

CASE STUDY

Waste Not, Want Not - Cost Effective Solutions to Pollution



A view of Absolut Distillers Incorporated's catchment lagoon and plant. Photo credit: Absolut Distillers Inc.

A Philippine distiller has demonstrated how to turn wastewater into clean energy and fertilizer, highlighting the cost effectiveness of green solutions to pollution.

Overview

In 1998, Absolut Distillers Incorporated (ADI), an alcohol distillery based in Batangas in the Philippines, received a cease-and-desist order from local government authorities to halt discharges of harmful wastewater into nearby rivers.

In response the company took a number of innovative measures to clean up its operations, including putting in place equipment to convert wastewater slops into biogas (methane) for use as an energy source at the plant.

This case study is based on separate case studies that appeared on ADB's Wastewater Innovations website and *From Toilets to Rivers Volume 1*.

Project snapshot

Dates	<ul style="list-style-type: none"> • 1998: Expansion of ADI's wastewater catchment lagoons • 2000: Construction of artificial wetland • 2001: Setup of sequential batch reactor system • 2008: Setup of ADI's biogas digester through funding from Mitsubishi Corporation under the Clean Development Mechanism
Cost	<ul style="list-style-type: none"> • PhP 2 to 3 million : For the lagoon expansion and setup of the artificial wetland and the batch reactor system • US\$ 2 million: For the biogas project
Institutions and Stakeholders	Financing <ul style="list-style-type: none"> • Mitsubishi Corporation of Japan

Challenges

- As an alcohol distillery, ADI produces volumes of wastewater that are 10–18 times greater than the volume of alcohol produced.
- After the cease-and-desist order the company had to come up with both environmentally friendly and cost-effective solutions for its wastewater problem in order to resume its business.

Solutions

The company took a number of actions to resolve the wastewater issues, which were implemented between 1998 and 2008.

They included:

- Expansion of the plant's wastewater catchment lagoons, and introduction of high-density polyethylene geo-membrane liners to prevent leaching or seepage.
- Construction of a reed-bed system to serve as an artificial wetland to remove contaminants.
- Introduction of industrial processing tanks to treat wastewater in batches.
- Introduction of a green technology (biogas digester) to convert wastewater slops into biogas (methane), which was then used as an alternative fuel for the plant's boilers.

The introduction of the biogas digester was done through a funding agreement with Japanese company, Mitsubishi Corporation and the tapping of the Clean Development Mechanism – a global green financing facility.

Under the terms of the deal made in 2007, Mitsubishi Corporation agreed to finance the design, and construction of the biogas digester system, in return for acquiring certified emission credits stemming

from the use of methane instead of fossil fuels for powering ADI's boilers.



Absolut Distillers Incorporated's biogas digester, which was funded through the Clean Development Mechanism financing facility. Photo credit: Absolut Distillers Inc.

What is the Clean Development Mechanism?

Set up under the Kyoto Protocol, the Clean Development Mechanism (CDM) is a financing facility that helps countries and companies around the world develop projects which reduce carbon emissions and mitigate climate change. It is the first global, environmental investment and credit scheme of its kind.

By obtaining certified emission reduction credits (carbon credits) from projects located in developing countries, developed countries can meet their greenhouse gas emission reduction targets at a lower cost, while promoting sustainable development in developing countries.

The Asian Development Bank (ADB) is a strong advocate of the scheme and through its Carbon Market Program, offers developing member countries technical and financial services on CDM projects. It also manages the Asia Pacific Carbon Fund and the Future Carbon Fund, to purchase carbon credits from projects. Over the years, ADB has provided financing to various CDM projects, including coal mine methane projects in the People's Republic of China, renewable energy projects in Indonesia, and a hydroelectric power plant in Bhutan.

Numbers and facts

8,712,000 cubic meters Total biogas generated annually

4,623,300 liters Equivalent liters of bunker fuel saved annually

PhP 161,815,000 Cost of annual fuel saved from use of biogas in operating plant boilers

Up to 96,000 tonnes per year Volume of carbon dioxide emissions reduced

150 The number of sugarcane farmers who received liquid fertilizer from the company

1,339 hectares Total area of sugarcane crops where liquid fertilizer was applied, resulting in a 60% increase in yields

Results

As a result of its actions:

- The cease-and-desist order was lifted in 2004.
- The plant introduced a viable green technology, allowing wastewater byproducts to be converted into biogas.
- Distillery slops are now being turned into liquid fertilizer, which ADI distributes to local farmers for free.
- The company has subsequently built a 2-megawatt solar power plant and an ethanol plant in 2015 to make its operations even more sustainable.
- ADI was the first company in the Philippines manufacturing sector to tap the Clean Development Mechanism and has received numerous 'green' awards and citations.



Encouraged by the results of its wastewater management initiatives, the company built a solar power plant and an ethanol plant in 2015 to make its operations even more sustainable. Photo credit: Absolut Distillers Inc.

Lessons

Consider alternative financing options

Despite high upfront costs, wastewater management can be cost-effective if companies tap available clean energy financing options and adopt green technologies that cut their reliance on fossil fuels, resulting in significant savings.

Take into account the needs of local communities

There are technologies available that can convert wastewater into useful by-products such as fertilizer, that can benefit local communities.

Going green translates to "triple bottom line"

"Greening" a business operation has triple benefits in terms of profits, a greener environment, and improved relations with local communities.

Resources

Wastewater Innovations. 2015. *Yin and Yang: Synergy of Wastewater and Energy*. Manila.

Asian Development Bank (ADB). 2014. *From Toilets to Rivers: Experiences, New Opportunities, and Innovative Solutions*. Manila

ADB. *Clean Development Mechanism Overview 2011*. Manila.



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Gerardo Tan Tee has been with Absolut Distillers, Incorporated since 1990. He oversaw several of the company's pioneering green initiatives, including the distillery's innovative wastewater management system, which has received accolades. He is a mechanical engineering graduate from Adamson University and holds an Executive MBA from International Academy of Management and Economics.

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