

# ERPsim

## Sustainability Webinar

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Webinar  
Online | October 17, 2023

**ERPsimLab**  
**HEC MONTRÉAL**

Serious games to learn enterprise  
systems and business analytics

# Agenda

1. Carbon Reporting
2. Two Sustainability Scenarios:
  - ▶ Logistics Sustainability (3 presets)
  - ▶ Manufacturing Sustainability (3 presets)
3. ZCONTROL
4. Demo
5. FAQ
6. Final Slides/Other Questions

# Carbon Reporting

## Measure and track Carbon emissions:

- Measuring in kilograms of carbon dioxide equivalent (CO<sub>2</sub>e)
- Following the “Greenhouse Gas Protocol” (GHG Protocol)
  - joint initiative by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)
- Categorizing corporate-level emissions within 3 scopes for carbon reporting

For more information, refer to our carbon reporting guide: <https://erpsim.hec.ca/en/node/419>

# Carbon Reporting: GHG Scopes

## Scope ①

- contains all direct CO<sub>2</sub>e emissions from a company's owned or controlled sources

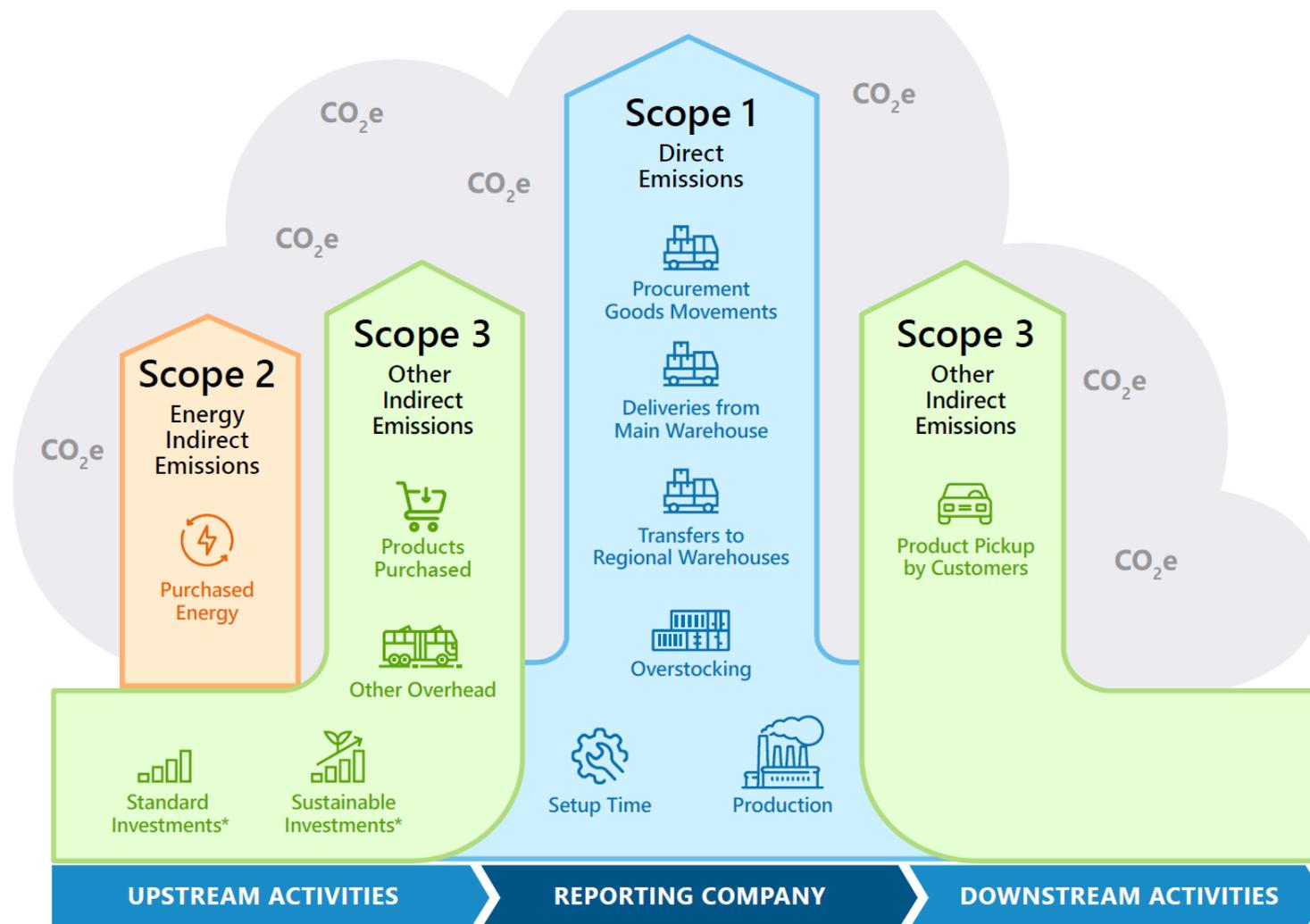
## Scope ②

- groups all indirect emissions from purchased energy (e.g., electricity, heat)
- consumed by the reporting company but generated by a utility company or other uncontrolled sources

## Scope ③

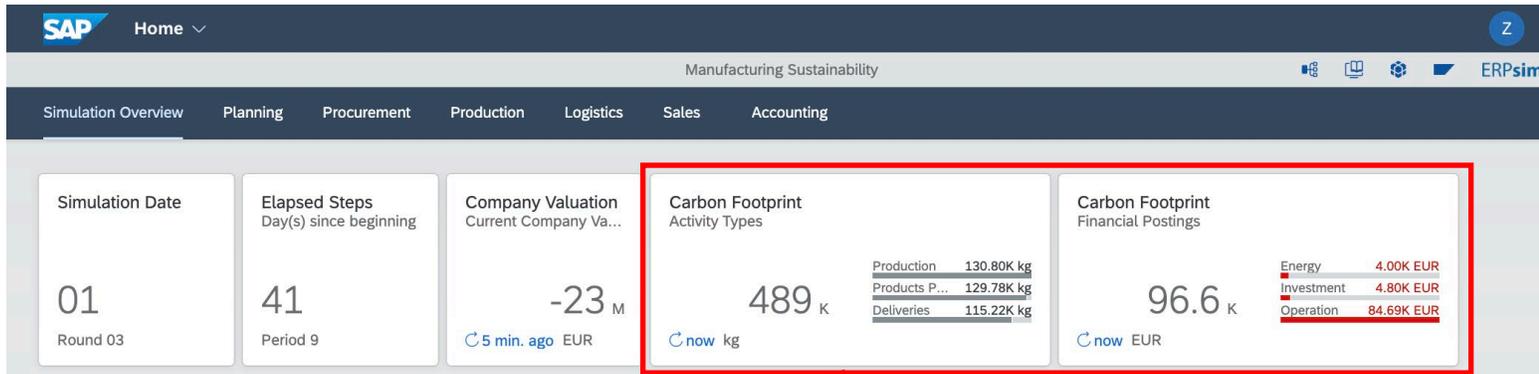
- groups all other indirect upstream and downstream emissions having an impact on your value chain
- emissions are generally owned and reported as Scope 1 by another party

