

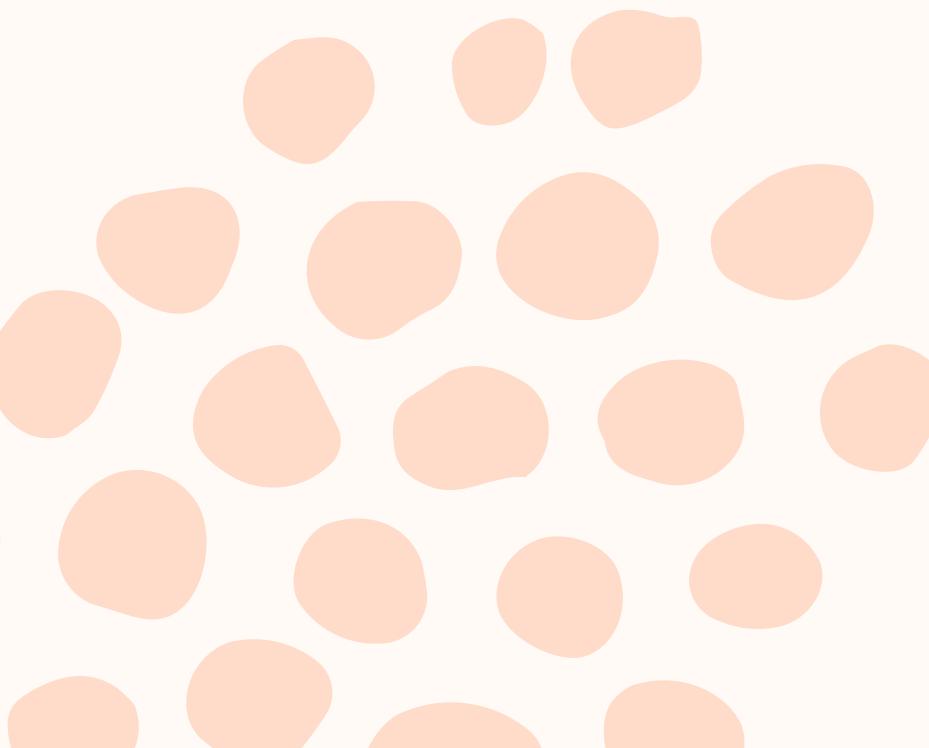


# Project Walkthrough

# Ecopredict



*Empowering the Circular Economic ideas through AI*



# About Us



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# problem statement

## The Circular Economic Conundrum: From Data to Decisions

Despite an influx of sustainable business ideas, distinguishing viable circular economy innovations remains a hurdle.

# *Solution*

EcoPredict addresses this by evaluating and surfacing the most promising solutions, aiding in the transition to a sustainable, circular economy. It harnesses the power of AI to analyze and assess sustainability initiatives. Built on a BERT-based machine learning framework, it effectively processes environmental text data, categorizing solutions and estimating their potential impact. EcoPredict is a valuable asset for decision-makers in the circular economy, offering data-driven insights to prioritize and quickly identify promising ideas.



# Version 1

```
Epoch 1/3
35/35 [=====] - 1422s 39s/step - loss: 0.8304 - accuracy: 0.7054
Epoch 2/3
35/35 [=====] - 1405s 40s/step - loss: 0.5661 - accuracy: 0.8054
Epoch 3/3
35/35 [=====] - 1415s 40s/step - loss: 0.3532 - accuracy: 0.8911
9/9 [=====] - 92s 10s/step - loss: 0.3831 - accuracy: 0.8786

[0.3830888271331787, 0.8785714507102966]
```

Current construction methods heavily rely on traditional cement, leading to high carbon dioxide emissions and significant health risks for construction workers. Each year, the production of this traditional cement releases approximately 5 billion tonnes of CO <sub>2</sub> into the atmosphere.	High Potential
Power Generation It is not my original idea. I just combined two ideas and scaled. RAM Pumps make it possible to pump water without electrical energy. <a href="https://www.lowimpact.org/categories/hydraulic-ram-pumps">https://www.lowimpact.org/categories/hydraulic-ram-pumps</a>	Very Low Potential
Imagine scaling it to the size of dam projects = running water in a closed loop.	
Then combine this with Hydroelectric power generation. <a href="https://www.youtube.com/watch?v=i31hGJ93OTg">https://www.youtube.com/watch?v=i31hGJ93OTg</a>	
Reuse IT Reuse cycle for hardware routers, switches, servers and laptops with security	Very Low Potential
Fast or takeaway food services contribute heavily to single-use packaging waste, which is detrimental to the environment and expensive for businesses that must dispose of it. Reducing reliance on single-use plastics can help reduce waste and costs.	Medium Potential
The automotive industry is one of the largest contributors to environmental pollution, with the use of traditional tires and cushions being a significant source of waste and emissions. Traditional tire cushions are often made from non-renewable resources and contribute to air pollution.	High Potential
Furthermore, the Eco-Cushion is designed to improve fuel efficiency, thus reducing emissions and environmental pollution. The cushion is engineered to reduce rolling resistance, making cars run more smoothly and efficiently.	
Additionally, the Eco-Cushion is easy to produce and cost-effective, making it an attractive alternative to traditional tire cushions. Its production process is simple and requires minimal energy, reducing the carbon footprint of the industry.	

