Environmental Activism on Campus

Fall 2013

Projects developed and implemented by students in POLS 255 Global Political Ecology in Fall 2013

Instructor: Pablo Toral
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Composting at Beloit
Institutionalizing Vermicompost

By: Lena Wright, Xavier Ward, Elliot Tom

Presented December 11, 2013
The Problem
According to the United States Environmental Protection Agency, food makes up the highest percentage of wastes that is put into landfills. Beloit College was contributing to this problem by having no program in place that reused food scraps, neither in the cafeteria nor in Special Interest houses. Five Special Interest houses that were surveyed had a total of 61.4 pounds of food waste after a week in September. The Beloit Urban Garden, a student-run garden servicing the student cafeteria, spent $70 on compost the past year. The food scraps that Beloit students generated should have been used to help the garden, and used to teach students how easy sustainable living is.

Goals
- **Houses**: Our main goal was to institute composting in Special Interest Houses on Beloit College’s campus. This included contacting houses about the composting project, leaving buckets for them to put compost into, and assigning a house member to take the bucket of compost to the bins. We also aimed to have houses fill out composting surveys about their experiences with composting, and their involvement in the project.
- **Vermicompost**: The goal of the vermicompost is to facilitate a type of composting which can be done indoors. The frigid winters in this area only allow for a small period of time when composting is available. There are not very many students who remain in the area during the summertime, making the summer a difficult time to compost. Roughly three months are available outside during the school year. In comparison, Vermicompost allows for composting year round, provided someone is able to check on it.
- **Institutionalizing Compost**: In order to effectively maintain the composting project, the project was instituted into the infrastructure of the college itself. This goal is three-fold: to provide institutionalization in individual houses, to provide institutionalization that carries the project year-to-year, and to provide institutionalization for the person who takes care of, and reaps the benefits of, the compost.

Strategies
- **Public Outreach and Education**: We approached each of the special interest houses in order to get them to agree to compost. We met individually with members of the houses, went to club meetings and assigned a person to take out the compost in each house. This was effective because face-to-face contact led to more participation, and house members were able to connect us to the project.
- **Meeting with Residential Life Staff**: Meeting with the residential life staff was a key part of our strategy. Without the consent of John Winkelmann, our project would have been dead in the water. He was extremely cooperative and proactive in helping our project move along swimmingly.
- **Shared Governance**: The Beloit Urban Garden Working Group was already in place at the start of our project, and a group member had a very close connection to them. We utilized them in order to insure that someone will take care of the compost in the future, and that the garden can use the compost. We attended meetings in order to get taking care of the compost into the future work plan. We also consulted with Kyle Bohrer
regarding how much compost the garden could use, and what he felt the best use was, based on his expertise as the Sustainability Fellow for the garden this summer. Utilizing shared governance meant that we were able to give multiple players stake in the project.

- **Building the Bins:** In our research, we found that there are a number of factors that need to be considered when purchasing or building bins for worm composting. After considering these factors, we decided to construct our own composting bins out of plastic storage boxes. It takes three plastic storage boxes stacked upon one another, with the top two having holes drilled in the bottom and then the lid will also be drilled in order to allow for the worms to breath. Plastic storage boxes turned out to be the best choice for the project because they are inexpensive, long lasting, easy to turn into composting bins, and are readily available from a number of manufacturers. Ripped up cardboard and old newspaper is layered on top of the first bin so moisture is kept out. These only need to be changed once a month. Through a search on the Web, we discovered that Sterlite boxes could be purchased online in sets of nine for a cost of about $5 per bin including shipping and handling costs. Their comparatively low cost made them the choice for the project. We were able to find detailed instructions on how to build the bins out of plastic storage boxes from Washington State University.

- **Funding:** Funding came from an extremely generous grant given to our class. A member of our group fronted the money for the bins as we were writing and presenting a proposal for money. This proposal was accepted, and we were able to secure full funding. We also received an in-kind donation of red worms.

**Challenges**

- **House Cooperation:** Initially it was difficult to get the houses involved because they were skeptical about our ability to reach our goals. We initially asked Tau Kappa Epsilon, Spanish House, Outdoor Environmental Club and French/SlowFood house to house the bins before settling on French/SlowFood house. Groups were skeptical because of past experiences with college projects, and the amount of work they would have to put in. After explaining that someone else would care for the compost, Slow Food stepped up. Houses also exercised administrative discretion over when the compost got taken out, which was combated by us checking in and making it as easy as possible.

- **College Politics:** John Winkelmann was immediately wary of our project because of the image of rotting food sitting in houses. After we explained our full plan, the work we had put in with individual houses, and Beloit Urban Gardens commitment to the project, he was much more interested in helping us. The political climate of the college also came into play when students assumed we were asking housekeepers to do more work.

