City of Santa Fe

Agenda

CITY CLERK'S OFFICE
DATE 2/3/15 TIME 8:11am
SUBMITTED BY Julie Bystrom
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SANTA FE SISTER CITIES COMMITTEE
February 11, 2015
City Councilor's Meeting Room
4:00 – 5:00 pm
955-6707

Goals of Santa Fe's Sister Cities Committee

- More effectively market who sister cities is and what they do
- Develop educational programs in schools
- Strengthen relationships w/ existing sister cities
- Involve greater community in work/activities of sister cities

1. Call to Order
2. Approval of Agenda
3. Approval of Minutes – December 10, 2014
4. Report of Staff
   a. Introduction of Jo Stodgel, Trash 2 Treasure, Greenpop – Livingstone, Zambia
   b. Update on Airport/City Hall project
5. Report of Chair – Carol Robertson Lopez
   a. Discussion of Sister Cities goal related to the promotion of trade tourism
   b. San Miguel del Allende visit: March 11 -12, 2015
6. Action Item
   a. Request for Approval, Sister Cities goal related to the promotion of trade tourism
7. Committee Updates
8. Other Items
9. Adjournment

* Persons with disabilities in need of accommodations, contact the City Clerk's Office at 955-6520, five (5) working days prior to meeting date.

SISTER CITIES COMMITTEE
INDEX
FEBRUARY 11, 2015

CITY OF SANTA FE

SANTA FE SISTER CITIES COMMITTEE

MINUTES – February 11, 2015

Fran Lucero, Stenographer

DRAFT UNTIL APPROVED

SANTA FE SISTER CITIES COMMITTEE
FEBRUARY 11, 2015
City Councilors' Meeting Room
4:00 p.m. – 5:00 p.m.

GOALS OF SANTA FE SISTER CITIES COMMITTEE

- More effectively market who Sister Cities is and what they do
  - Develop educational programs in schools
  - Strengthen relationships with existing Sister Cities
  - Involve greater community in work/activities of Sister Cities
- Re-enforce and build existing relationships through trade and tourism efforts.

I. Call to Order

The Chair called the Santa Fe Sister Cities Committee meeting to order at 4:00 pm. A quorum was declared by roll call.

Present:
Carol Robertson Lopez, Chair
Dr. Jeff Case
Arthur Olivas
Gilbert Delgado

Not Present/Excused:
Rudy Fernandez
Ling Tong
Bernard Rubenstein
Carl Moore
Kim Song
Cathy Magni

Others Present:
Debra Garcia y Griego, Director Arts Commission
Lauren Komer, Student Representative
Jo Stodgel, Presenter, Trash to Treasure Zambia
Fran Lucero, Stenographer

II. Approval of Agenda

Mr. Olivas moved to approve the agenda as presented, second by Dr. Case, motion carried by unanimous voice vote.

III. Approval of Minutes
December 10, 2014

Corrections: Page 5 Under VII-d – 3rd sentence, …delegation request to the Mayor ~~of China~~ for a visit next year *from the Zhang Jia Jie delegation.*

Page 5: VII-e – last sentence add: *for a visit in 2016.*
Last paragraph, 2nd sentence: … ~~found out~~ *mentioned*

Dr. Case moved to approve minutes as amended, second by Mr. Olivas, motion carried by unanimous voice vote.

IV. Report of Staff

a. Introduction of Jo Stodgel (Exhibit A)

Mr. Stodgel addressed the Sister Cities Committee and provided information on how he got involved with Trash 2 Treasure Zambia, Livingstone - Greenpop. He attended High School in Santa Fe and continued his college education at Schumacher College in Devon, England.

In 2014, Trash to Treasure teamed up Greenpop to launch a waste management system in Livingstone, Zambia. Through this project, they aim to introduce simple waste management solutions that will reduce the environmental impact of trash, create a cleaner and healthier living environment for the Livingstone communities, and bring financial benefits to community members.

Mr. Stodgel together with Candice Mostert, Director of Trash to Treasure Zambia collaborate on addressing the huge problem needs a multipronged approach and are developing a program combines interactive education initiatives for children, incentives for people to re-use and re-cycle, and creative solutions for collecting and appropriately managing large amounts of waste.

The eco-brick and clay building workshops have been very successful. Eco-bricks are plastic bottles stuffed with other plastic waste, especially non-recyclable plastic waste that can be used as a long-lasting brick. To date approximately 3 schools have been built using the eco-bricks.

The Chair asked Mr. Stodgel what his request was from the Arts Commission.

Mr. Stodgel is asking for monetary support for him to get back to Zambia to help them with the continuation of this project. He welcomes any fund raising and marketing opportunities. The short-term aims are to further develop the eco-brick workshops and the Green and Clean Your School initiative. Long-term aims are to establish a waste management centre that can process both the household waste and the hazardous waste in appropriate ways.

Mr. Stodgel talked about the Trees for Zambia project. Zambia is one of the highest deforestation rates in the world. Greenpop Progress in Zambia: 176 trees

plated, 97 planting days, 24 sustainability workshops and many other projects listed in Exhibit A.

The Chair would like to consider a fund raiser for the Trees for Zambia project. The Chair introduced Ms. Lauren Komer our Student Representative and she is very interested and impressed with Mr. Stodgel's history of pursuing his goal through his international education and will participate through Sister Cities and her school to participate.

The Chair also offered to contact the Mandela School who will have interest in this project.

Mr. Stodgel said that they are also using milk cartons which is much more standardized and fits into a 4" wall partition. The group continues to research a standardized system. It is recommended to use "clean and dry" waste for eco bricks. The eco bricks have a high installation value.

Mr. Stodgel provided information on the Branch Out Festival of Action to be held in Zambia, June 28-July 2015.

b. Update on Airport/City Hall Project

Ms. Garcia y Griego reported that Ms. Bystrom has received all of the photographs from our sister cities and she has been in contact with the contractor. Project is moving forward. More detailed information to follow.

V. Report of the Chair – Carol Robertson Lopez

The Chair informed the committee members that she had visited Uspakistan for the parliament election and did get to visit Bukhara. The Chair noted that members of the Folk Art Market and they visited a new market in Bukhara. One of the Founders of the Folk Art Market was meeting in India meeting with other countries that are developing strategy for tourism. The Chair has been invited back to Bukhara for the Presidential election in March, 2015. There will be more time available to meet with the Mayor during the March visit. The Chair noted as part of the above trip she visited an oil and gas colleges which was a polling place. She has had some discussions in connecting that college with New Mexico Tech. They are very big in oil and gas coverage and at that college it is funded by industry. Most of their polling places were held in colleges and schools. They had a play room where the kids could go while their parents voted and a medical office staffed by a doctor and nurse. The President has issued an initiative that anyone who gets their medical science degree or nursing degree is guaranteed a job in a hospital facility.

They have built this beautiful white mosque since that last time the Chair was there. The Chair she was hosted by a Vice Chair of a Bank who was the first woman to be admitted as a CPA to Deloitte and Touche in all of central Asia. Bukhara reminds the Chair so much of Old Santa Fe, there are many similarities between our cultures. Old

buildings and history have many similarities. The arts are very amazing. The Mayor of Bukhara is planning to visit the Folk Art Market. The Folk Art Market is planning two trips.