# Version 2

Epoch 1/3

55/55 [=====] - 3280s 59s/step - loss: 0.8369 - accuracy: 0.6705

Epoch 2/3

55/55 [=====] - 2079s 38s/step - loss: 0.4410 - accuracy: 0.8545

Epoch 3/3

55/55 [=====] - 2009s 37s/step - loss: 0.2160 - accuracy: 0.9375

14/14 [=====] - 143s 10s/step - loss: 0.2379 - accuracy: 0.9364

[0.23785936832427979, 0.9363636374473572]

a gross inefficiency in our food system but also contributes to significant environmental issues. The wasted food	Medium Potential	This idea has medium potential. Consider improvements in resource efficiency, sustainability, or economic viability.
a harrowing fact that threatens our planet and people's livelihood. A significant part of these emissions stems fro	High Potential	This idea shows high potential with strong resource efficiency, sustainability, and economic viability.
blem. When cables become obsolete, they contribute to growing landfills. Additionally, the energy usage in manu	High Potential	This idea shows high potential with strong resource efficiency, sustainability, and economic viability.
ll or the ocean, is a major environmental challenge that needs an effective circular economy solution. Impleme	Very Low Potential	This idea has very low potential. A major rethink or overhaul may be required to improve its viability.
to environmental degradation and resource depletion. The industry's move towards fast fashion exacerbates this	High Potential	This idea shows high potential with strong resource efficiency, sustainability, and economic viability.
vironment but also endangers the health of those involved in manual waste segregation. The reality is that these	High Potential	This idea shows high potential with strong resource efficiency, sustainability, and economic viability.
unsustainable waste management system. The traditional method of disposing of sanitary pads and diapers thro		
ugh a sophisticated process that involves shredding, cleaning, and transforming the waste into wood pulp and pl		
comprehensive and sustainable approach to handling sanitary pads and diapers. With its high level of technical s		
cently, companies like Goldman Sachs, Capgemini etc. are installing these in their offices in India.		

# Future Work

## - Version 3

Potential	Sustainability_Score	Resource_Efficiency_Score	Economic_Viability_Score
High Potential	10	8	8
High Potential	8	9	8
Very Low Potential	1	1	1
High Potential	8	8	9
High Potential	10	10	10
Medium Potential	5	7	6
Very Low Potential	1	1	0
Very Low Potential	0	0	0
High Potential	9	10	10
Very Low Potential	1	1	1

```
Epoch 1/3  
25/25 [=====] - 1037s 40s/step - loss: 3.0840 - accuracy: 0.4750  
Epoch 2/3  
25/25 [=====] - 912s 36s/step - loss: 1.6511 - accuracy: 0.6275  
Epoch 3/3  
25/25 [=====] - 1007s 41s/step - loss: 1.5631 - accuracy: 0.7325  
7/7 [=====] - 72s 9s/step - loss: 1.8289 - accuracy: 0.7500
```

Some weights of the PyTorch model were not used when initializing the TF 2.0 model TFBertModel: ['cls.seq\_relations.hip.weight', 'cls.predictions.transform.LayerNorm.bias', 'cls.seq\_relationship.bias', 'cls.predictions.transform.dense.bias', 'cls.predictions.transform.dense.weight', 'cls.predictions.bias', 'cls.predictions.transform.LayerNorm.weight']

- This IS expected if you are initializing TFBertModel from a PyTorch model trained on another task or with another architecture (e.g. initializing a TFBertForSequenceClassification model from a BertForPreTraining model).
- This IS NOT expected if you are initializing TFBertModel from a PyTorch model that you expect to be exactly identical (e.g. initializing a TFBertForSequenceClassification model from a BertForSequenceClassification model).

All the weights of TFBertModel were initialized from the PyTorch model.

If your task is similar to the task the model of the checkpoint was trained on, you can already use TFBertModel for predictions without further training.

MSE for Score Prediction: 12.20343633333334

# Future Development

The next chapter for EcoPredict is to offer a comprehensive analysis of sustainable ideas, providing detailed scores in economic feasibility, resource efficiency, and sustainability. Our enhanced algorithm will also deliver specific feedback for each idea, pinpointing specific areas for enhancement in these key categories. To augment this experience, we plan to introduce an intuitive chatbot, making the exploration and refinement of sustainable ideas more user-friendly and interactive.





Thank  
you