- **Starting as Separate Projects:** This project began as two separate projects, one which involved vermicomposting and another that was working to get buckets into special interest houses. After students dropped our Global Political Ecology class, one group was down to two members and the other had only one member involved in it. We decided to merge groups and work with common goals. The downside of this was that there were less people to work on every aspect of the project, which meant that certain things, like the composting survey, were not able to be covered.
• **Time Restrictions:** Seeing as this is a project done for the most part out of class, time management was a large challenge for our group. Our competing schedules mean it was not only difficult to find a time to meet, but also difficult to meet with other groups, John Winkelmann, special interest houses, etc.

**Accomplishments**

We accomplished many things for a three-person group trying to get Beloit College students to voluntarily participate in a project that didn’t have a visible effect on their lives. We were able to get buckets into 6 special interest houses. These buckets were each assigned to a particular person, and they have been successfully dumped (at least) weekly into the composting bin behind OEC.

We also won the institutional support of John Winkelmann, Director of Residential Life at Beloit College. After meeting with him, he has agreed to talk to R.A.’s of special interest houses every year to make sure they delegate a house member to empty the compost. The Beloit Urban Garden has officially written the compost into the work plan, and has committed to continuing the project in the spring. All of this work has led to a more open dialogue about composting on Beloit’s campus, and the oddity of Rock County frowning on large-scale composters.

**Advice for the Future**

One of the most important aspects of a project of this type is developing relationships with individuals and organizations within the community whose participation and support is essential to the success of the project. Figuring out the key players to contact on campus and setting priorities for contacting them and building relationships was part of our learning experience. We could have been more selective in our contacts, immediately focusing on Residential Life, the Special Interest Houses, and BUG to gain their cooperation and to get the project off the ground.

Having class funds available for the project certainly helped us, but we did not take advantage of them early enough in the semester. Unfortunately, other activities got in the way of writing the cost proposal. We should have made it a higher priority and recommend that others submit a cost proposal as soon as enough information is available for them to do so.

There are plenty of opportunities for future projects to build on what we have started on campus. One suggestion would be expanding to more special interest houses, or doing a bigger public awareness campaign about composting on campus or in Rock County. A group could also be successful doing similar food waste projects for different area of campus, such as Bon Appetit’s catering or other co-operative dining experiences. Finally, working with Beloit Urban Garden has future potential because it is a student group that sways student opinion on projects, but also is backed by the administration.
Appendices

Appendix A: Residential Life/R.A. Poster

Composting
Beloit College

A member of your Special Interest House should be chosen at the start of each semester to DUMP THE COMPOST TWICE A WEEK.

Compost should be dumped ________________

<table>
<thead>
<tr>
<th>What CAN go in the compost?</th>
<th>What CANNOT go in the compost?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncooked Produce</td>
<td>Cooked Produce</td>
</tr>
<tr>
<td>Coffee Grounds</td>
<td>Meat</td>
</tr>
<tr>
<td></td>
<td>Egg Shells</td>
</tr>
<tr>
<td></td>
<td>Oil</td>
</tr>
</tbody>
</table>
Appendix B: Poster Attached To Composting Buckets

Compost
Please do not throw out!
This is part of a study on composting in campus communities

What can I compost?
- Raw fruits and vegetables
  - Coffee grounds
  - Egg shells

Appendix C: Composting Survey

Composting Survey:
Do you cook in your house?
How many times a week?
Do you cook with fresh fruits and veggies?
Do you make coffee with grounds or tea?
Would you be interested in having a compost in your house?
Would you be willing to take the compost out once or twice a week? (Behind CEC)
How many people live in your house?
Appendix D: Initial Contact House Spreadsheet

<table>
<thead>
<tr>
<th>House</th>
<th>Contact</th>
<th>Email</th>
<th>Group Contact</th>
<th>Meeting time/day</th>
<th>Bucket</th>
<th>Got the OK!</th>
<th>Who's measuring?</th>
<th>1st Week Totals (in Pounds)</th>
<th>Date of 1st Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women's Center</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td>9:15, Weds</td>
<td>X</td>
<td>X</td>
<td>Lena</td>
<td>8.8 pounds</td>
<td>9/4-9/11</td>
</tr>
<tr>
<td>Outdoor Environment House (OEC)</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td>8, Weds</td>
<td>X</td>
<td>X</td>
<td>Nora</td>
<td>(8.2 Lb) one more day</td>
<td>9/10-9/25</td>
</tr>
<tr>
<td>Peace and Justice House</td>
<td>Sarah</td>
<td></td>
<td>Sarah</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Sarah</td>
<td>(5 Lb), (week two: 4 lbs)</td>
<td>9/16-9/24-9/30</td>
</tr>
<tr>
<td>Big-Spoon Co-op/Slow Food/French House</td>
<td>Sarah</td>
<td></td>
<td>Sarah</td>
<td>6, Mon-Fri 12-9pm, Weds</td>
<td>X</td>
<td>X</td>
<td>Sarah</td>
<td>(31.6 Lb)</td>
<td>9/13-9/20</td>
</tr>
<tr>
<td>Geology House</td>
<td>Nora</td>
<td></td>
<td>Nora</td>
<td>12:30pm, Weds or 7, Fri?</td>
<td>X</td>
<td>X</td>
<td>Lena</td>
<td>9 lbs</td>
<td>9/17/2013</td>
</tr>
<tr>
<td>Spanish House</td>
<td>Sarah</td>
<td></td>
<td>Sarah</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art House</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td>8, Weds</td>
<td>X</td>
<td>X</td>
<td>Lena</td>
<td>9 lbs</td>
<td>9/27-10/4</td>
</tr>
<tr>
<td>Theta</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td>1pm, Sunday</td>
<td>X</td>
<td></td>
<td>Lena</td>
<td>9 lbs</td>
<td></td>
</tr>
<tr>
<td>Russian House</td>
<td>Sarah</td>
<td></td>
<td>Sarah</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAGA</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music House</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthropology House/Voces</td>
<td>Nora</td>
<td></td>
<td>Nora</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latinas House</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfaith House</td>
<td>Lena</td>
<td></td>
<td>Lena</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance Free</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix E: Composting Inquiry Email