Dr. Case said that it fits well with the new goal. This fits well with sending our posters; i.e., Opera, Folk Art Market, Indian Market, Spanish Market, Santa Fe Fiesta and others. Ms. Komer could work on the poster project and students could write something on each event and send them out.

Dr. Case encouraged the Chair to speak with Randy Randall on this poster idea.

Mr. Olivas said that Sorrento and Tsuyama are big in music and at one time he researched how to do a round robin of music festivals between the three of us. Tsuyama is always inquiring about Santa Fe, i.e., the Chamber Music Festival, the Opera, etc.

Dr. Case said we should be sending out our calendar of events to our sister cities. Mr. Olivas said calendars are nice but posters are visual. Dr. Case said that we have expertise and knowledge to work on this type of endeavor. Dr. Case said would be great to also receive event calendars from our sister cities.

The Chair said this is a great idea and does fit within Goal #5.

Mr. Olivas spoke of a time when they went to Tsuyama and planted a friendship tree and noted that it came from Santa Fe. The Chair said this would be nice to do in Livingston.

a. San Miguel de Allende visit March 11-12, 2015

Ms. Garcia y Griego reported that the Mexican Consulate made the recommendation to invite Mayor Trejo to Santa Fe. Staff is in process of working with the Chair, Randy Randall and Fabian Trujillo from Economic Development. Through Economic Development there is discussion of future trade missions to establish trade opportunities in Mexico. San Miguel de Allende is looking forward to taking back additional educational and economic resource information on their next trip. Dr. Case and Mr. Delgado will work together with staff on this opportunity.

VI. Action Items

a. Request for Approval Sister Cities goal related to the promotion of trade tourism
Discussion of Sister Cities goal related to the promotion of trade tourism

Mr. Olivas moved to approve goal #5 Re-enforce and build existing relationships through trade and tourism efforts, second by Dr. Case, motion carried by unanimous voice vote.

Dr. Case noted that much can be done with the addition of this new goal.

VII. Committee Updates

Lauren Komer – Continues to work on Facebook and monitoring its progress.

Mr. Delgado said that things have changed at St. Michael's, they have a new President. They have had some difficulties in communicating with Spain. Mr. Delgado said that in the past they talked about doing a Santa Fe Day and Spain Day – Mr. Delgado will research who is the Mayor.

Mr. Olivas has been in touch with Santa Fe JIN regarding the invitation for the Mayor of Tsuyama to come to Santa Fe.

Dr. Case reported on the Artist Showcase. An e-mail has been sent in hopes of getting entries. He is working with School for the Arts and ATC. Ms. Komer asked if an electronic flyer could be sent to her and she could distribute to her teachers and some of the honor students. CIR Turkish Event is on March 7th and Dr. Case would like to recruit students to see who would like to do an art project. March 7th – Santa Fe Community College – cost is minimal –notice will be sent out. The Chair encouraged the Sister City members to attend.

Dr. Case reminded the committee if there are any students we want to send to the National Youth Conference in July to please contact him.

VIII. Other Items
None

IX. Adjournment
There being no further action to discuss at the Sister Cities Committee meeting, the meeting was adjourned at 5:00 pm

Signature:

Carol Robertson Lopez, Chair

Fran Lucero, Stenographer

BARACK OBAMA

OUT

AND BE THE CHANGE

28 June - 19 July 2015

ZAMBIA

ESTIMATED POPULATION

Candice Mostert,
Director, Trash to Treasure Zambia
candice.mostert@inl.co.za

Marleen Lammers,
Head of Fundraising, Greenpop
marleen@greenpop.org

Livingstone, Zambia Jan. 15, 2015

To the people of Santa Fe, New Mexico, our Sister City,

Greetings from Africa!

In 2014, Trash to Treasure teamed up with Greenpop to launch a waste management system in Livingstone, Zambia. Through this project, we aim to introduce simple waste management solutions that will reduce the environmental impact of trash, create a cleaner and healthier living environment for the Livingstone communities, and bring financial benefits to community members.

Livingstone has very little in place in terms of waste management systems. As of the 2010 Zambian Census, the district has a population of 136,897 people. As the population has grown no efforts or funds have been put into creating the systems needed to deal with the growing increase of products coming into the city. Most roads are inaccessible and not tarred, making most of Livingstone difficult to gain access to for collection. Livingstone currently has three working pick up trucks that collect waste from a small number of areas that the vehicle can reach and transports it to the Livingstone dumpsite, where it is burnt. Most people bury or burn the waste in their backyards, which brings along strong health hazards for the community as a whole.

As this huge waste problem needs a multipronged approach, we are developing a program that combines interactive education initiatives for children, incentives for people to re-use and re-cycle, and creative solutions for collecting and appropriately managing large amounts of waste.

The project was launched with eco-brick and clay building workshops. Eco-bricks are plastic bottles stuffed with other plastic waste, especially non-recyclable plastic waste that can be used as a long-lasting brick. It is a tool that showcases the potential waste holds, while the ancient technique of natural building highlights a cost effective and self-empowering method of building structures. An additional benefit to building with eco-bricks is the strong insulation of the plastic: buildings made out of eco-bricks stay at a more even temperature throughout the year than traditional buildings. During the workshops, we build benches or walls out of eco-bricks, which is a fun and easy way of teaching the building technique, as well as an effective platform for waste management education. An average bench we build utilizes 150 to 400 plastic bottles [illegible] that would otherwise wash up in the dumpsite.

We received great interest and feedback to these workshops from the Livingstone community. One attendee got excited enough by the workshops that he is now building his own house out of eco-bricks and clay. This project, which we are assisting him with, has successfully reused 838 stuffed plastic bottles.

Simultaneously, we started hosting recycling workshops at schools. These workshops are fun and educational lessons on the issues around waste, the value of some wasted materials, and on ways of re-using or disposing of it in appropriate ways. We aims to assess each school's waste situation, and work together with teachers and children to come up with creative solutions for them to implement composting, recyling, and re-using as much of their waste as possible. We are developing this workshop material into a long-term involvement with schools through our Green and Clean Your School Program, which will see schools get a full green make-over in collaboration with Greenpop.

Our short-term aims are to further develop our eco-brick workshops and our Green and Clean Your School initiative. Our long-term aims are to establish a waste management centre that can process both the household waste and the hazardous waste in appropriate ways.

The project is run in collaboration with Greenpop and its Trees for Zambia project. Greenpop is a Cape Town-based social enterprise dedicated to urban greening, reforestation and eco-education projects. In 2011, Greenpop ventured to Livingstone to launch Trees for Zambia, a project that aims to find holistic solutions to the drastic deforestation the area is facing. They do this through planting trees, educating the community on environmental issues, creating value for trees, promoting good land management, and providing alternatives to the use of charcoal.

Thank you for reading, we wish you a happy new year and look forward to a strengthened connection and collaboration with you, the good people of our sister city.

Chapter 2: There is No Away, Only Slow Cycling

In conventional scientific and epistemological methods we are always looking towards the end; there is an obsession with linearity in beginnings to endings. Put simply and paradoxically - there is an endless search for the end, where there is none. A clear example of this can be found in the endless scientific search for the smallest building block of Universe - the so called God particles which comprise everything.

