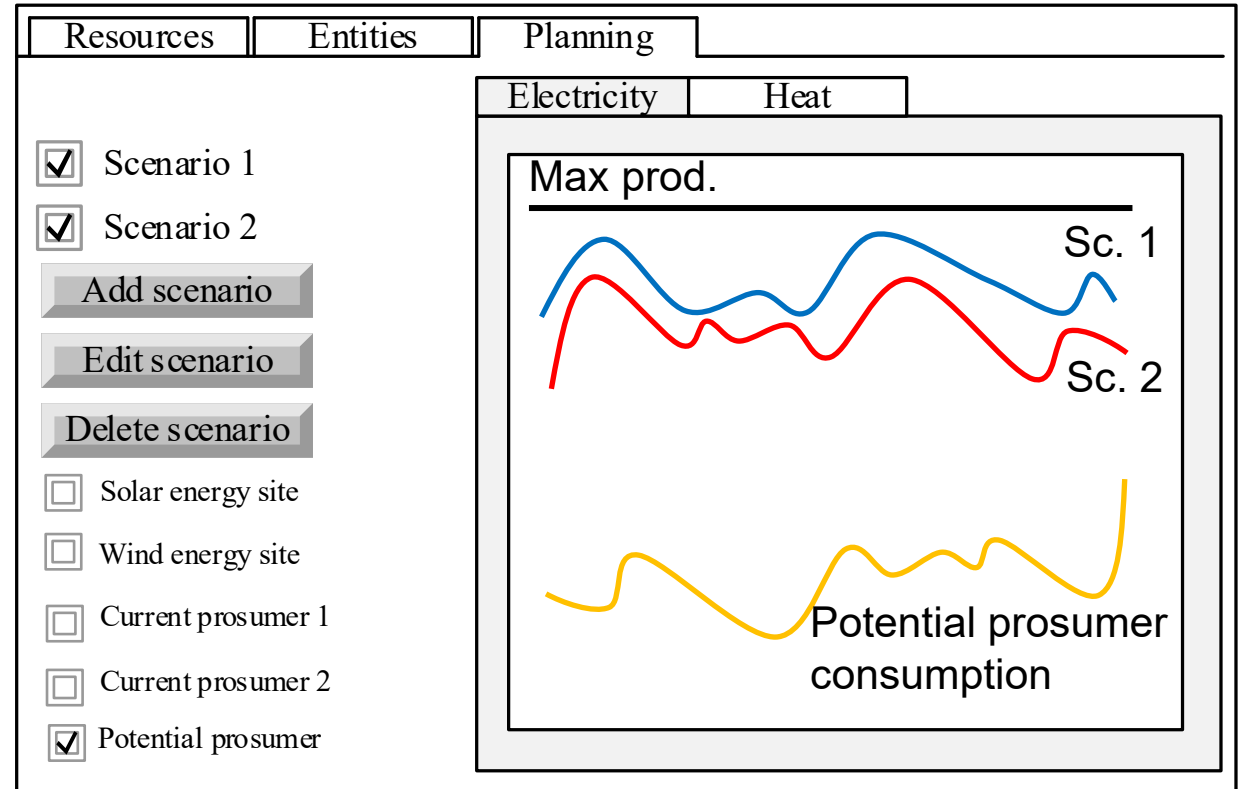
# How does it work?

## 3. Design and energy management of the eco-park

Energy balance

Electricity:

- Total production/consumption
- Individual production/consumption



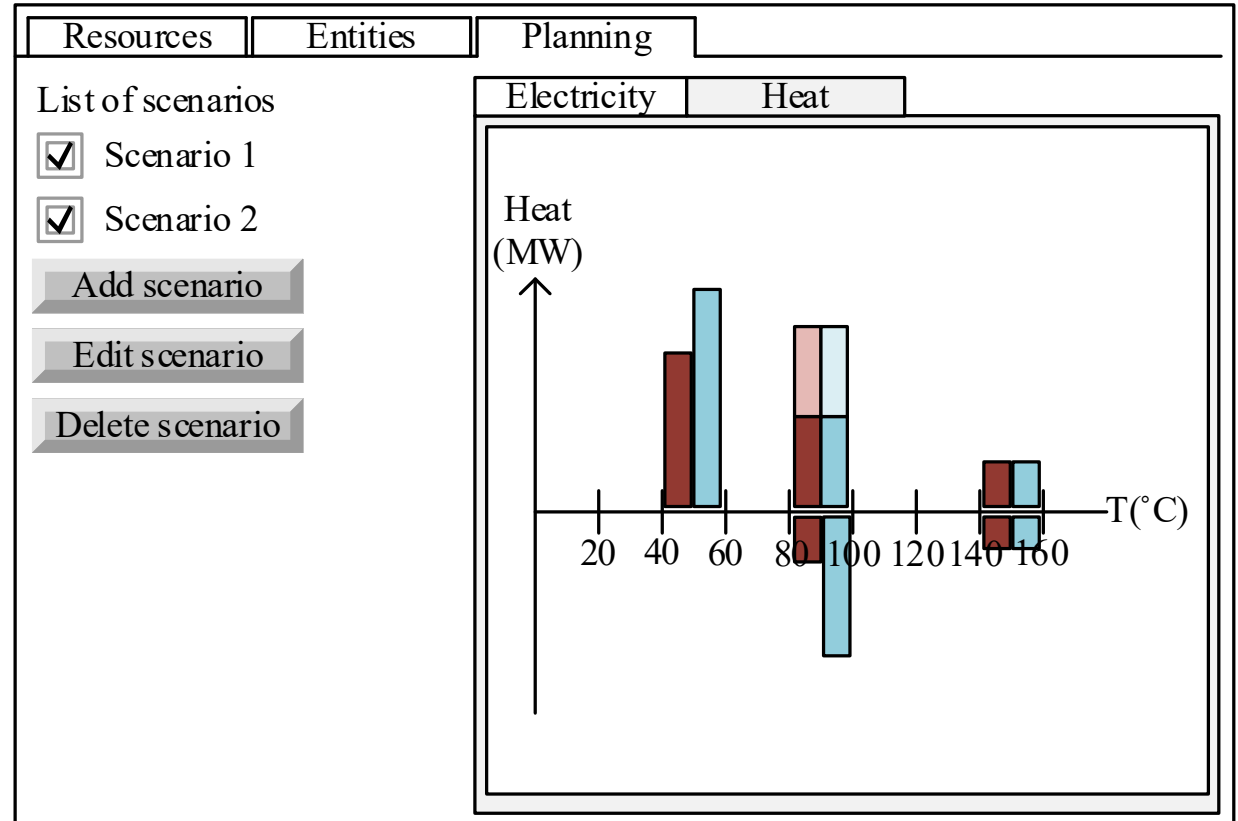
# How does it work?

## 3. Design and energy management of the eco-park

### Energy balance

### Heat:

- Separated by temperature levels
- Overall heat balance
- Average over 1 day, 1 week,...



# How can it create value?

First of its kind decision support software for eco-industrial parks

- Design
- Management of energy flows

Different objectives  
Economy, energy  
balance, CO2 footprint, ...

Integration of any  
resource (H2, e-  
fuels, CO2, ...)

Informs about  
consequences of  
potential new  
investments

**Greenlab  
Designer Lite**

Provides insight  
on current/future  
energy balance

Helps reduce  
energy peak  
load

Helps optimizing future  
scenarios when onboarding  
new companies - symbiosis

# Questions?

Thank you for your attention.