Inquiring about the possibility of worm composting in slowfood's basement.

---------- Forwarded message ----------
From: <Name Omitted>
Date: Wed, Oct 2, 2013 at 11:44 AM
Subject: [slowfood] meeting Sunday at 6:00pm
To: <Group Name Omitted>

We will be having a meeting on Sunday at 6:00pm to discuss our upcoming events and other club matters*. There will be yummy homemade food provided!

<Name>
* Meetings are required for Slow Food House members, please come.

<Email Omitted>
Oct 6
to <Names Omitted>,
I'm hoping that one or both of you were able to go. I was waiting outside for you guys to arrive and then I felt really sick with the chills and had to leave. Please let me know what happened.

Thanks,
<Name>

Let's show up from 12:30 o 12:40 or 12:45 to see if they could partner to take the worm composting!

Meeting with BUG Re: Taking care of the compost

---------- Forwarded message ----------
From: <Name Omitted>
Date: Tue, Oct 1, 2013 at 8:17 PM
Subject: Re: Composting
To: <Name Omitted>

We would love to have your group come to our meeting! Our next meeting is actually tomorrow during common hour (12:30-1:30) on the 2nd floor of Pearsons (Moore Lounge). We meet there every Wednesday during common hour.

<Name>

On Tue, Oct 1, 2013 at 8:04 PM, <Name Omitted> wrote:
Hi <Name>,
When is your next BUG meeting? Could my group from Political Ecology come talk to you guys about using compost from our potential worm composting project this semester, and setting up a partnership with all the mini compost projects currently done on campus.
Thanks
<Name>

Group members leaving

<Name Omitted>
Oct 6

to me, Name
Hi Guys,
I am so sorry but due to all the issues I had going on this semester I had to drop 4 classes including Global Political Ecology. I hope that you guys have enough to really get things going. Maybe just focus on the worm composting, because food service never got back to us. Name
(spiritual life) can show us his family's worms. I am willing to still be of some help, but less than in the past

<Name Omitted>

<Name>,

**Inquiring about TKE's past involvement**

My name is <Name>, I believe we are in the same film music class. I am currently doing a composting project in my ecology class and was curious if you could tell me about the composting bucket at TKE, if it's still there. Any information is helpful.

Regards,
<Name>

<Name Omitted>

Oct 1

to me
Hey <Name>,

I'm sorry but I've checked if we have a composting bucket and I don't think we have one anymore.

<Name>

**Inquiring about past work with Bon Appetit**

Hi <Name>,

I am currently taking Global Political Ecology and have heard about the potential plans for a food compactor(?) being installed in Commons. I am in a group that is very interested in tackling food waste and making what we eat more sustainable here at Beloit College. I have talked with both a student, <Name> who did research on this possibility and <Name> who suggested we reach out to you. We are interested in hearing more about what you and Bon Appetit think about this project or other potential sustainable projects that we could help out with this semester. Is it possible to plan a face-to-face meeting this coming week?

<Names Omitted>

**Group emails**
You guys let's start talking to people and make a plan! Who can you guys reach out to? We need to figure out what is going on with the OEC compost. Also, it looks like it is legal, as long as we don't deal with cooked food(like this group intended to). I want to set up our worm compost somewhere where it can be done year round. If you guys are willing, I would like to try to start on a smaller scale, maybe Java Joint for tea and coffee and then allow the special interest houses that <Name> group is working on to dump in ours?...

to <Names>
Hi All,

I'm a little confused at the moment and will read the attached. Starting small and working up sounds good to me. Thanks for sending this along!

<Name Omitted>
Sep 24
to <Names>,

Maybe we could talk briefly after class tomorrow if that works for you guys?