One night during my stay at the Schumacher College many people gathered in the library around a stoked fire to witness an especially rich conversation and debate between Satish Kumar and a visiting economist named Robin Murray. The talk was primarily about the pros and cons of economic specialization and centralization. Later into the space opened for comments and questions, Claudius van Wyk recited something that stuck with me and came to be a repeatedly heard remark. He said, "There are no nouns – only slow verbs". Bridging this statement to waste management, one can say that there is no disposal, only slow cycling. There is no "away" to throw the waste – everything put forth returns in a cyclical fashion in space and time. For this reason, humanity is asked discontinue usage of the deceptive words of disposal, for they do not reflect the inherent truths of the natural world. Every form of waste management is really a form of materials management, in that from a natural and authentic holistic viewpoint there is no such thing as waste - everything matters – and each way in which we deal with and pass on materials is a type of cycling, each with its own consequences and speed.

Plastics: The Most Tenacious

Plastics - the easily mouldable, lightweight, low mass, high volume super materials which have enabled the modern lifestyle as we know it. Made from the refinements of crude oil and natural gas and a slew of additive chemical compounds, they surround us in mass from our toothbrushes and hearing aids to the hundreds and thousands of components needed to make our cell phones or automobiles. Now more than ever with the widespread dispersal of plastics in our environments and the amounts found in our food sources increasing, they are inside of us as well - striking novel conversations and exchanges with the delicate balance of our hormones and internal chemistries[4]. Built to last indefinitely, and made with such a variety of different flavours and compositions, they are not so easily disarmed, recycled or disbanded as other materials are, such as organics, papers, glasses, and metals. The addition in mass of non-biodegradable (indigestible) materials to waste streams and the alarming increases in rates of consumption and disposal worldwide have brought about an unprecedented crisis of plastics pollution and chemical contamination. Commonly utilized reductionist methods for managing waste have failed at containing the problem and in most cases have added to it, wreaking further harm upon fragile ecosystems and in turn ourselves.

Nocicyling: The Conversion of Waste Products into Noxious Pollutants

"One might say that the Titanic was not only a product of the Industrial Revolution but remains an apt metaphor for the industrial infrastructure that revolution created. Like that famous ship, this infrastructure is powered by brutish and artificial sources of energy that are environmentally depleting.

4 Mercola, 2009

It pours waste into the water and smoke into the sky. It attempts to work by its own rules, which are contrary to those of nature. And although it may seem invincible, the fundamental flaws in its design presage tragedy and disaster."[5]

We can use the word nocicycling to refer to any and all forms of waste management which cause harm (the prefix noci- comes from the Latin nocere meaning 'to harm'). Unfortunately, most all forms of modern and industrial waste management, including most recycling practices, are in one way or another harmful to human beings and other species. For instance, any type of waste management practice requiring the burning of fossil fuels requires the emission of greenhouse gasses and volatile chemicals into the atmosphere and the irretrievable loss of precious and energy dense non-renewable petroleum resources. People might think this view extreme, but as authors William McDonough and Michael Braungart point out in their book Cradle to Cradle, "doing less bad is not good enough".[6]

Humanity can and must minimize the harm that it does, but this is just an act of rearranging the deck chairs on the aforementioned Titanic. Really what is needed is a "do no harm" system of waste (materials) management wherein all extraneous products from one operation are complements to another. Here is recognized that the answer to the crises of widespread pollution is found at the root of the issue in the way things are designed and made. This does not excuse people from the mess that they have made though – ways of dealing with the trash that has been and is continued to be created in mass must be found.

Below are described a few common practices of nocicycling household wastes worldwide from quite opposite ends of the economic and development spectrum: the urbanized first world and the rural third world.

The Bulging Carpet of Landfill – Waste Management in the First World

Outside of Totnes in the hills of Devon, UK, a family unwraps the heavily packaged contents of a trip to the supermarket, placing their recyclables and otherwise in demarcated bags to be picked up by the Council. The only plastics accepted for recycle are PET bottles, so the rest of them - the containers, wrappers, polystyrene, and other pieces are placed in the trash bin. This is later picked up and transported to the landfill site several kilometres south. All of the trash is buried under a thick layer of earth.

Santa Fe, New Mexico, USA. Three o'clock in the morning: A young man stops by the local Trader Joe's supermarket to inspect their trash. The dumpster is full to the brim with heavily packaged food that has reached its expiration date or is showing slight cosmetic bruising. Bunches of basil held in polystyrene trays and wrapped with PVC cling film, microwave meals triple wrapped in PET containers and plasticized paper, and black sacks full of day old bread wrapped in plastic - these are just a few of the items contained in the dumpster whose destination later in the morning is the land fill at the western end of town. The young man salvages what he can and closes the lid.

The mass throwing away of perfectly good, cosmetically impaired or slightly damaged things has become a highly regulated, common and systematized occurrence in the United States of America,

5 McDonough, 2002. 17.
6 McDonough, 2002. Ch. 2.

the capitol of throw-away and disposable lifestyles. Most people are very much unaware of just how much gets swept under the carpet to land filling by the fleets of garbage trucks and land-movers, in that trash is so quickly removed out of sight and out of mind. Enough food to feed the country's hungry if not others as well is laid to waste on a daily basis along with a massive amount of untapped wealth and usefulness in the inorganic waste stream - only a portion of which is recycled or downcycled.[7]

Not only are we looking at the avoidable loss of a massive amount of resources, the carpet of landfill is bulging and swelling with every passing day's addition of thousands of tons of solid waste, with a foul smelling liquid trickling forth from underneath and a foul smelling gas seeping up through the layers to contribute to the warming of the ecosphere. The toxic liquid is leachate and the majority of landfills in the United States are already failing at containing it. Due to the natural processes of weathering all landfill liners will eventually be compromised and fail, leaking toxic liquids into their surroundings.[8] The gas is methane - twenty times more potent of a greenhouse gas than carbon dioxide - and if concentrated and lit can easily explode and set fire to entire landfill sites.[9]

Flotation and Cremation – Waste Management in the Third World

Every morning a Balinese woman sweeps up all of the rubbish in front of her home forming a conical pile. Today it is composed of polystyrene, woven offerings from the day before, a few PET bottles, dog faeces, discarded papers and a rubber sandal with a broken strap. She sets fire to the rubbish cone and a thick swirl of smoke rises into the hot and humid air. Young tourists identify the smell with their time visiting the Indonesian Island.

Night falls in India on a reservoir north of Puna. A group of men gather together and start their fire with thick plastic sacks. Earlier in the evening they carried their vegetables home in a plastic bag before peeling and preparing them. They place the food scraps back in the plastic bag before throwing them on the hillside, the whole of which they light on fire about once a week. Their rivers and streams are full of plastic, enough so to create pockets of stagnant water where mosquitoes breed.

A group of young computer science students from Karachi escape the heat and take a long drive to the North, up into the breathtaking hills of the Western Himalayas. They have a picnic in a beautiful mountain meadow and leave a pile of trash and a trail of wrappers behind. The plastics disperse and for some are mistaken as wildflowers in the distance. A bag is blown into a nearby stream, travels down river to the Indus and all the way to the delta east of Karachi where it is pushed out into the ocean. Exposed to oxygen, salt water and UV rays, the plastic bag disintegrates into hundreds and thousands of small pieces, some of which are mistaken for food and swallowed by a fish. The fish is later caught and served in a restaurant in Karachi.