# ERPsim Activities: Scopes



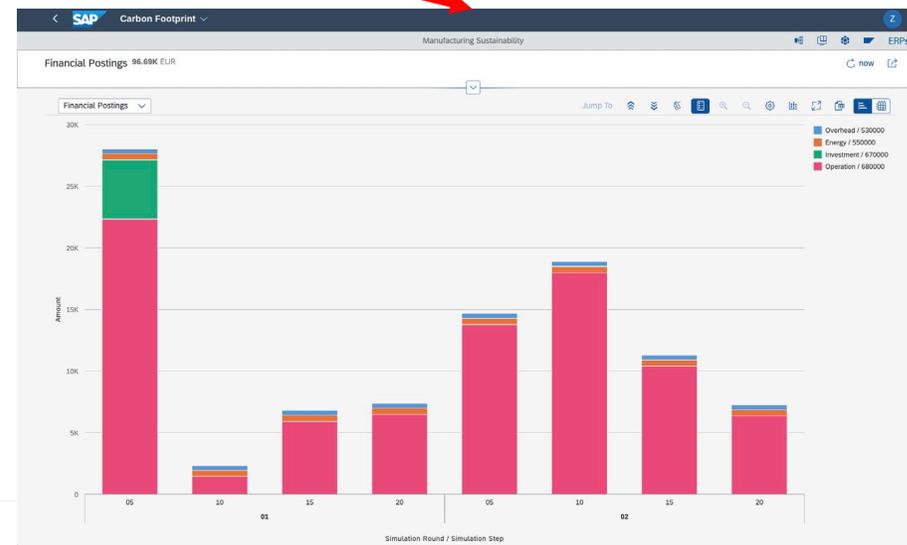
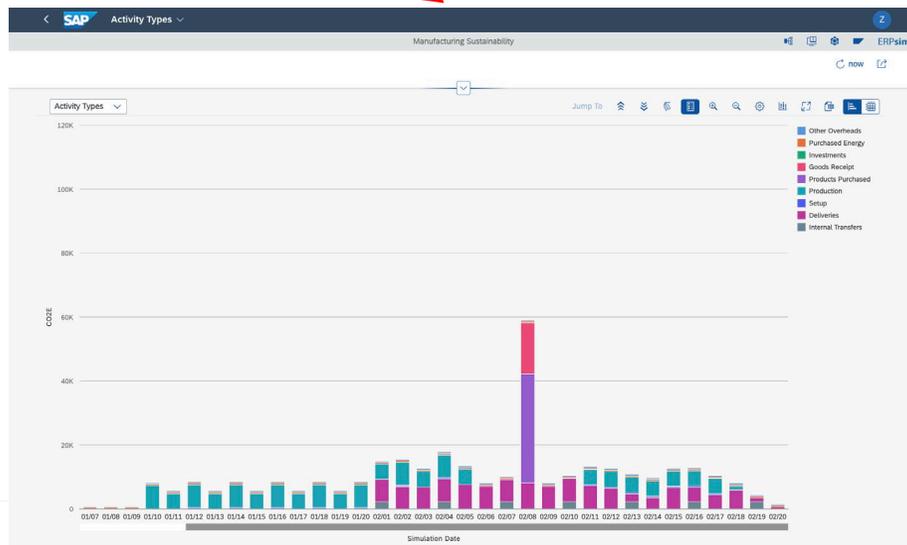
\* Investments include capital goods purchases (e.g., solar panels, additional machinery or electric vehicles) and consultants business travels.

# ERPsim Carbon Activities and Postings



Activity Type (kg)

Financial Postings (Euros)



# Logistics Sustainability

- Comparable the other Logistics game scenarios (Intro and Extended)
- Carbon emissions generated and tracked from different sources such as transportation, warehousing, and overhead
- Carbon is taxed and deducted from the revenues
- **Students' role:** Maintain profitable operations while keeping carbon footprint low



**Logistics Sustainability Game (Preset 3)**

User: **\$\_1 to \$\_9**  
Initial password: **ERPSIM**

Adapted for Fiori and for SAP GUI with Fiori Visual Theme Activated  
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Last Update: July 17, 2023

**FORECAST SALES**  
Create Planned Indep. Req. (MD61)

- Select Product group and enter the following information
- Enter your forecast quantities in the 2nd date column
- Save

**CALCULATE REQUIREMENTS**  
MRP Run (MD01)

- Press Enter or click **Execute**
- Ignore orange warnings. Press Enter two more times
- In the pop-up window, click **Continue**

