

Improved integrated management of residual solids in Santa Cruz canton and the resulting decrease in solid wastes

Ulf Tosten Hardter, Ph.D.

Municipal Government of Santa Cruz/WWF

Introduction

In recent years, the resident population of the canton of Santa Cruz has greatly increased and there are currently more than 16 000 resident and temporary inhabitants.¹ The current population growth is nearly 7% per year, which is reflected in the ever-increasing generation of waste (7% per year) and demand for electricity. In addition, there is an annual floating population of 100 000 tourists that arrive in Galapagos, the majority of whom enter via the canton of Santa Cruz. The majority of tourist boats base their operations out of Santa Cruz, requiring that the provision of services to these vessels (fuel, water, food, waste management, etc.) come from this community. This high level of population growth has major implications for the local government and the provision of basic services, such as water, sewage system, garbage collection, health, and education.

With an increasing population the demand for services provided by the Municipal Government of Santa Cruz (MGSC)—especially waste management—continues to increase. Since 2006, the MGSC has relied on a new Integrated Solid Waste Management System, which is primarily supported by the World Wildlife Fund (WWF)². The system includes the separation of different types of waste at the source (recyclables, organic, and non-recyclables), selective collection, and processing and/or recycling depending upon the type of waste (Hardter and Sánchez, 2007). Glass (approximately 25% of the total) is the only one of the recyclable materials that is recycled in Santa Cruz; the other 75% is transported to the continent for processing. The system also includes collection of toxic and hospital wastes, as well as separate collections of voluminous materials, such as yard waste, scrap iron, and used tires. The micro-enterprise RELUGAL (Collection of Used Lubricants

¹ The estimate of 16 000 inhabitants is based on average energy and water consumption in Santa Cruz. Domestic waste generation data support the estimate.

² WWF provides approximately 75% of the program budget. Other supporting institutions include AECI/Proyecto ARAUCARIA XXI, the Charles Darwin Foundation, and Fundación Galápagos.



in Galapagos) manages the collection and storage of used engine oils. In 2008, the system was expanded to include waste management and recycling of materials from the entire canton, including Baltra. System capacity has been designed to increase gradually with demand.

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Evolution of the production of solid waste in Santa Cruz

The estimate of total production of solid waste in 2007 was based on a study of the composition of waste in 2003 (Honkish, 2003) and the estimate of production of waste per capita of 0.79 kg/resident/day (Zapata, 2005). Based on these two studies and the size of the current population, in 2007 the human population on Santa Cruz produced an average of 11 to 12 tons of waste per day.

Results achieved: Increase in the recycling rate between 2006 and 2008

Until 2006, the separation of waste was voluntary and the average amount of recycled waste collected was 13 tons per month, with variations occurring during the system’s startup period (Figure 1). Continued improvements in the system, an educational campaign carried out with support from WWF, and the implementation of a monitoring system have all contributed to the program’s success. From May 2007 to May 2008, the monthly quantity of recycled material in the canton of Santa Cruz doubled from 17 tons to 35 tons.

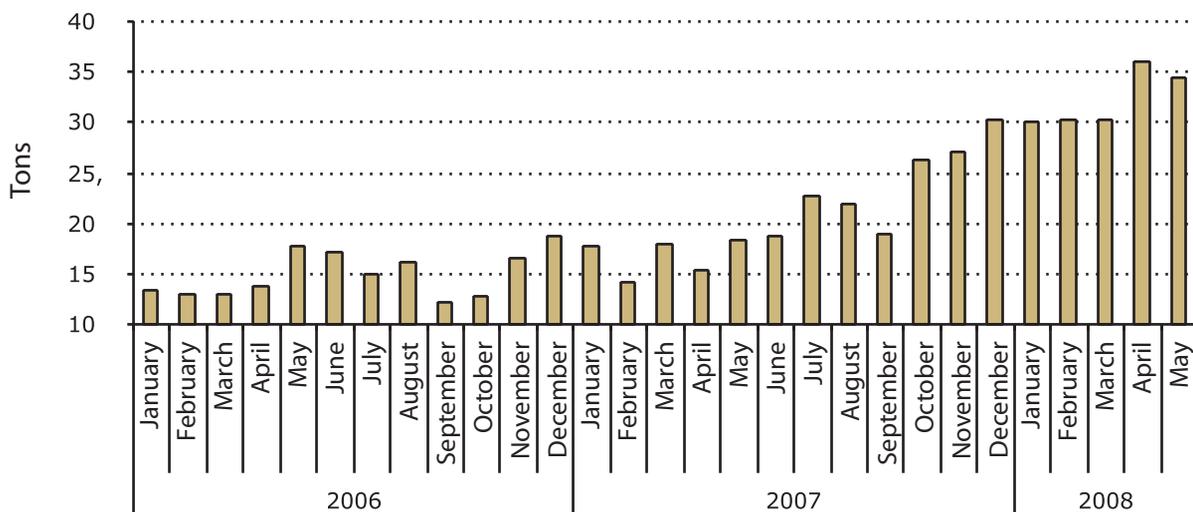


Figure 1. Monthly volume of recycled material in Santa Cruz from 2006 to 2008.

An increase in plastics, glass, and paper in 2007 and 2008 is also notable, with a 10-fold increase in plastic in just two years, while both glass and paper had a 5-fold increase.

more than 80% of the recycled material in Santa Cruz was cardboard. An increase in plastics, glass, and paper in 2007 and 2008 is also notable, with a 10-fold increase in plastic in just two years, while both glass and paper had a 5-fold increase.