In much of the rest of the world where the expensive cover-up of landfill cannot be afforded, waste - particularly non-biodegradable plastic - is dealt with in a much more explicit and readily detrimental fashion: it is stockpiled in festering open dump sites, thrown by riversides to be carried away in high waters, burned in heaps with children playing nearby, and used for fire starters to keep warm and cook the day's catch. These methods may seem shocking, but due to the lack of education,

7 US EPA. 2012.
8 Lades 2002
9 USFA 2002

awareness and readily available alternatives are relatively commonplace. They are the quick fix with which people choose to get rid of their waste stream – out of sight and to the immediate detriment of them and those surrounding.

Open dumping and river disposal contaminate water systems and are the inland sources responsible for some 80% of the plastics in our oceans[10], which in the Northern Gyre region of the Pacific Ocean have now been found to outweigh plankton by tens of times over, and the cremation of plastics release a slew of environmental toxins including particulates, volatile organic compounds (VOCs) polycyclic aromatic hydrocarbons, hexachlorobenzenes and carbon monoxide.[11] In some cases burning can alter the chemistry of plastics to create some of the most toxic substances known to man as is the case in the incineration of PVCs (polyvinyl-chlorides) resulting in super-toxic carcinogenic dioxins.[12]

Plastics Recycling is Downcycling is Nocicycling

McDonough and Braungart draw special attention to the fact that the practice of recycling as we know it is more often than not an act of "downcycling" wherein parent materials of a certain quality, use and function are melted down, pulverized, shredded and downgraded into materials of lesser quality with a limited function and use. An example of this downcycling and loss of value can be found in the shredding of tires, which aside from disintegrating an otherwise highly useful item causes a host of heavy metal contaminants such as zinc, lead and mercury to be much more easily leeched into the environment and surroundings. Sadly, it is often children that are exposed to these tire shreddings and their emissions which are commonly used as cushioning in children's playgrounds and artificial turf fields.[13]

In the case of plastics, options for recycling are limited and more often than not are acts of downcycling and nocicycling, wherein useful materials are compromised and go on to cause more harm than good. As detailed in the story above about Devon's plastic waste management systems or the lack of them, even in the first world it is often the case that facilities are only able to deal with a select few varieties of plastics such as PET bottles, whilst the rest are left to be swept under the carpet or even schlepped on to the shoulders of those overseas. Plastic waste has become "one of Britain's biggest exports to China", stuffed into the boats which bring loads of cheap goods (plastic waste) to the UK. It is estimated that 1/3 of the UK's "recyclables" return to the Far East to be melted down in open vats by unprotected and underpaid workers in specialized plastics villages – areas which as a result suffer from acute environmental degradation, water contamination and air pollution.[14,15]

As far as proper facilities go, in much of the developing world options are of course even more limited, and the distances to those options even greater. With the high volume and low mass of plastics, transportation becomes impractical and not worth the costly inputs and emissions of fossil fuels. If

10 Dabydeen 2009
11 EPA 2012
12 Polyvinyl-chloride is the most poisonous of plastics – emitting asbestos, dioxins and mercury waste in the production process, and contributing heavy amounts of lead and cadmium, 50% - 68% of chlorine levels and 90% - 98% of endocrine disrupting pthalates to the waste stream (Belliveau 2004.14, 17.).
13 EHHI
14 Branigan, 2009.
15 Williams, 2009.

facilities for processing PET are available, it is shredded or melted down to make a variety of products such as carpets, insulation and clothing, as well as further packaging which must be sandwiched between virgin layers. These hailed as "green" processes can be easily derailed if even a small amount of PVC gets into the PET system[16], and the safety of the resultant products are questionable in that they much more easily off-gas than intact parent materials.[17] The destination for these recycled - or rather downcycled - materials more often than not still lies under the carpet of landfill, as particulates in the atmosphere, or swirling in one of the many growing islands of ocean plastics worldwide.

Considering these costs of the recycling or downcycling system, which Rob Hopkins writes "adds almost no resilience to the community", it becomes clear that local and decentralized ways of dealing with the non-biodegradable waste stream must be found and furthered.[18]

16 Belliveau 2004
17 OECOTEXTILES
18 Hopkins, 2008. 54-55

Chapter 3: The Biomimetics[19] of Upcycling

Contrary to what we might think, recycling as we know it does not take place in nature. Rather, organisms gather available materials in their environments and actively transform them not back into the same materials, but into other materials which will be of benefit to other organisms and themselves further down the line. An example of this is found in a freshly laid pile of cow faeces. This will not only be a banquet for hundreds and thousands of micro-organisms – it will be a lasting dining hall and festival grounds for the gathering of countless other forms of fungal, plant and animal life. Life bolsters life in this way - increasing health and resilience with the emission of every material or so called "waste" product. If we are to truly imitate nature and harness its wisdom in our human systems, we must not merely take available materials deemed waste or otherwise and expend energy to change them back into themselves - we must practice the "upcycling" of these for usage in other processes or by other life forms, bringing lasting value through more efficient systems to ourselves and the all of life within which we are embedded and intertwined.

The Long Spoons – a Story of True Upcycling

I am reminded of a story to illustrate this point a bit further. There is an old story which describes hell as being a room with a long table full of the most extravagant display of the most delicious of foods. Windows on either side of the room open to people armed with long spoons. The dinner bell rings and all of the precious food is thrown about, spoiled and lost as each one with a spoon attempts to thwart the others and draw the morsels back for themselves. Next is a display and description of heaven. The room is set up in the exact same way, but when the dinner bell rings, each spoon-wielder takes their time in feeding the delicacies to those in the windows across the room from them. Everyone enjoys the feast because of the kindness and cooperation of the others.

Although it is questionable whether organisms actively show kindness to other organisms, their so called waste products do end up naturally being of benefit and gifts to others. The latter part of this story is not only a description of what heaven might look like - it is a display of what takes place in nature. Each organism feeds another to the benefit of all, and every species brings a dish to the buffet of life (their so called "waste") that only another species can eat.

Upcycling refers to the conversion of materials otherwise headed for nocicycling into items of a restored value and usefulness. Some example upcycled products are artworks such as miniature models of cars or boats made from aluminium soda cans, clothing such as rain coats made from fused and stitched plastic bags, accessories such as wallets made from old billboard canvases, and furniture such as chairs made from stitched-together bicycle tires. All of these examples showcase how easily accessible and free materials can be utilized to make valuable items that can be used or sold to bolster local economics, transforming waste into wealth.

As with many other terms in the field of waste management though, the name of upcycling has been hijacked to some extent; unfortunately most of what passes under the banner are art projects that are quickly discarded after a short return to the cycle of usefulness. As long as it remains in the cycle of usefulness then we can say that it is an upcycled thing. This leaves us with the task of finding relatively beneficial, long lasting and highly useful options for our waste stream, rather than quick fixes which

19 Biomimetic is a word used to describe anything that imitates (mimes) life (bio) and natural systems.

may be not only be a waste of materials in the end, but also a waste of time. Here the answer lies in the buildings that we inhabit and utilize on a day to day basis, which of course require large amounts of materials and thus can harness in their construction a greater amount of otherwise nocicycled trash.

