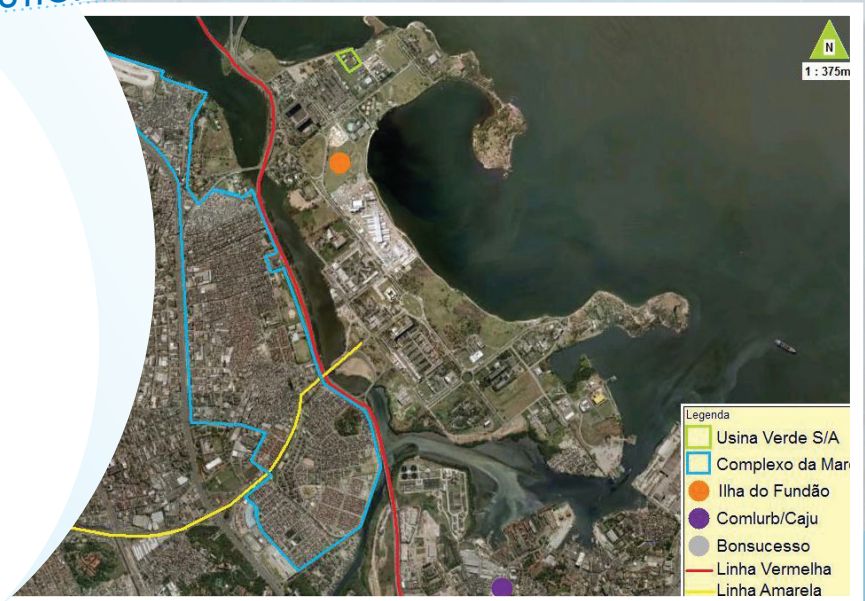


FALSE CLAIMS OF A FALSE SOLUTION:

The Usina Verde Incinerator in Rio de Janeiro

by André Abreu and Marcelo Negrão



In 2002, the company Usina Verde S/A signed a cooperation agreement with the Coordination Foundation for Technological Projects, Research and Studies (COPPETEC) of the Federal University of Rio de Janeiro (UFRJ), Brazil, to build a prototype incinerator on the campus of the university located in Ilha do Fundão, north of Rio city. The aim of the project was to develop a Brazilian technology to incinerate solid waste, recovering the energy produced as electric and thermal energy.

The prototype has the capacity to incinerate 30 tons of solid waste per day and produce 440 kWh of electric energy. It started operations in 2005 and received the approval of the Clean Development Mechanism (CDM)

under misguided claims and despite public opposition, and took advantage of being an experimental plant for research purposes to elude an Environmental Impact Assessment requirement.

While it claims to be experimental and not commercial, the company has been promoting large scale waste-to-energy incinerators using this plant as a model, even though the plant is not able to produce enough energy to meet its own needs. Given that this pilot plant is the only incinerator of municipal solid waste operating in Brazil, its potential commercial impact is high.

Photo Above: Location of the Usina Verde incinerator prototype.



Global Alliance for Incinerator Alternatives
Global Anti-Incinerator Alliance



Zero Waste for
Zero Warming

The city of Rio de Janeiro produces about 8,800 tons of municipal solid waste per day, with an average of almost 550 kg per resident per year. Unlike most other Brazilian municipalities, waste collection and public cleaning services in the city of Rio are managed by a public company, the Municipal Urban Cleansing of Rio de Janeiro (COMLURB). The incinerator facility receives part of this waste. It is located in Ilha do Fundão, in the north of Rio, in Guanabara Bay. Also called the “oil island”, it hosts the Research and Development Center of the state oil company Petrobras, as well as research centers from other multinational companies that work with the university.

CDM and False Claims of Recycling, Inclusion and Emissions Reduction

Before arriving at Usina Verde, solid waste¹ is collected by COMLURB from the neighborhoods adjacent to Ilha do Fundão and stored at a sorting plant and transfer station in Caju. COMLURB employees separate a small fraction of the waste that enters the plant; a mix of primarily dry materials is taken to the Usina Verde plant, as established by a contract between them. This sorting is fundamental to make the incineration process possible, since it depends on an input mix with high calorific value. Once at the Usina Verde site, informal recyclers from the Cooperative Friends of the Environment (Coopama) undertake a second sort. They separate metals, glass, pieces of wood and other materials that can affect the rapid incineration of waste. After sorting, the rest of the materials go to the incinerator.