<Name>

Hi All,

The text in the building the bins section is inconsistent with the link about how to build the bins that I included in the appendix. I'm not sure whether the information was drawn from another source that suggests that newspaper and cardboard keeps moisture out, but the link I found says that cardboard and newspaper are used for bedding and they are moistened (but not soggy) to provide moisture for the worms.

Either the text needs to be changed or I need to get rid of the link. Please advise. I happy to edit the text if that's what needs to be done. Just let me know.

http://whatcom.wsu.edu/ag/compost/easywormbin.htm

Thanks,
Elliot

<Name Omitted>
4:16 PM (19 hours ago)

to Elliot, Willene
My uncle simply said it's so it doesn't get too damp, because if it gets too damp the worms can get mites. Which cause a foul smell, I can double check if you'd like.

Name Omitted 4:33 PM
I'm sure he knows and that you have it right, but I'm wondering if something ...

<Name Omitted>
8:28 PM (15 hours ago)

to Elliot
Keep the link, we can clarify if you think it's necessary. But I don't think he'll ask, if you want we can simply tell him that bit of information was not factual.

Appendix F: Contact With Residential Life

Emails
Xavier Ward <wardxa@beloit.edu>
12:19 PM

John,

I met with you a few weeks ago regarding our composting project. I wanted to update you and let you know that the bins will be going into the basement of French/SlowFood. We will report back and tell you of our progress in the spring. If you have any questions please let me know. I hope you have a good holiday break.

Regards,
Xavier Ward

Xavier Ward <wardxa@beloit.edu>
Nov 13

John,

My name is Xavier Ward and I am working on a project in Pablo Toral's Ecology class. Earlier in the semester Vivian Mitnick had met with you to discuss this project, but since she is no longer taking this class I and a few others are taking over the project. I believe you have already met with Lena Wright, she is also a member of our group. I was hoping to set up a meeting time on Friday to discuss the parameters of implementing the composting bins into the special interest houses that have expressed interest in our project. I hope to hear back from you soon.
Regards,
Xavier Ward

Residential Life <reslife@beloit.edu>
Nov 13
to me
Hello Xavier,
Because I manage John’s appointment schedule, he has forwarded your email to me. The only times John has available for Friday, 11/15/13, are for: 9:30 am, between 11:30 am and noon, or between 3:15 pm and 4:00 pm.
Let me know if anything within the times I listed can work for you. Otherwise, call me and we can try to figure something out.
I will wait to hear from you,
Elise

Xavier Ward <wardxa@beloit.edu>
Nov 13
to Residential
3:15 would be perfect, thank you.

Residential Life
Nov 14
to me
Morning Xavier,
I have added you to John’s calendar for 3:15 pm tomorrow, Friday, 11/15/13.
We will see you then,
Elise
Res Life

<Name Omitted>
Oct 1
to John, Elliot, me
Hi John,
My meeting with you last week was super informative. My group decided to move forward on finding out more about the OEC composting project failed, setting up a pilot worm composting
project this semester in one of the special interest houses- we have reached out to Slow Food, TKE, and Spanish House so far about this and trying to revitalize the discussion about getting the food compactor in Commons. I emailed Ken last week, but did not hear back. Do you think you could help me get in touch with someone from Bon Appetit to quickly start a real conversation with them?

Thank you John!

<Name Omitted>
12:19 PM (23 hours ago)

to Name
Name,

I met with you a few weeks ago regarding our composting project. I wanted to update you and let you know that the bins will be going into the basement of French/SlowFood. We will report back and tell you of our progress in the spring. If you have any questions please let me know. I hope you have a good holiday break.

Regards,
Name

Meeting Notes
Lena Wright meeting with John Winkelmann 11/5/2013:
John interested in having the compost in a house, wants more information. Can work with R.A.’s to establish a system year-to-year for someone taking the compost to the specified worm bins. Interested in institutionalizing more in the long run. Will follow up with Xavier about meeting specifically about bins and create a poster for RA’s.

Appendix G: Contact With Phys Plant
All contact with Phys Plant was done via telephone. What was discussed was in order to get a drill to construct the bins. They sent one of their student workers and constructed the bins. Contact was made with them first on November 26th, 2013. The bins were constructed later that day.

Appendix H: Funding Proposal
Xavier Ward, Lena Wright, and Elliot Tom
11/15

Money Proposal for Global Political Ecology: Composting
Beloit College has a long history of a commitment to sustainability, both in the classroom and on the residential side of campus. The primary goal of this project is to take the food waste on campus and turn it into compost for Beloit Urban Garden. Red worms will be eating the food waste, digesting it, and producing an extremely fertile topsoil and liquid byproduct.