The amount of recycled waste shipped to the continent has increased steadily from 2000 to 2008 (Figure 2). Up until 2006,

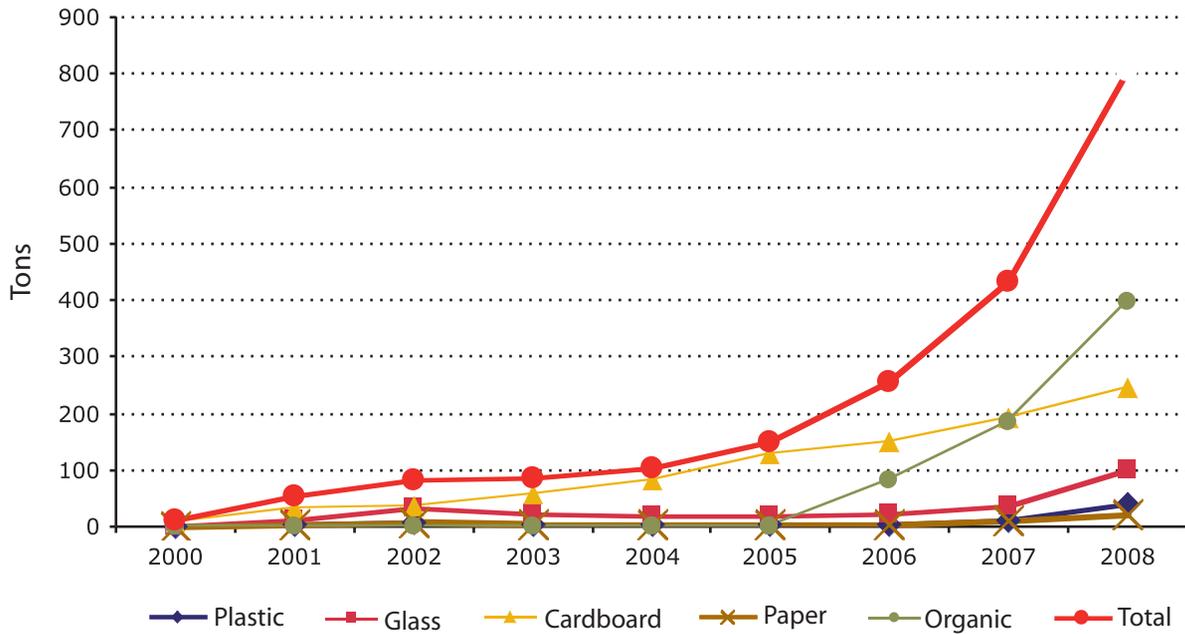


Figure 2. Annual amount of recycled materials transported from the Recycle Center to the continent or used in Santa Cruz from 2000 to 2008. The 2008 data reflect an estimate based on the results of the first five months of the year.

The quantity of organic material entering the composting plant at the Recycling Center has been measured since the beginning of January 2007 (Figure 3). The estimated amount processed in 2006 (based on volume estimates) was nine tons per month. Between May 2007 and May 2008,

the monthly amount increased from 12 to 35 tons. There has been a near tripling of the amount of organic material collected and processed, primarily due to improvements in the collection system, the education campaign, and continued monitoring.

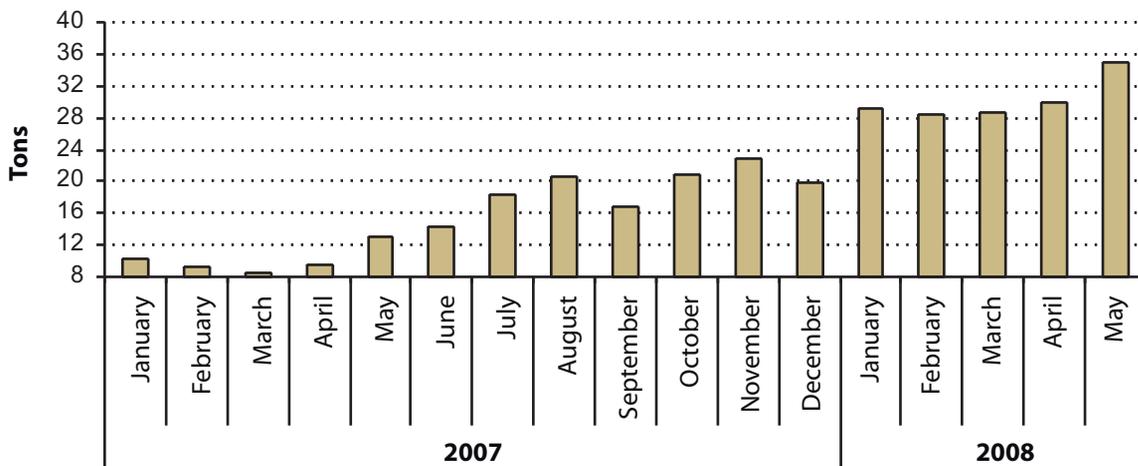


Figure 3. Monthly volume of organic material collected in Santa Cruz in 2007 and 2008.



Photograph: Mandy Trueman

Conclusions

The recycling system on Santa Cruz experienced a notable increase in both recycled and organic materials beginning in the second half of 2007, when greater public participation resulted in the collection and processing of more glass, plastic, paper, and organic materials. The success of this project is due to:

- i) Improvements in waste collection;
- ii) Continued control of separation of types of waste, and
- iii) Educational campaigns focused on recycling practices.

A measure of the efficiency of the entire system is difficult due to the lack of data on the collection and treatment of some types of materials, including scrap iron, rubble, used batteries, weeds, and brush. Based on the weight of the processed material that leaves the Recycling Center,

the estimated efficiency of separation and recycling of waste in Santa Cruz ranges from 30-40%. This suggests that the recycling program successfully removes from the environment of Santa Cruz approximately 50% of the waste produced.