**SELECT VENDOR**  
Procurement Sourcing (ZME12)

- Click on **Assign Source of Supply**
- For each Product, assign either vendor V04 or V08
- Save

**ORDER MATERIALS**  
Create Purchase Orders (MES9N)

- Make sure the **Fixed Vendor** field is empty
- Execute

Purchase orders are created  
! If no open requisitions:  
! No suitable requisitions found

**PLAN STOCK TRANSFER**  
Stock Transfer (ZMB1B)

- In **Planning Mode**, select a **Push or Pull** transfer strategy
- In **Scheduling**, enter your delivery frequency
- If available, to sell from main warehouse, in **Direct Sales**, check **Sales from Stock** & specify **Mix Qty**
- Enter the amount of each product you wish to send/maintain in each region
- Save

**MAINTAIN PRICES**  
Change Price List (VK32)

- Open the **Prices** folder and double click on **Price List**
- Verify **Distribution Channel** is 16
- Execute
- Modify your prices
- Save





**Logistics Sustainability Game (Preset 3)**

User: **\$\_1 to \$\_9**  
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Last Update: July 17, 2023

**FINANCIAL STATEMENTS**  
Financial Statements (F01)

- In **Company Code**, enter your <company code>
- GUI step: Select **ALV Tree Control**
- GUI step: In **Statement Version**, enter **SM1**
- GUI step: Execute
- GUI step: Execute

Product	Initial Stock	Unit Cost (V04)	Unit Cost (V08)	Initial Price
 Milk (\$\$-T01)	950 units	€22.95	€24.10	€25.25
 Cream (\$\$-T02)	300 units	€72.07	€75.67	€79.78
 Yoghurt (\$\$-T03)	700 units	€25.85	€27.14	€28.43
 Cheese (\$\$-T04)	350 units	€82.68	€86.81	€90.95
 Butter (\$\$-T05)	400 units	€59.88	€62.87	€65.87
 Ice Cream (\$\$-T06)	300 units	€43.15	€45.31	€47.47

WAREHOUSING COSTS	
Current Space (Units) (maximum capacity without additional fees)	4 000
Daily Cost per Additional 1 000 Units (€)	300
Daily Carbon per Additional 1 000 Units (kg of CO <sub>2</sub> e)	500

CUSTOMERS	
<b>DC 16: Retail Stores</b>	
Payment Time	4 days
Approximate Market Size	€72 000 per team/day

OVERHEAD CARBON	
Frequency	5 days
Purchased Energy (kg of CO <sub>2</sub> e)	500
Other Overhead (kg of CO <sub>2</sub> e)	500

TRANSPORTATION AND CARBON FEES		
	(€)	(kg of CO <sub>2</sub> e)
V04 to Main Warehouse	1 000	100
V08 to Main Warehouse	600	400
Main Warehouse to Regions	100	50
Main to Customers	350	300
Regions to Customers	-	75

SUPPLIERS			
<b>Vendor</b>	<b>V04</b>	<b>V08</b>	
Lead time (days)	1-2	1-4	
Carbon per unit ordered (kg of CO <sub>2</sub> e)	1.2	0.8	
Payment time (days)	5	10	

VARIABLE CARBON TAX	
<b>Unit of Measure</b>	<b>kg of CO<sub>2</sub>e</b>
Initial Price (€/kg of CO <sub>2</sub> e)	0.10

# Presets

## Preset 1: Simple

Light introduction to sustainability concepts with only a few carbon-related parameters

## Preset 2: Storyline

Build scaffolding: each round offers more layers of complexity and decision points

## Preset 3: Exhaustive

Complete version offering all the parameters and decision points from the start of the game

# Manufacturing Sustainability

- Comparable the other Manufacturing game scenarios (Intro, Ext, Adv)
- Carbon emissions generated and tracked from different sources such as production, transportation, warehousing, and overhead
- Carbon is taxed and deducted from the revenues
- Possible to invest in sustainability and reduce carbon footprint
- **Students' role:** Maintain profitable operations while keeping carbon footprint low