Because Beloit College does not pay for their garbage by weight, it is not estimated to save the college direct money. However, we will have roughly 40 pounds of food waste going into this a week, which will create an excess amount of compost. The amount that is not used for the Beloit Urban Garden (BUG) can be put back into the community, or sold at the farmers market and profits will go to BUG. In this way, an extremely cheap start-up system can save BUG money on the compost they would already be buying.

Up until this point, our group has been talking to special interest houses, compiling a preliminary report on food waste, and setting up initial buckets in houses. The contingency plan has also been put into place, with John Winkelmann approving a pamphlet that RA’s will use every year to pick the person who will be responsible for the compost. The Beloit Urban Garden planning group has put the position of “compost manager” into their long-term document, so it is highly likely a consistent person will be responsible for turning and managing the food transfer to the Garden.

Our proposal includes a dollar amount of $85.05. This includes the shipping and handling of 9 large Bins from Walmart for the compost, and 8 more small bins for special interest houses. We plan on creating the initial compost from these bins. Offers for donation of red worms have been given, therefore we do not anticipate that being a start up cost.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
<th>$ Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large bins</td>
<td>4</td>
<td>45.05</td>
</tr>
<tr>
<td>Small Bins</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Worms</td>
<td>&gt;200</td>
<td>20 (contingent on donation)</td>
</tr>
</tbody>
</table>
We think this project has a lot of potential to help turn food waste into extremely fertile compost and worm tea (the liquid byproduct). This project will be benefitting Beloit College and the Beloit Urban Garden. You’ll be helping out a good cause and we can publicize the donors when talking about the vermiculture.

Contact info: (omitted)

Appendix I: Composting Bins Info Sheet

**Materials.** Bins can be made from a variety of materials, including wood, rubber, and plastic. The bins should be made out of opaque material since worms generally do not like light.

**Size.** The larger the bins, the more worms they can handle. The bins should be shallow rather than deep since worms generally prefer to be near the surface. They also should be no more than 24 inches deep, since composting worms will not go any deeper. The extra depth is just wasted space. In choosing the size of the bin, it is important to consider the amount of food scraps that will composted. About 1 square foot of surface area is required for each pound of waste generated in a week.

**Ventilation.** Untreated wood bins are self-ventilating due to the structure of wood. Some people prefer wood bins for this reason and because they absorb extra moisture. However, the wood will eventually be eaten and deteriorate due to moisture. If other materials are used, small holes need to be drilled or punched in the bottom, sides, and tops of the bins to allow for ventilation. A drill, or a hammer and a nail, or a pick can be used for this purpose. The holes need to be large enough to ventilate the bins, but small enough so not much light gets into the bins. Holes between 1/8 and 1/4 inch in diameter are recommended. The holes in the bottom of the bins also allow for drainage. In addition, they allow worms to crawl into another bin when it is time to harvest the castings.

**Covers.** Bins should be covered with a removable lid to prevent light from getting in.

**Cost.** Commercial bins for worm composting are readily available, but they tend to be expensive with 3 to 5 tray bins costing as much as $200. Homemade bins are relatively easy to make and cost much less than commercial bins.
Worms. Red Wiggler worms are the preferred choice for worm composting. They can eat about one-half of their weight each day. There are about 500 worms in a pound, which means it takes about 1,000 worms to eat a pound of food in a day. They multiply quickly if conditions are right. These factors need to be considered when determining how many worms and how many bins are needed to handle the food scraps generated each day.

Our Bins. Taking these factors into consideration, we decided to construct our own bins from plastic storage boxes. Each Sterlite plastic storage box that we purchased is 20.75” long and 14.5” wide. When converted into a composting bin, each box can handle a little over 2 lbs of food scraps per week (or about 5 ounces per day), which is roughly the amount that two people typically produce in a week. Each box requires about 100 worms to consume 2 lbs of scraps in a week. In terms of the economics, this means that an investment of about $5 can prevent about 60 lbs of food scraps going into a landfill each academic year for many years.
Electronic Recycling At Beloit College

By Jacqueline Ashby, Russell Hall and James Ramage

Basel Action Network Photo
**Problem to Solve**

In 2012 alone the world generated roughly 120 billion pounds of e-waste and by the year 2017 the amount of e-waste dumped annually is expected to rise to 161 billion pounds according to The U.N. initiative Solving the E-Waste Problem (StEP).\(^1\) In the U.S., Americans dumped roughly 23 billion pounds of e-waste in 2012 and in 2010 alone, threw away about 120 million phones. The fundamental question is: What is driving this crisis? Perhaps the most influential factor is the “out with the old, in with the new” mentality towards electronics. The rapid evolution of technology has made old electronics quickly obsolete. In fact, “The average lifespan of a computer has shrunk from four or five years to two years.”\(^2\)

In 1989 The Basel Convention was formed to address the growing hazardous waste trade from developed countries to developing ones. Because developed countries were not willing to address e-waste problem themselves, they shipped off old electronic equipment to developing countries, whose resources are inadequate to deal with the toxic e-waste problem. This proved to be such a problem that in 1994, the Basel Convention, “…agreed to adopt a total ban on the export of all hazardous wastes from rich to poor countries for any reason, including for recycling.”\(^3\) Every developed country, except for the United States, ratified the proposal.