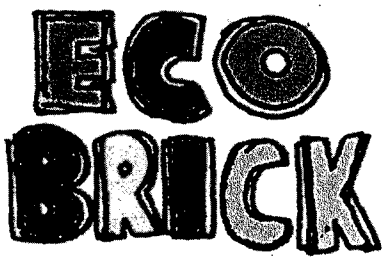
Building with "Waste" Materials

Waste materials of all sorts have long been used in alternative construction projects around the world. If built properly these dwellings are not only safe and non-toxic but as well possess many other advantageous qualities. The three main forces which act upon and break down plastics and other synthetic and compound materials such as tire rubbers, causing them to off-gas and leech toxins into their surroundings, are oxygen[20], water, and sunlight. When plastics or tires are covered in a substantial layer of clay, cob, mortar or concrete, they are more or less placed in an inert setting and protected from all of these weathering forces which compromise their integrity and lessen their life span and usefulness.

"Reusing a tire in an Earthship, where it becomes a beneficial resource, and spends its future in an inert setting is an ideal ultimate use for discarded tires."[21] Earth rammed tires, wired together tin cans, bagged polystyrene, and bottles plastic and glass are the primary materials in the Earthship constructions originally developed in New Mexico by the architect Michael Reynolds. Several aid projects have now been started by him and his team around the world, providing impoverished communities with the knowledge and examples needed to harness and convert a good deal of their waste stream into a wealth of beneficial building materials. Another example of this kind of building is given by the Honduras-based ECO-TEC, who have built a wide variety of structures including homes, water tanks and even aqueducts out of sand-filled plastic bottles which provide heavy and dense thermal mass (heat-retaining) just as tires packed with dirt do.

Even though these are highly effective examples of upcycling, they do not necessarily come near to addressing and dealing with the totality of the plastics waste stream, which seems to evade our best efforts at appreciation. So how can we utilize the rest of our waste stream in our constructions? Some choose to stuff sculptures, walls and benches with all manner of non-biodegradable rubbish, such as the folks at Kibbutz Lotan in Israel[22]. Upon reaching the limits of their life spans in erosion or destruction though, these structures will spew forth the once trapped waste streams of long ago.

Got Trash? Eco-Brick It!



A better method of containing the non-biodegradable waste stream is available, and to be found in the simple plastic bottle of which there is no end in sight. They are designed to be containment vessels, so it probably best that we use them as such.[23] This idea brings us to the eco-brick and the work of Pura

20 Stephan Harding, one of my primary teachers at the Schumacher College, always referred to the element of oxygen as the Passionate Italian who always breaks up the chemical couplings of other elements. This process is of course known as oxidation.

21 Kaiser

22 Stodgel 2009. 7.

23 Plastic bottles are the responsible elder siblings of the plastics family with arms big enough to hug and contain the rest

Vida Atitlan of Guatemala and the other organizations and individuals worldwide who are stuffing their plastic waste streams into bottle bricks, preventing it all from wrecking pollution on their homes and utilizing the otherwise nocicycled materials as beneficial building components. Certain groups have even gone to the extent of turning the trash of entire landfills into schools they couldn't otherwise afford.[24]

My first encounter with the act of filling plastic bottles with trash took place many years ago on a backpacking trip in the Sangre De Christo mountain range outside of my hometown of Santa Fe, New Mexico. As we agreed with and were following Leave No Trace principles and practice to the best of our abilities, we were collecting all of our trash produced in a black sack that swelled to a substantial size. Wanting to save on space and do something around the fire, my friend John Armstrong began to stuff the whole lot of the trash into a one-litre sports drink bottle that we had. Instead of walking out with a substantially sized black trash sack full of trash, we walked out with a hardened bottle compressed to the brim.

Rediscovering this lost art of upcycling and considering its potential in building projects came to me just days before I departed to South Africa to conduct my dissertation research. I was excited to say the least at having found a simple solution to the question of what to do with "the rest of the stuff". I was back in the area of Schumacher College and picked up the most recent copy of Resurgence where I quickly found an article by the environmentalist Nicola Peel whom I met last year at the College. I read of her work helping to clean up villages by spreading the simple wisdom of Pura Vida Atitlan, who have overseen and encouraged the creation of thousands upon thousands of plastic bottle bricks stuffed with all sorts of plastic trash to make walls, garden partitions, schools, and health centres for much cheaper than otherwise and of great benefit in the beautification of surrounding areas. On PVA's site I was awe-struck and inspired to find shot after shot of upcycled buildings going up and all of the smiling and stoked faces of the local people involved. I recognized quite quickly that this was the direction that I wanted to take the work in South Africa, and was deeply gladdened to have such an example to work from. It is home-made upcycling par excellence.

Further into this dissertation is described the variety of ways in which I attempted to spread the knowledge of eco-brick stuffing and construction. In the Infrastructure section is detailed the way in which we ended up building with the bottles.

---

of their unruly siblings.

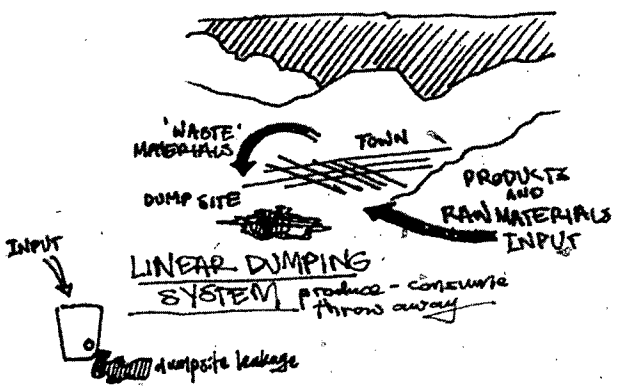
24 HUSK Cambodia

Containing Resources and Cultivating Resilience: Eco-Bricks in Transition

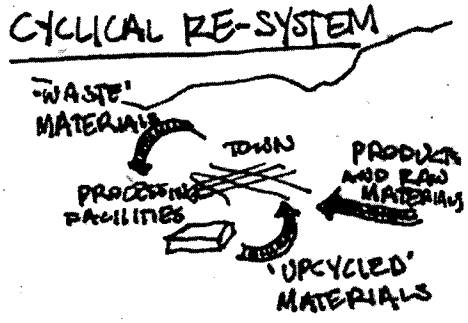
Rob Hopkins, one of our guest lecturers on the course in Holistic Science and founder of the Transition Town Movement, clearly points to the utilization of a similar kind of plastic bottle brick in his book the Transition Handbook: "Perhaps a better solution (alongside the obvious one of producing less plastic waste), would be to develop other uses for waste plastics requiring minimal processing, perhaps producing tightly compressed building blocks or an insulating product for local use. Simply collecting it and sending it away doesn't leave the community in a stronger position, nor is it able to respond creatively to change and shock."[25]

The Transition Town Network was originally established by Hopkins in the town of Totnes - near to the Schumacher College - as a visionary response to the loss of resilience in small communities and the bleak future presented with the realities of peak oil and finite resource depletion as well as the pressing realities of climate change. Since its founding, more than one thousand Transition Town Initiatives have been established and Greyton Transition Town, where I ended up working in South Africa, is one of the more recent of those.