**Manufacturing Sustainability Game (Preset 3)**

User: \$,1 to \$,9 Initial password: ERPSIM

Adapted for Fiori and for SAP GUI with Fiori Visual Theme Activated

© ERPSim Lab, HEC Montréal Last Update: July 25, 2023

**CHANGE PRODUCT DESIGN** Validated BOM Change (ZCS02)  
1 Select the material to change by clicking  
2 Change quantities and Save  
3 If received error messages, click on Continue to modify the entries

**FORECAST SALES** Create Planned Indep. Req. (MD61)  
1 Select Product group and enter the following information  
2 Continue  
3 Enter your forecast quantities in the 2nd date column  
4 Save

**CALCULATE REQUIREMENTS** MRP Run (MD01)  
1 Press Enter or click Execute  
2 Ignore orange warnings Press two more times on Enter  
3 In the pop-up window, click Continue

**SELECT VENDOR** Procurement Sourcing (ZME12)  
1 Click on Assign Source of Supply  
2 For each Material, assign a vendor  
3 Save

**ORDER MATERIALS** Create Purchase Orders (MES9N)  
1 Execute  
Purchase orders are created  
If no open requisitions: No suitable requisitions found

**RELEASE PRODUCTION** Convert Planned Orders (C041)  
1 Run Selection  
If no planned order: Planned order could not be selected  
2 Select orders  
3 Confirm  
If conversion fails, click on X to see log

**PLAN STOCK TRANSFER** Stock Transfer (ZMB18)  
1 In Planning Mode, select a Push or Pull transfer strategy  
2 In Scheduling, enter your delivery frequency  
3 If available, Is sold from main warehouse, in Direct Sales, check Sales from Site 2 & specify site ID  
4 Enter the amount of each product you wish to send/maintain in each region  
5 Save

**MAINTAIN PRICES** Change Price List (VK32)  
1 Open the Prices folder and double click on Price list  
2 In Distribution channel, enter 10, 12 or 14  
3 Execute  
4 Modify your prices  
5 Save

**STOCK LEVELS** Inventory Report (ZMBS2)  
Shows stock levels for both finished products and raw materials  
Shows quantities of raw materials reserved for production

**PROCUREMENT TRACKING** Purchase Order Tracking (ZME2N)  
Shows the details/status of each purchase order  
Shows expected goods delivery Date

**Bill of Materials**

Nut	Strawberry	Original	Raisin	Blueberry	Mixed
SS-F01 500g SS-F11 1kg	SS-F03 500g SS-F13 1kg	SS-F05 500g SS-F15 1kg	SS-F04 500g SS-F14 1kg	SS-F02 500g SS-F12 1kg	SS-F06 500g SS-F16 1kg
20% wheat* 30% oat* 20% nut** 1 box / 1 bag*	20% wheat* 30% oat* 20% strawberry* 1 box / 1 bag*	20% wheat* 30% oat* 1 box / 1 bag*	20% wheat* 30% oat* 20% raisins* 1 box / 1 bag*	20% wheat* 30% oat* 20% blueberry** 1 box / 1 bag*	20% wheat* 30% oat* 30% fruits & nuts** 1 box / 1 bag*

**STORAGE CAPACITY AND COSTS**

Product Type	Current Space	Daily Cost per additional 50 000 units*	Daily Carbon cost per additional 50 000 units*
Finished products	250 000 boxes	€500	2 500 (kg of CO <sub>2</sub> e)/day
Raw materials	250 000 kg	€1 000	5 000 (kg of CO <sub>2</sub> e)/day
Packaging (bags and boxes)	750 000 units	€100	1 500 (kg of CO <sub>2</sub> e)/day