The fundamental problem with e-waste is that it is designed neither to be dumped in a landfill nor to be recycled. In fact, “E-waste is full of many different materials…that are mixed, bolted, screwed, snapped, glued or soldered together… Therefore, responsible recycling requires intensive labor and/or sophisticated and costly technologies that safely separate materials.”\(^4\) Unfortunately, rather than recycling e-waste responsibly, most so-called electronic recycling companies just dump their electronic waste in developing countries. According to The Basel Action Network (an environmental NGO that specializes in toxic waste), 80 percent of e-waste that is sent to recyclers is instead shipped overseas to developing nations like China, India and Ghana.\(^5\) When the material arrives in China or other developing countries, it is first broken apart, usually with hammers and screw drivers, and then the broken down material is usually burned or melted down. Workers sort through the ash in order to find the copper, gold, steel and other precious materials that can be re-sold for a profit. The ash is then dumped in landfills or in nearby streams.\(^6\) Even if electronic waste is recycled within the United States, it is often done in prisons where inmates are exempted from domestic labor laws and where human rights abuses are widespread.\(^7\)

Arguably, it is not cheaper to ship electronic waste overseas to be recycled or to recycle the waste in a UNICOR prison. In developing countries, labor costs are low and environmental and workers protection laws are minimal to non-existent. In Guiyu China, where much of the

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1. Al Jazeera America, “UN saying E-waste Problem Growing Fast”
2. Puckett et al., "Exporting Harm: The High Tech Trashing of Asia." pg. 5
3. Puckett et al., "Exporting Harm: The High Tech Trashing of Asia." pg. 2
4. E-Stewards, “What’s driving the E-waste crisis,” Appendix G
5. NPR, "After Dump, What Happens To Electronic Waste?"
6. Puckett et al., "Exporting Harm: The High Tech Trashing of Asia." pg. 17
world’s electronic recycling takes place, the average wage of an employee in the electronic recycling industry is $1.50 per day. 8 Shipping electronic waste overseas or to a prison facility in the U.S. to be recycled, however, does not result in lower costs or in economic benefits. Rather, the recyclers are just passing on a negative externality to the poor and communities of color. They are simply shifting the cost of electronic recycling from the privileged to the poor.

We were not able to find out the amount of e-waste that Beloit recycles per year or the extent of the e-waste problem at Beloit simply because until recently (and as a result of our recommendation), the IT Department did not keep records on how much e-waste it sent to electronic recyclers. Although much of our information on e-waste is therefore limited to national and international data, it is safe to assume that Beloit College, like other college campuses, generates a substantial amount of electronic waste.

In view of the global e-waste crisis, our project sought to document how the recycling system works at Beloit College, which companies Beloit College partners with, and whether those companies recycle electronic waste in an environmentally and socially responsible way.

**PROJECT GOALS**

Our goals shifted widely throughout the semester. Originally the goal of the project was to use the Funding Factory as a way to promote clean recycling of e-waste material as well as to generate some revenue for the college. However, once we discovered that Funding Factory was not as environmentally responsible as they claimed to be, our project was dead in the water for several weeks.

A second goal of the project was to investigate the current electronic recycling system at Beloit and to determine whether or not the recyclers that the college uses are responsible recyclers, meaning that they do not export their waste overseas or to U.S. prisons. We hoped to have a clear outline of the companies that Beloit uses and whether they are e-Stewards certified or R2 Solutions certified.

A third goal of the project was to provide a document that the IT department could use when determining which electronic recyclers to contract with. One of the problems faced by the IT Department is that it is bombarded by recyclers who want to do business with it and who claim that they have great environmental certification credentials. However, many in the IT Department do not know the difference between standards like R2 Solutions and e-Stewards. We wanted to provide the IT Department with information that we compiled throughout our project so that they could easily determine which companies are environmentally friendly and which ones are just fake recyclers.

Lastly, we wanted to set up a platform for future group projects in Global Political Ecology classes. Through this document we wanted to provide future student groups who are interested in electronic recycling the information that we have put together so that they can implement a program that expands electronic recycling on the college campus. We also wanted

8 Puckett et al., "Exporting Harm: The High Tech Trashing of Asia." pg. 16
this document to be used by students so that they do not make the same mistakes that we made. Our goal is to have this project be a stepping stone for future groups interested in electronic recycling.

STRATEGIES

Employing the Precautionary Principle: Throughout the semester we employed the precautionary principle. One of the key ideas behind the precautionary principle is that unless it can be proven that a certain activity is not harmful for the environment, we should discourage it. Our group decided not to embrace Funding Factory because we could not find evidence that they were recycling in a responsible manner. We only embraced companies that proved to us that they were recycling in way that was not harmful to the environment.