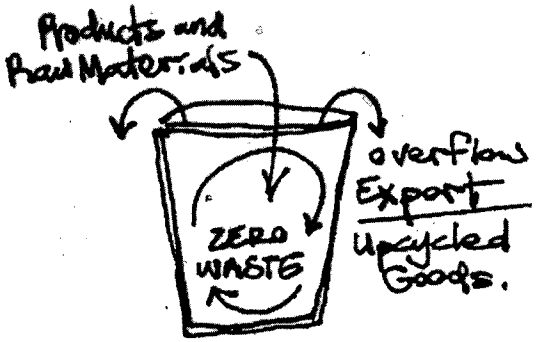
An image that the Transition Town Network often calls upon to illustrate local economics is that of a bucket with variable amounts of liquid inside of it. The amount of liquid is proportional to the health of the local economy. Goods, products and wealth brought in from elsewhere or produced locally enter into the bucket and accumulate there as long as they continue to circulate through local businesses and individuals. Wealth is lost through a variety of potential holes in the bucket, such as taxation and outsourcing. Most importantly though (for the topic of this dissertation), wealth is lost through the holes of disposable linear systems of "waste" (materials) management, wherein products enter into one end of the local economy and exit out the other as waste. These systems will down the line leak even more wealth from the local economy with the pressing needs and fixes of rehabilitation and remediation.



With the cultivation of local upcycling practices, the stuffing of eco-bottle-bricks and the utilization of the fullness of the waste stream, the holes of "disposal" can be effectively plugged so that what wealth was going to leak away as "waste" can then circulate and further bolster the local economy, thereby increasing community health and resilience. This method of *Dealing* with waste in this way, rather than throwing it "away" fills the bucket with the potential of overflow and the establishment of successful cottage industries and small businesses, catering to the demand for and popularity of well-made upcycled products.



25 Hopkins, 2008. 54-55.


Products and
Raw Materials
ZERO
WASTE
overflow
Export
Upcycled
Goods.

UPCYCLING AND PERMACULTURE FROM SANTA FE TO LIVINGSTONE

BRANCH OUT AND BE THE CHANGE

ZAMBIA

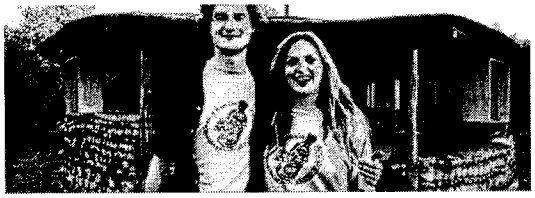
How Reforestation and Ecological Education are Making the Difference

UPCYCLE SANTA FE

T2T

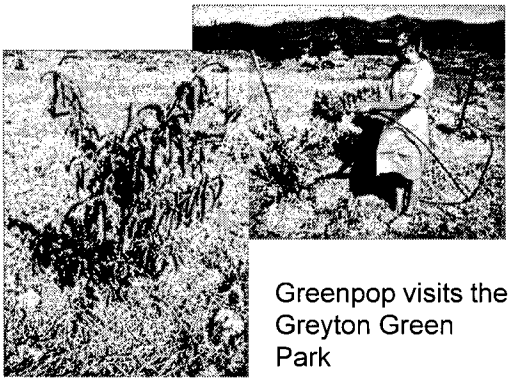
SCHUMACHER COLLEGE
DEVON, ENGLAND

TRASH TO TREASURE FESTIVALS
GREYTON, SOUTH AFRICA



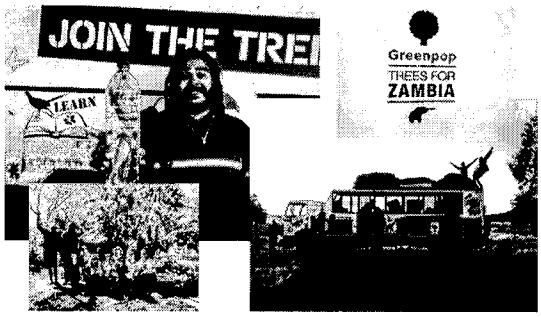
Bringing People to their Dumpsite to Make Rehabilitation a Celebration

WE ♥ PET ECO BRICKS



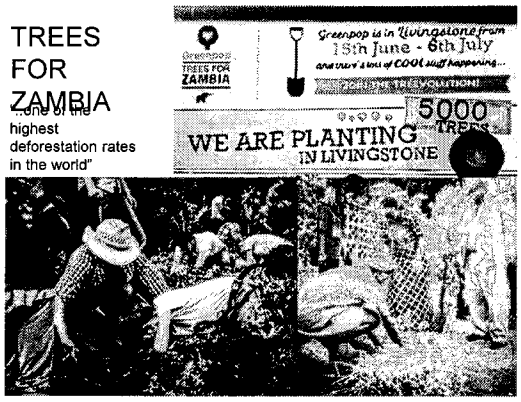
Greenpop visits the Greyton Green Park

T2T TEAM MEMBERS HOP ON THE GREENPOP BUS TO ZAMBIA



TREES FOR ZAMBIA

"...one of the highest deforestation rates in the world"

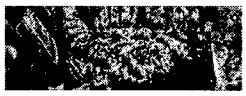


GREENPOP'S PROGRESS IN ZAMBIA

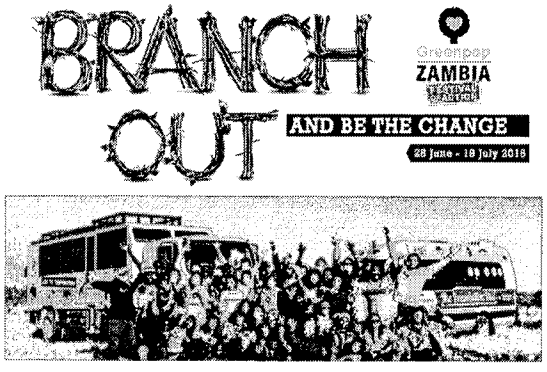
11 176 trees planted | **97** planting days | **24** sustainability workshops **7** educational wall murals | **>50** handmade solar cookers | **>10** handmade rocket stoves | **74** Tree Tuesday radio shows | **48** schools | **5** community farms | **1** reforestation site | **256** passionate planters from around the world

TRASH TO TREASURE
LEADS WASTE MANAGEMENT

- WASTE AUDITS
- ECOBRICKING PLASTICS
- COMPOSTING ORGANICS
- FESTIVAL WASTE = RESOURCES FOR LOCAL BUSINESSES
- BUILDING COMMUNITY GATHERING PLACES WITH "TRASH"