**SUPPLIERS**

Vendor	V01	V11	V02	V12
Lead time (days)	2-3	1-4	2-3	1-4
Delivery Cost (euros)	-	€ 1 000	-	€ 2 000
Delivery Carbon (kg of CO <sub>2</sub> e)	10 000	10 000	6 000	15 000

**CUSTOMERS**

- DC 10: Hypermarkets  
Payment Time: 20 days  
Approximate Market Size €50 000 per team per week
- DC 12: Grocery Chains  
Payment Time: 10-20 days  
Approximate Market Size €50 000 per team per week
- DC 14: Independent Grocers  
Payment Time: 1-25 days  
Approximate Market Size €35 000 per team per week

**TRANSPORTATION AND CARBON FEES**

Movement type	Cost (€)	Carbon (kg)
Main Warehouse to Regions	500	750
Regions to Customers	-	200
Main WH to Customers (per unit)	0.05	0.25

**VARIABLE CARBON TAX**

Initial Price (€/kg of CO <sub>2</sub> e)	Carbon Tax
0.20	0.20

**SUSTAINABLE INVESTMENTS**

Type	Cost (€)	Carbon (kg of CO <sub>2</sub> e)	Reduction (%)	Max. Reduction (%)
Freight Fleet Improvement	10 000	2 000	15	45
Sustainable Manufacturing	10 000	2 000	15	45

**FIXED COSTS (€ paid each 5 days)\***

Labor	20 000
Manufacturing overhead	15 000
S, G & A	40 000
Depreciation (Building)	1 250
Depreciation (Equipment)	50 000

**DAILY OVERHEAD CARBON**

Purchased Energy (kg of CO <sub>2</sub> e)	500
Other Overhead (kg of CO <sub>2</sub> e)	400

**PRODUCTION CONSTRAINTS**

Capacity (units/day)	24 000
Additional Capacity Cost (€ per 1 000 units)	1 000 000**
Additional Capacity Carbon Emission (kg per 1 000 units)	1 000
Production Carbon Emission	0.30 kg per box
Setup Carbon Emission	50 kg per hour
Minimum/Maximum Lot Size	16 000/48 000

**SETUP TIME REDUCTION**

Setup time (hrs)	Cost (€)	Carbon (kg)
8	-	-
7	50 000	100
6	125 000	250
5	250 000	500
4	500 000	1 000
3	1 250 000	2 500

# Presets

## Preset 1: Simple

Comparable to Manuf. Extended game with addition of some carbon-related parameters and decision points

## Preset 2: Storyline

Build scaffolding: each round offers more layers of complexity and decision points

## Preset 3: Exhaustive

Comparable to Manuf. Advanced game with many decision points and all carbon-related parameters from the start of the game

# Presets Comparison

	Preset 1	Preset 2	Preset 3
<b>Gradual Complexity</b>	No	<b>Yes</b>	No
<b>Tax Rate</b>	Fixed	Fixed	Variable
<b>Impact on credit rating</b>	No	<b>Yes</b>	<b>Yes</b>
<b>Investments</b>	Capacity and setup time	Capacity and setup time <i>Added at round 2:</i> Sustainable investments	Capacity and setup time Sustainable investments
<b>Logistics</b>	Sales from main warehouse	Sales from main warehouse <i>Added at round 3:</i> Sales from region	Sales from main warehouse Sales from region
<b>Vendors</b>	V01 and V02	V01, V02 <i>Added at round 4:</i> V11, V12	V01, V02 V11, V12

# How to teach with the new scenarios?

**As the instructor, you have TWO options:**

1. Keep the default presets as explained in the games' documentation (job-aids, slides, videos)
2. Customize the experience:
  - Tailored experience for your learning objectives
  - Adjust the game to your time constraints
  - Build your own storyline
  - Make the games easier or harder