Contrary to the company’s claims that the technology is compatible with recycling², a visit to the plant proved that no recyclable material with high calorific value is actually recycled. Materials like plastics, paper, and small pieces of wood are incinerated, as the equilibrium and good performance of the incinerator depend on those materials.

The company claims that its technology creates dignified jobs for informal recyclers working on the dumps, and states that it is currently employing twenty waste pickers from Coopama.³ However, a visit to the facility could verify that in total, only six informal recyclers work at the plant, in two 12-hour shifts. They are paid by contract, and they take the sorted material to sell for recycling through the cooperative. However, the work at this plant is not stable. Usina Verde has had to stop operations repeatedly (for as long as six months) for maintenance or research purposes, which obviously creates significant instability for the Coopama workers. In addition, burning materials that are usually recycled in the area, like plastics and paper, takes away the livelihoods of informal recyclers and undermines efforts to create green jobs through recycling. At least three cooperatives and associations of informal recyclers and an unknown number of people whose livelihoods depend on recovering recyclable materials live in the nearby neighborhoods. This clearly contradicts Usina Verde’s claims of social inclusion.

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The CDM as Greenwashing

The company has been using the CDM as a way to legitimize its technology. The plant has been promoted as a technology that would reduce greenhouse gas emissions and obtain carbon credits.⁴ Currently, the company’s website states that “the project to classify the technology center USINA VERDE as a ‘Clean Development Mechanism’ was approved on 14th October 2005 by the Brazilian Inter-ministerial Commission on Climate Change. The verification of the CO₂ emissions avoided by the technology center USINAVERDE was certified by Bureau Veritas Certification in October 2007.”⁵ The text fails to say

that the CDM lists the project as “validation terminated” and the plant is not receiving carbon credits at all.⁶ The appeal to the CDM has helped both to build the plant and to promote it as a climate change solution; any financial benefit from the carbon credits is secondary. In addition, the company has been denounced by two national coalitions of NGOs in Brazil for falsely claiming to have a Gold Standard certificate, as explained below.

According to the company: “The scope of the CDM project of the facility by treatment center USINA VERDE is exclusively the elimination of the emissions of methane that would be produced if the same organic matter that is thermally treated was disposed of at the current site (Gramacho dumpsite/RJ).”⁷ Usina Verde was certified as an activity that prevents greenhouse gas emissions from the avoidance of methane at the dumpsite, when in fact most of the material it burns is not organic materials – those that produce the methane in the landfills – but dry materials, most of which could be recycled.⁸ Even the company admits as much: “in order to produce energy, municipal solid waste cannot be of any type, it should be mostly plastics, dry papers and petrochemicals in general.”⁹

The notorious Gramacho dumpsite, from which Usina Verde claims to divert methane-generating waste, is in the process of closure¹⁰ for a wide variety of environmental and social reasons. Usina Verde’s claim to climate benefits – that it prevents methane-generating organic waste from being dumped at a disastrous open landfill – thus rests on very shaky grounds.

The company Usina Verde S/A is part of the ARBI Group, which used to work in the banking sector, and whose owner was fined R\$ 243 million (US\$ 140 million) in 2005 and banned from occupying management positions after damaging the interests of stakeholders in some of his companies. Since 2000, the

group has been restructuring itself and investing in energy and infrastructure fields.¹¹

Not only is the facility not producing enough energy to give to other industries or the grid, but it even has a diesel generator to supplement its own energy needs.

Waste-of-Energy, Waste of Resources

The efficiency rate for energy recovery at the Usina Verde incinerator is extremely low, between 7% and 15% of the heat released from the combustion. Still, while the company’s promotional materials state that their technology produces “environmentally friendly” electric energy, the reality shows that not only is the facility not producing enough energy to give to other industries or the grid, but it even has a diesel generator to supplement its own energy needs.

Even though Usina Verde acknowledges that incineration has very limited energy generation potential, particularly compared to conventional sources of energy, much of its public relations campaign continues to talk about the “magic of transforming waste – a problem – into energy – a remarkable solution.”