Employing the principle of Incrementalism: Incrementalism is the idea that changbest comes through a million tiny steps rather than one giant leap. Therefore, rather than proposing dramatic change to the campus recycling system, we moved in a very pragmatic, incremental way to try to slowly change the campus e-waste recycling system for the better. When our project began, we did not immediately embrace the idea of incrementalism. We went into our project thinking that we were going to dramatically change the recycling system at Beloit by implementing Funding Factory and raising revenue in the process. When that program fell through, we turned to a more incremental approach. We decided to work directly with the IT Department, to understand how the current recycling program works, and to try to improve it rather than to propose a completely new program and expect the college to accept it. We did not want to aim for the moon and then miss.

Reaching out to the recycling companies Beloit works with: We tried to contact and research the various companies that the college works with. We called up companies that the college uses such as American TV and Beloit Recycling in order to find out what recyclers they use and whether or not they were e-Stewards certified.

Educating the IT Department: We began a dialog with the IT Department about the importance of working with good recyclers and the problem with fake recyclers. We believe that increasing awareness surrounding the problem of electronic waste is critical to getting the college to look into its e-waste program and improve it.

CHALLENGES AND HOW WE OVERCAME THEM

Forming a cohesive group: Our group did not form until four weeks into the semester. Once formed, one of our group members broke off and joined another group. Our group also faced coordination problems. Because everyone had different schedules, it was hard to find times when everyone could meet and work together.

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9 Rosenbaum, pgs. 144-147
10 Rosenbaum, pg. 43
**False starts:** One of the key challenges our project faced was that we had several false starts. In particular, early on, we thought that Funding Factory would be a great organization for our college to partner with because, according to an article written in *The Chronicle of Higher Education* titled “Old Cellphones, Once Bound for Landfills, Now Bring Colleges Money,” the company did not send its materials to landfills or export its materials overseas. However, we later discovered that Funding Factory was certified under the R2 Solutions recycling standard developed by the recycling industry, but not under the much more rigorous E-Stewards standard, and consequently the program does not guarantee that no harmful materials are sent to landfills or exported. By the time we had discovered this problem, it was November, and we had to make a seismic shift in our project.

**Finding good information on electronic recycling:** During the course of this project, we learned that most news outlets have not properly investigated the electronic recycling industry. In fact, until November of 2013 we were not well informed about the fake recycler problem. We were basing our entire project on the article in *The Chronicle of Higher Education* which asserted that Funding Factory did not export any of its waste overseas. Most news sources do not do investigative reporting on e-waste, and it is incredibly hard without prior knowledge to distinguish between a good recycler and a bad one. It was only when we discovered E-Stewards, The Basel Action Network, The Electronics TakeBack Coalition, and Greenpeace that we were able to really understand the electronic recycling industry and were able to distinguish between electronic recycling companies that are green and ones that are not.

**Finding data on Beloit’s recycling program:** One of the challenging aspects of our project is that we were not able to arrange a meeting with the IT Department until the end of the semester. It was only then that we discovered exactly how the college’s electronic recycling system works, what companies that the college uses, and what materials the college recycles. We were not able to determine the amount of electronic equipment that the college recycles in a year because the college does not keep records on it. One accomplishment of our project is that from now on IT will keep a record of all the material that it recycles.

**Contacting electronic recycling sources that the school uses:** Once we obtained a list of the companies that Beloit College uses for recycling, we found it hard to contact them and to find out whether or not they recycle responsibly. We never were able to reach Beloit Recycling. Someone at American TV promised to provide us with this information, but never did.

**Time restrictions:** Time was an issue for our group throughout the semester. Given the amount of investigative work that we had to do for our project and the setbacks that we faced, it was hard for us to put our project into action. Part of the reason why we did not propose any recycling plan to the college is because we were not able to thoroughly investigate all the companies that Beloit College does recycling with in order to determine whether or not they recycle in an environmentally responsible manner. However, we compiled some great resources on recycling, including our discovery of E-Stewards, and information on the electronic recycling companies that Beloit College uses. Although we made those discoveries too late in the semester to be able to propose an alternative recycling program to Beloit College, the information that we gathered during this project will help future groups seeking to improve Beloit College’s recycling program.
ACCOMPLISHMENTS

Avoided doing business with Funding Factory: This might not sound like much of an accomplishment at face value, but we prevented the college from doing business with a dirty recycler. This accomplishment is very important because Funding Factory was willing to pay the college for electronic recycling equipment and if this project had gone through, it would have been very difficult to get rid of it because the college would have had a financial interest in keeping the program, no matter how environmentally damaging it was.