# Customize your game via ZCONTROL

## You can customize the following:

- **Carbon Impact:** Carbon tax and the impact on credit rating
- **Vendors:** additional vendors & their time of entry into the game
- **Goods movement:** procurement, internal transfers, sales
- Overstocking, Overhead, Logistics (sales from MW/Regions)
- Production
- Investments (standard, sustainable)

Administration Troubleshooting Administrator Reports

Administration

- ERPsim Client Setup ZSTART
- Control Panel ZCONTROL**
- User Management ZUSER  
0  
Account(s) locked
- External Links ZLINK
- Scrap Inventory ZSCRAP
- Loan Repayment ZLOAN

Troubleshooting

- Process Goods Movements Errors COGI  
0  
Error(s) found
- Predefined Confirmation Processes CO1P
- Rejected Production Orders ZREJECTED  
1  
Release(s) Rejected

Administrator Reports

- Inventory Report ZMB52
- Purchase Order Tracking ZME2N
- Production Report ZCOOIS
- Sales Order Report ZVA05
- Summary Sales Order Report ZVC2
- Display Price List VK33
- Financial Statements Fiori
- Company Valuation Report ZVAL

# Demo

ERPsim Academic Edition 2023

ERPsim © 2004-2023, ERPsim Lab, HEC Montréal.

# FAQ - Students' perspective

- Can students play the Logistics Sustainability game without having played the Logistics Intro or Logistics Extended games?
- Can students play the Manufacturing Sustainability game without having played the Manufacturing Intro, Extended, or Advanced games before?
- Who are the main target audience for these sustainability scenarios?
- Are there any documentation for students to learn the sustainability scenarios?

# FAQ – Instructors' perspective

- Are there any documentation/resources for instructors to learn the sustainability scenarios?
  - Teaching Notes on the Learning Portal:  
<https://erpsim.hec.ca/en/learning/instructors#content-teaching-notes>
  - Level 2 certification course on eduZone Platform (contact us for enrollment)
- As an instructor, how much time do I need to invest to learn these sustainability scenarios?
- Do I need to get recertified to be able to use these new scenarios?
- I am newly certified (Level 1). Can I use these new scenarios?

# FAQ – Other questions!

- Do I need to order a different ERPsim SAP client from my UCC?
- Can we do analytics with the new carbon data? Where can I find resources?
  - **OData View:** Carbon\_Emissions
  - Analytics Reference Guide & Sustainability Carbon Reporting documents:  
<https://erpsim.hec.ca/en/node/419>
- How many rounds should be played (for each game) to fully comprehend the sustainability impact?
- Can I change the presets or customize the game mid-game?

# ERPsim Sustainability Curriculum Award



# ERPsim activities 2023



**ERPsim Events**  
Live Session Webinar

October 31, 2023 • Online • 1 pm Montréal Time

[Register now!](#)

Photo by iStock.com



**ERPsim Challenge**  
**Manufacturing Sustainability**  
Student Friendly Competition

November 10, 2023 • Online • 10 am Montréal Time

[Register now!](#)



**ERPsim Digital Transformation**  
Live Session Webinar

November 14, 2023 • Online • 1 pm Montréal Time

[Register now!](#)

Photo by Fabio on Unsplash



**ERPsim Challenge**  
**Maple Game**  
Student Friendly Competition

November 24, 2023 • Online • 10 am Montréal Time

[Register now!](#)

Photo by Brooke Edge on Unsplash

# ERPsim competitions 2024



National competitions



Regional competitions



Mar 22, 2024



June 6, 2024



Apr 26, 2024



Mar 29, 2024



May 23, 2024



Nov 10, 2023



Nov 17, 2023



Nov 17, 2024



May 17, 2024



May 31, 2024



Apr 12, 2024



Oct 20, 2023

# SAP NAAC 2024 & ERPsim UGM

Save the Date

**Jun 17-20, 2024**

ERPsim Lab 20<sup>th</sup> Anniversary Celebration

# Questions

# Thank You!

Website: [erpsim.hec.ca](http://erpsim.hec.ca)

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