The plant in Ilha do Fundão has run a deficit since it was built, since it is not receiving carbon credits from the CDM, it does not produce energy for the grid, and it does not export steam.

According to the company, the technology is now economically viable after the National Solid Waste Law was passed in 2010. This law obligates municipalities to eradicate open dumps and look for a proper disposal of solid waste. The director of the company recognizes that if it was not for the new law, the municipalities would have no incentive to incinerate waste, given that the cost of municipal solid waste disposal in Brazil



Part of the filtration equipment and fly ash from Usina Verde S/A

is relatively low, around R\$ 35 – 50 (US\$ 20-29) per ton.¹² So companies need to look for financial incentives, including climate funds, to make their projects economically viable.

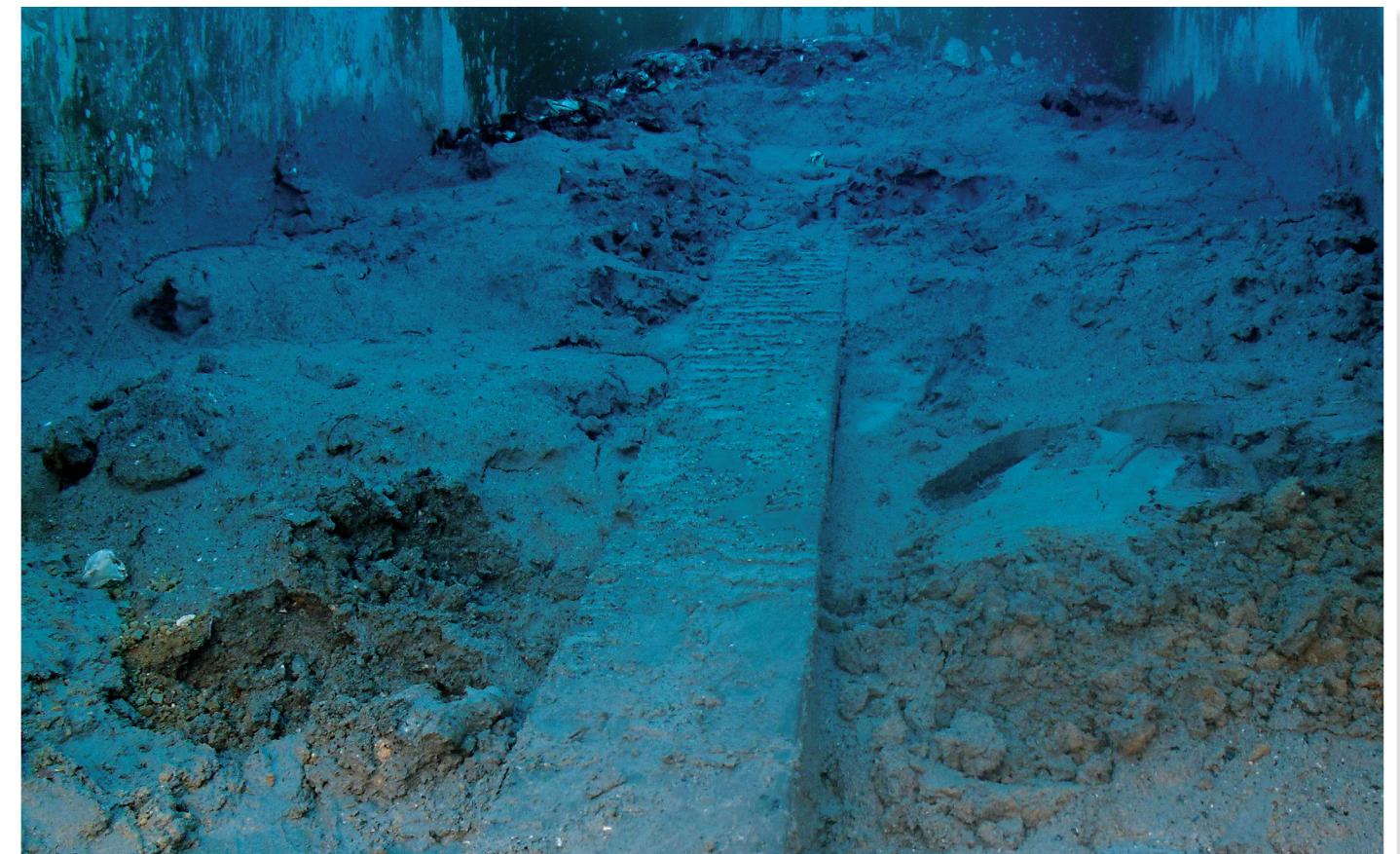
According to the company, its business model is based on four income streams: waste treatment per ton (tipping fee), sale of energy produced, carbon credits from the CDM for avoided methane emissions, and the export of steam to other industries. However, the plant in Ilha do Fundão has run a deficit since it was built, since it is not receiving carbon credits from the CDM, it does not produce energy for the grid, and it does not export

