



# COLEX

Your Guide to Environmental Law and Sustainability



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## What is **EcoLEX**®?

**EcoLEX**® is a powerful, specialized **Artificial Intelligence (AI) Chatbot** designed to provide accurate, on-demand answers regarding **relevant and commonly used Environmental Laws in the Philippines**. It serves as an essential, offline legal research tool for professionals, researchers, students, and government staff.

## Core Purpose and Focus

**EcoLEX**® is explicitly focused on the legal landscape of the Philippines. Its primary purpose is to:

- Provide accurate legal information:** Answer queries by retrieving text directly from an internal database of Philippine Environmental Laws.
- Ensure compliance and consistency:** Limit its responses strictly to the data provided in the legal documents, preventing the fabrication of information (hallucination).
- Enable offline access:** Function completely without an internet connection, making it ideal for fieldwork, remote locations, or environments with strict data security requirements.

## Technology and Architecture

The Chatbot utilizes a cutting-edge AI technique to ensure the reliability and relevance of its answers.

Component	Description	Benefit
<b>Retrieval-Augmented Generation (RAG)</b>	This is the core system architecture. It works by first <b>retrieving</b> the most relevant sections of the law from the database and then using a <b>Large Language Model (LLM)</b> to <i>generate</i> a precise answer based <i>only</i> on the retrieved text.	Guarantees that the answers are directly verifiable and grounded in the actual legal documents.
<b>Fine-Tuned LLM</b>	A sophisticated LLM has been <b>reinforced</b> (fine-tuned) to prioritize and produce output based on the contents of the populated environmental laws.	Increases the legal accuracy and contextual relevance of the generated responses.
<b>Ollama Models</b>	The system uses <b>Ollama models</b> , an open-source framework, which allows the LLM and the entire RAG system to run <b>locally</b> on a user's machine.	Ensures local, high-performance operation and enables the system to function <b>without an internet connection</b> .

## Key Operational Features

Feature	Description	Importance
<b>Local Operation</b>	<b>EcoLEX®</b> is designed to be installed and used on a local device.	Critical for <b>data security</b> and ensuring access in areas with <b>no or unreliable internet service</b> .
<b>Database Update Capability</b>	The internal database of laws can be updated periodically.	Allows the chatbot to stay current with <b>newly passed or amended Philippine environmental legislation</b> .
<b>Legal Scope</b>	The database is populated with <b>relevant and commonly used</b> Philippine environmental laws.	Focuses the tool on the <b>most practical and high-demand</b> legal statutes (e.g., the Philippine Clean Air Act, Ecological Solid Waste Management Act, etc.).

## Legal Database

Currently, the beta version<sup>1</sup> of **EcoLEX®** is fine-tuned with four laws, namely:

- Philippine Clean Air Act of 1999
- Philippine Clean Water Act of 2004
- Ecological Solid Waste Management Act of 2000
- Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990.

New laws can be added to the database through a single command.

## Interacting with EcoLEX

Simply pose your question in natural, conversational language. In every run, the system retains a conversation history between the user and the chatbot, and the subsequent answers of the chatbot take into consideration the context of the preceding conversation. However, the history is refreshed once the conversation is terminated.

Example Query	Expected EcoLEX® Action
"What are the prohibited acts under the Philippine Clean Water Act?"	<b>Retrieves</b> the list the prohibited acts, then <b>generates</b> a summary or list based on that text.
"Define 'hazardous waste' according to R.A. 6969."	<b>Retrieves</b> the definition from the relevant section of Republic Act No. 6969, then <b>generates</b> the exact or slightly paraphrased statutory definition.

**Important Note:** While **EcoLEX®** is highly accurate and grounded in law, it remains to be an **AI tool** and cannot provide legal advice. It may commit mistakes, as any artificial intelligence model. Always refer to the *official full text* of the retrieved law for professional legal interpretation.

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<sup>1</sup> The beta version was submitted as a midterm requirement; thus, the system is currently deployed on a computer terminal (black screen).

## **INFORMATION ON THIS EcoLEX®**

The name of this chatbot is called EcoLEX®.

Charles Arthel R. Rey developed this ChatBot for the subject Environmental Rights and Legal Remedies in the Philippines.

The professor of the subject Environmental Rights and Legal Remedies in the Philippines is Atty. Maria Roda Cisnero.

The school where the subject is being taught is at the Ateneo de Manila University School of Law.

The current semester is First Semester, Academic Year 2025-2026.