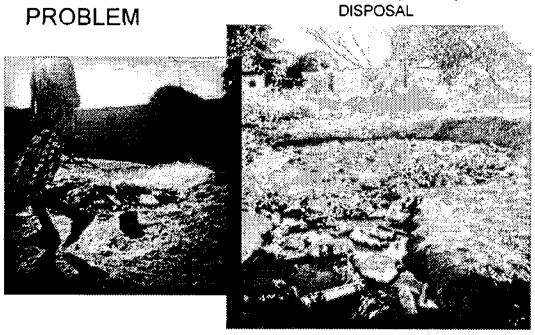


85 – 90% DIVERSION AND RECOVERY RATES



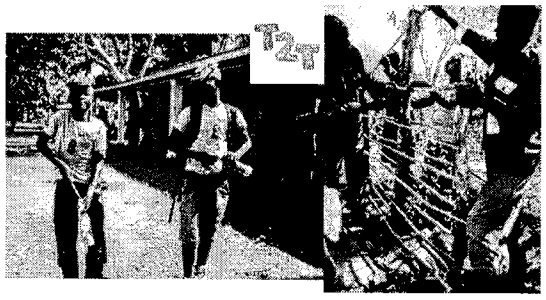
WASTE IN ZAMBIA – A SERIOUS PROBLEM

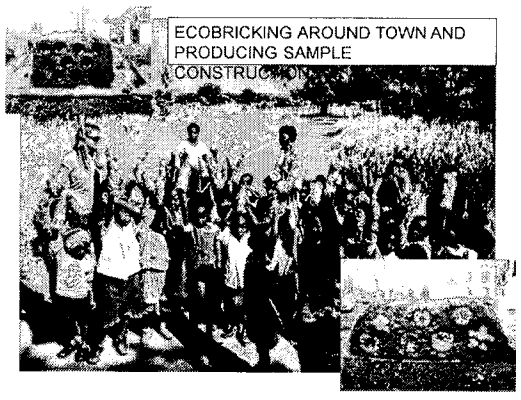
- INCINERATION
- OPEN DUMPING
- WATER (OCEAN) DISPOSAL

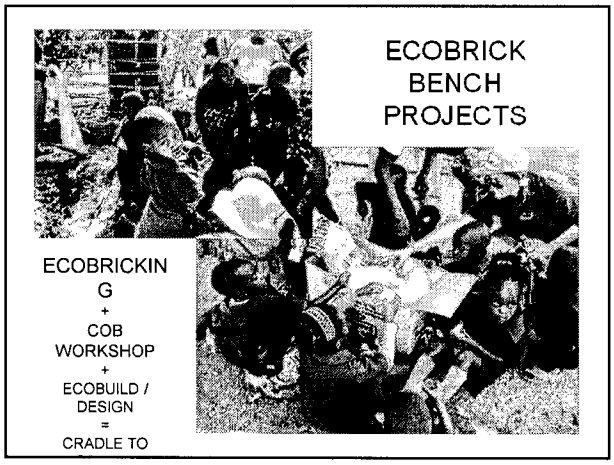


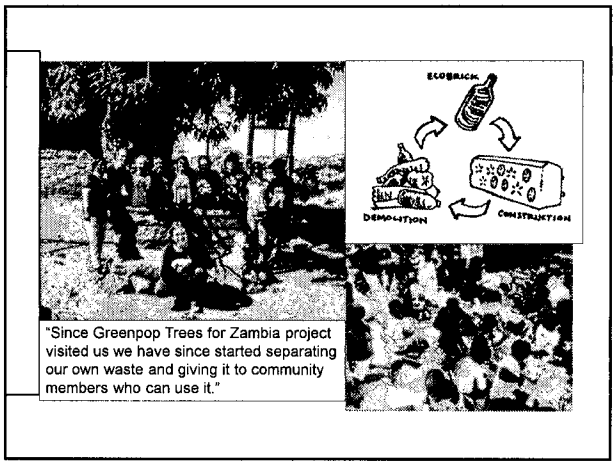
TRASH TO TREASURE

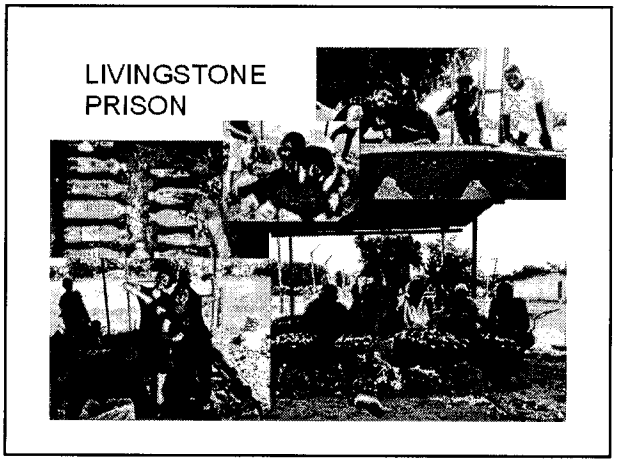
INTRODUCING THE ECOBRICK



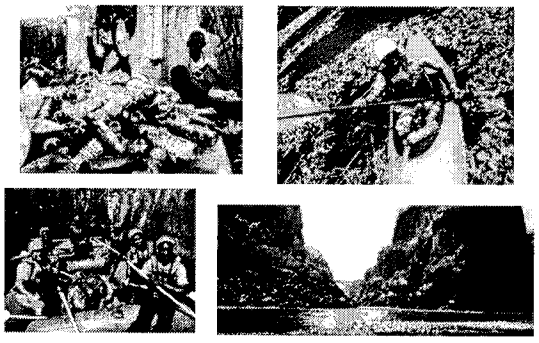



ECOBRICK
BENCH
PROJECTS
ECOBRICKIN
G
+
COB
WORKSHOP
+
ECOBUILD /
DESIGN
=
CRADLE TO


ECOBRICK
DEMOLITION
CONSTRUCTION
"Since Greenpop Trees for Zambia project visited us we have since started separating our own waste and giving it to community members who can use it."


LIVINGSTONE
PRISON

RAPID CLEAN UPS
WITH BUNDU ADVENTURES



WASTE NOT
WEDNESDAYS
ON ZAMBEZI FM

THE
TEAM

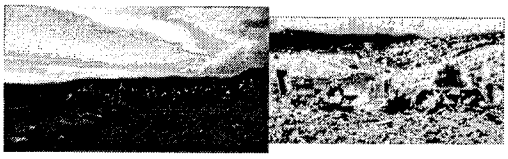
Solomon
Betrand
Allan
Loveness
Emmanuel
Ireen
Marshall
Candice

WORKING TOWARDS HOLISTIC WASTE MANAGEMENT

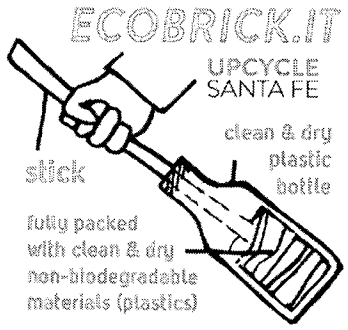
UPCYCLE SANTA FE

WORKING TOWARDS HOLISTIC WASTE MANAGEMENT

WASTE IN NEW MEXICO –
A SERIOUS PROBLEM



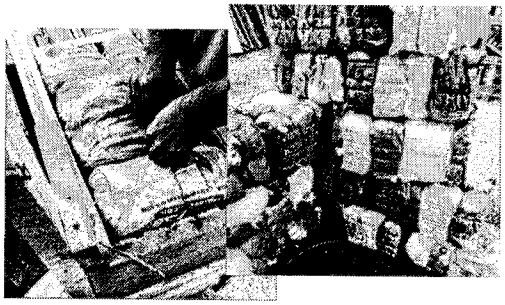
- Open Dumping still Common Practice
- Recycling Subsidized by Landfilling
- Very Low Diversion and Recovery Rates (~12% for Santa Fe)