steam (an income stream that does not seem too promising in a tropical area like Rio). Company directors claim that the economic model would be feasible and profitable if operated at 150 tons/day but the pilot plant has a capacity of only 30 tons/day. It is also unclear how a larger size plant would change it from being a net importer to net exporter of energy. Despite technical problems, repeated interruptions and running a deficit, it seems that the plant is still operating, if only to have a “model” to show and advertise the technology.

Commercially, Usina Verde offers modules with a capacity to incinerate 150 or 300 tons of waste per day; these can be combined to treat 1,200 tons per day. The capital cost estimated to build one module is R\$ 35 million (US\$ 20 million)¹³. The information provided by the company about the cost is not complete, and this cost is estimated to be only for the burner, with very poor pollution control devices, no treatment of solid emissions (ash and slag) and very low standards of energy efficiency, so costs of a full treatment plan should be considerably higher. The operating cost per ton was estimated between R\$ 30 and R\$ 50 (US\$ 17 to 29) in 2004, depending on the capacity of the plant and the quality of the material burned.¹⁴ Despite offering this technology commercially, Usina Verde has yet to sell any plants, and therefore there are no modules operating which can be analyzed to assess how this technology works at scale in a Brazilian context.

Loopholes and Environmental Threats

Taking advantage of loose regulations regarding the monitoring and management of emissions, Usina Verde’s operating practices pose serious threats to public health and the environment. For instance, benefitting from being located at a university site and claiming to be an experimental plant with scientific purposes, Usina Verde did not conduct an



Ash and slag stored in containers without protection at the Usina Verde S/A site

Environmental Impact Assessment – with the consent of the authorities that granted it the operating license. But the plant is no laboratory experiment; it regularly burns 30 tons of waste per day. The potential health and environmental impacts of the plant cannot be neglected, especially considering that it is operating at a site visited by thousands of students, and very close to densely populated areas like Caju and Maré, as well as the neighborhoods Bonsucesso, Olaria and Penha, where over 100,000 families live within just a few kilometers of the plant.

Moreover, the ash and slag produced by the incinerator are being used for research to produce bricks and flooring. What is not used for this purpose is stored in open pits protected only by a plastic canvas until being landfilled.

Other important information gaps concern the systematization and access to emissions data from the plant, monitoring procedures, and potential mitigation measures in case harm is caused.

Community Opposition

The certification request by Usina Verde faced opposition from, among others, the Brazilian Forum of Non-Governmental Organizations and Social Movements (FBOMS) and the Brazilian Forum on Climate Change. In 2005, they sent a letter to Brazilian authorities unveiling false claims by the company and irregularities in the permits.¹⁵

“Despite being an incinerator, the project did not undergo any Environmental Impact Assessment or further Environmental Impact Report because the environmental authority of the state of Rio de Janeiro understood that these studies were dispensable given that this was a pilot project. The building permit was granted by FEEMA on January 15, 2004, and the operating permit was granted on May 12, 2005.”

“The proponents of the project stated in their propaganda materials that the project was a candidate for the Gold Standard, a quality seal for CDM projects developed and supported by a coalition of NGOs. Even without presenting the project as candidate, the initials of the Gold Standard (GS) program were printed on the cover of the PDD [project design document] and on all the pages, which can easily lead to the false perception that this project passed the evaluation process and received a Gold Standard certificate. However, according to the Gold Standards Manual of Project Development, neither waste incineration nor methane avoidance is eligible for the Gold Standard. This is because GS seeks to promote only those technologies that produce energy in a truly sustainable manner as well as practices that offer long term solutions for climate change, which in turn have to be supported by different social groups for their unquestionable benefits. We understand that this project is not eligible for GS and therefore should not use their terms to lead to false conclusions.”¹⁶

False Claims, False Solution

The Usina Verde incinerator has been built under false claims, and false claims keep being used to commercialize this technology throughout Brazil.

The company has promoted its incinerator as a climate change solution and a technology that would be certified under the CDM, while in fact it has been unable to obtain carbon credits. Despite its failure at the CDM, the company continues to claim CDM approval, just as it earlier claimed Gold Standard approval for which it was ineligible. The company claims to reduce methane emissions at the Gramacho landfill, while in fact it is mostly burning dry materials, and not the organic matter that produces methane in landfills. The company's claims of producing environmentally friendly energy are also false, as the plant is in fact a net consumer of energy. Claims of social inclusion are also misguided, as the plant is employing only six people, while burning livelihoods of many more informal recyclers. Finally, the avoidance of an Environmental Impact Assessment means a serious deficit in determining and preventing potential environmental and health problems related to the plant, and also a way to keep communities out of the discussion about the convenience of the project.

Based on the case study: *Incineração, recuperação energética e a Nova Política de Gestão de Resíduos Sólidos brasileira: o caso da Usina Verde S/A (Incineration, energy recovery and New Brazilian Solid Waste Management Policy: the case of Usina Verde S/A)* written by André Abreu and Marcelo Negrão.

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* Marcelo Negrão is working on doctoral thesis in social economy, and collaborator of France Libertés.

End Notes

- ¹ Non-hazardous waste. Classified as Class II in ABNT NBR 10004 / Revisão 2004.
- ² <http://www.usinaverde.com.br/tecnologia.php?cod=3D1F7E27-42EF-FFE5-BE21-F1D126D77DDD>
- ³ <http://www.usinaverde.com.br/modulos.php?cod=5CD8EE8C-FCC6-1D18-30BE-3EF2AA04BABA>
- ⁴ See, for example: Usina Verde reduz lixo e emissões: <http://noticias.ambientebrasil.com.br/clipping/2006/01/24/22827-usina-verde-reduz-lixo-e-emissoes.html>
- ⁵ <http://www.usinaverde.com.br/tecnologia.php?cod=6A6713DE-F8A6-DFFA-16EB-B99E1F870C8D> accessed on 14/11/2011.
- ⁶ CDM pipeline, accessed 15/11/2011.
- ⁷ <http://www.usinaverde.com.br/tecnologia.php?cod=3D1F7E27-42EF-FFE5-BE21-F1D126D77DDD> accessed on 01/11/2011.
- ⁸ <http://www.bureauveritascertification.com.br/noticias.asp?IDNot=18>
http://cdm.unfccc.int/filestorage/F/S/_/FS_996353854/CentroClima_CDM_PDD_%20USINAVERDE_English_28feb2005_b.pdf?t=blB8bHVwaXhwfDDu87XdNYu1cjSHTNzUgbbbs
And the authors' visit to the Usina Verde plant.
- ⁹ Personal communication with Usina Verde staff.
- ¹⁰ <http://oglobo.globo.com/rio/aterro-de-gramacho-sera-desativado-gradualmente-centro-de-tratamento-de-seropedica-comeca-operar-nesta-quarta-feira-2794151>
- ¹¹ http://www.istoedinheiro.com.br/noticias/12504_BIRMANN+VOLTA+AO+BALCAO
<http://www.debentures.com.br/informacoesaomercado/noticias.asp?mostra=5129&pagina=-1>
- ¹² Source: MNCR

¹³ www.usinaverde.com.br and interview with company staff.

¹⁴ Ibid

¹⁵ Letter sent to the Environmental Minister in 2005, signed by four coordinators of FBOMS.

¹⁶ FBOMS: Carta sobre o Projeto Usina Verde de Incineração de Resíduos Urbanos 5/12/2005 http://www.fboms.org.br/detalhes.asp?id=168&cat_id=4&cat_nome=Cartas+&topo=SUB&nome=Carta+sobre+o+Projeto+Usinaverde+de+Incinera%C3%A7%C3%A3o+de+Res%C3%ADduos+Urbanos&iidioma=



GAIA is a worldwide alliance of more than 600 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.

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