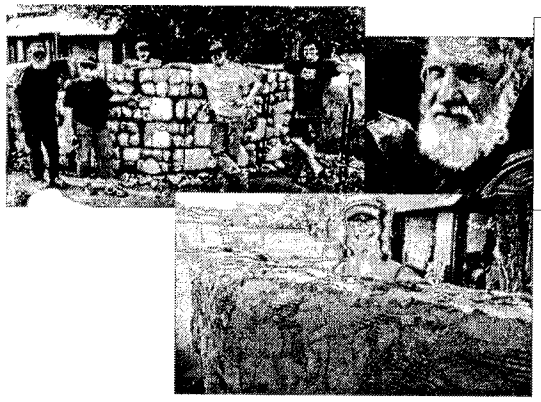


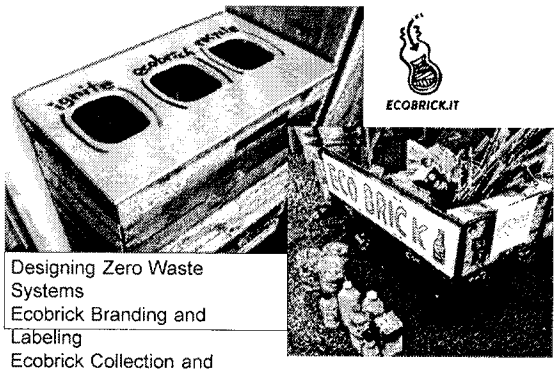
ECOBRICKS + PALLETS =
STRUCTURAL INSULATION PANELS

CARTON ECOBRICKS

UBUNTU-BLOX





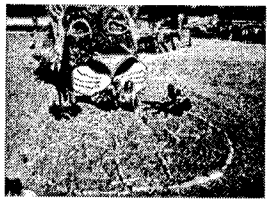


Designing Zero Waste Systems
Ecobrick Branding and Labeling
Ecobrick Collection and Building

CURRENT AND UPCOMING PROJECTS

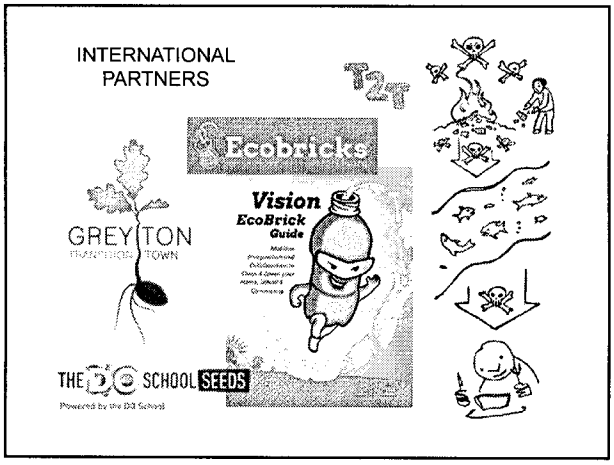
- Sample Constructions / Tiny Home with Only Green Desig
- Plastic Collection Pilot with Salon Del Mar and Cupcake
- Ecobrick Education and Design Project with Monte Del Sol
- Ecobrick Labeling with Pristina Bottled Water
- River Cleanups with the SF Watershed Association
- Collection Points at Local Retailers

BUILDING A BRIDGE
SANTA FE TO LIVINGSTONE

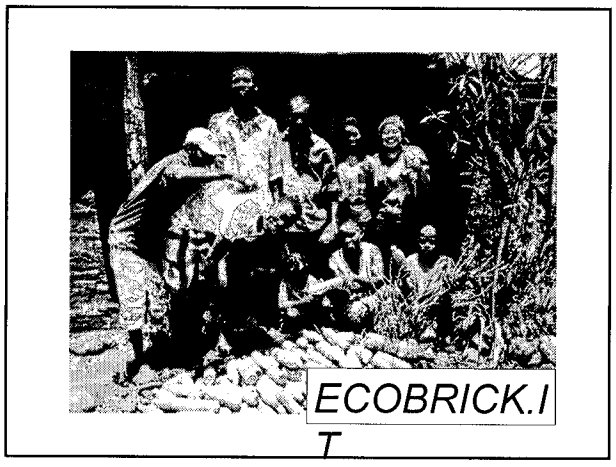


T2T
UPCYCLE
SANTA FE

- March thru June – Clean Your Schools Program in Livingstone
- Developing the Trash to Treasure / Upcycle Livingstone Brand
- Building a Simple Revenue Stream and connecting with


INTERNATIONAL
PARTNERS
T2T
Ecobricks
GREYTON
Vision
EcoBrick
Guide
THE SCHOOL SEEDS


GOT TRASH?


ECOBRICK.I
T

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Director, Trash to Treasure Zambia
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Marleen Lammers,
Head of Fundraising, Greenpop
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Livingstone, Zambia Jan. 15, 2015

To the people of Santa Fe, New Mexico, our Sister City,

Greetings from Africa!

In 2014, Trash to Treasure teamed up with Greenpop to launch a waste management system in Livingstone, Zambia. Through this project, we aim to introduce simple waste management solutions that will reduce the environmental impact of trash, create a cleaner and healthier living environment for the Livingstone communities, and bring financial benefits to community members.

Livingstone has very little in place in terms of waste management systems. As of the 2010 Zambian Census, the district has a population of 136,897 people. As the population has grown no efforts or funds have been put into creating the systems needed to deal with the growing increase of products coming into the city. Most roads are inaccessible and not tarred, making most of Livingstone difficult to gain access to for collection. Livingstone currently has three working pick up trucks that collect waste from a small number of areas that the vehicle can reach and transports it to the Livingstone dumpsite, where it is burnt. Most people bury or burn the waste in their backyards, which brings along strong health hazards for the community as a whole.

As this huge waste problem needs a multipronged approach, we are developing a program that combines interactive education initiatives for children, incentives for people to re-use and re-cycle, and creative solutions for collecting and appropriately managing large amounts of waste.

The project was launched with eco-brick and clay building workshops. Eco-bricks are plastic bottles stuffed with other plastic waste, especially non-recyclable plastic waste that can be used as a long-lasting brick. It is a tool that showcases the potential waste holds, while the ancient technique of natural building highlights a cost effective and self-empowering method of building structures. An additional benefit to building with eco-bricks is the strong insulation of the plastic; buildings made out of eco-bricks stay at a more even temperature throughout the year than traditional buildings. During the workshops, we build benches or walls out of eco-bricks, which is a fun and easy way of teaching the building technique, as well as an effective platform for waste management education. An average bench we build utilizes 150 to 400 plastic bottles stuffed with plastic waste that would otherwise wind up in the dumpsite.

We received great interest and feedback to these workshops from the Livingstone community. One attendee got excited enough by the workshops that he is now building his own house out of eco-bricks and clay. This project, which we are assisting him with, has successfully reused 838 stuffed plastic bottles.

Simultaneously, we started hosting recycling workshops at schools. These workshops are fun and educational lessons on the issues around waste, the value of some wasted materials, and on ways of re-using or disposing of it in appropriate ways. We aims to assess each school's waste situation, and work together with teachers and children to come up with creative solutions for them to implement composting, recyling, and re-using as much of their waste as possible. We are developing this workshop material into a long-term involvement with schools through our Green and Clean Your School Program, which will see schools get a full green make-over in collaboration with Greenpop.

Our short-term aims are to further develop our eco-brick workshops and our Green and Clean Your School initiative. Our long-term aims are to establish a waste management centre that can process both the household waste and the hazardous waste in appropriate ways.

The project is run in collaboration with Greenpop and its Trees for Zambia project. Greenpop is a Cape Town-based social enterprise dedicated to urban greening, reforestation and eco-education projects. In 2011, Greenpop ventured to Livingstone to launch Trees for Zambia, a project that aims to find holistic solutions to the drastic deforestation the area is facing. They do this through planting trees, educating the community on environmental issues, creating value for trees, promoting good land management, and providing alternatives to the use of charcoal.

Thank you for reading, we wish you a happy new year and look forward to a strengthened connection and collaboration with you, the good people of our sister city.