R2 Solutions vs. E-Stewards: There are two voluntary certification schemes that establish standards for electronic waste recycling. One of them is R2 Solutions and the other one is E-Stewards. Of the two, most in the recycling industry prefer R2 Solutions because it does not prohibit e-waste from being dumped overseas, from being sent to prisoners, and from being incinerated, and it does not include workplace protections for workers in the e-waste recycling industry. E-Stewards, on the other hand, prohibits the dumping of electronic waste overseas, the use of prison labor, and the incineration of e-waste, and it includes stringent labor requirements. One of our main accomplishments was to identify the differences between the various recycling certification standards and to figure out that an E-Stewards certification is the only way to tell if a company recycles electronic material in a responsible way.

Discovery of Universal Recycling Technologies: Perhaps one of our most unexpected discoveries was that there is an E-Stewards certified recycling corporation called Universal Recycling Technologies located in Janesville.

Record Keeping at the IT Department: Before our project, the IT Department at Beloit College did not keep records on how much electronic e-waste the college recycled annually. As a result, we were unable to find out the extent of the electronic waste problem on campus. Because, on our recommendation, the IT Department is now establishing a record keeping system, it will be easier for a future electronic recycling group to find out the extent of the e-waste problem on campus and whether or not it is worth addressing.

Wisconsin Statute 287.17 (1): We also gathered a lot of information regarding Wisconsin law on recycling and the disposal of electronic waste. We discovered that under current Wisconsin law, it is illegal to dump electronic waste into landfills and individuals are legally required to recycle their electronic e-waste. This discovery is important because it can be used by future college groups to justify expanding Beloit’s e-waste recycling program.

Investigating Companies that the College Works with: Perhaps one of the greatest accomplishments of our project was to get for the first time a clear and transparent look at all of the companies and organizations that Beloit College uses for electronic recycling. They include Staples, Beloit Recycling, Best Buy, American TV, Dell, Toner Buyer, and The Beloit Public Works Department.

11 Appendix C.
12 Appendix E
Staples and other business: We investigated several of the companies that the college currently uses for recycling. We discovered, to our surprise, that Staples is e-Steward certified, which means that Beloit has been partnering with a responsible recycler. Another one of the companies that Beloit College uses for recycling is Best Buy. Currently, Best Buy partners with three electronic recyclers: Electronic Recyclers International (ERI), Sims Recycling Solutions, and Regency Technologies. Of the three companies, two of them (Electronic Recyclers International and Sims Recycling Solutions) are e-Stewards certified, while Regency Technologies is not. Instead, it is R2 certified. While Best Buy’s program is better than most, one of the problems is that we don’t know which of the recycling companies takes the most electronic waste from the area Best Buy.

Advice for the Future

Do not trust recyclers unless they are e-Steward certified: The biggest mistake that we made in our project was that we did not do a lot of research into the various recycling certification schemes at the beginning of the semester. We trusted Funding Factory at first simply because they claimed to keep their recycling in America and because they were R2 certified. When we found out that R2 solutions was really a scam we were shocked. When we discovered e-Stewards, we learned about all the loopholes in the R2 certification. Working with an R2 certified company like Funding Factory would have damaged our commitment to combatting environmental racism because the R2 standard allows for e-waste to be dumped in developing countries and to be recycled in U.S. prisons.

Be wary of what is said in the media: When beginning research, first turn to environmental NGOs for information on e-waste and e-waste recycling. Part of the reason why we suffered such a setback on our project is because we trusted the accuracy of an article appearing in The Chronicle of Higher Education. Often the media does not investigate the claims made by electronic recyclers, so if a group uses a media source, fact check it with an environmental NGO. Good NGOs to use for research include The Basel Action Network, E-Stewards, The Electronics TakeBack Coalition, The Silicon Valley Toxics Coalition, The Center for Environmental Health, Greenpeace, and The National Resource Defense Council

Take information you receive from government agencies like the EPA and the Wisconsin DNR with a grain of salt: The reason why we say this is because EPA and the Wisconsin DNR approve of the R2 Solutions certification standard. This does not mean that future groups should avoid using use the EPA or the Wisconsin DNR for information, but rather, they should fact check anything they say with environmental NGOs like The Basel Action Network.

Be wary of Green washing: Many companies like to claim that they are environmentally friendly so that consumers flock to them. The problem is that companies can claim that they recycle responsibly when their actions suggest something completely different. Do not trust anything an electronic recycling company says at face value. Make sure that they are e-Stewards.
certified. For example, a company can accurately claim that it does not ship any of its e-waste overseas, but instead it may sell e-waste to a broker who then ships the waste overseas.\textsuperscript{13}

**Learn from our mistakes:** Lastly, for a smoother and more successful project, any group wishing to pursue e-waste recycling should look at the mistakes this group has made and learn how to avoid them.

**CONCLUSION**

If there was any way to label our project, we would refer to it as the “successful failure.” Our project was successful not because we implemented a great e-waste recycling program but rather because we prevented a bad e-waste recycling program from setting foot on this campus. If another group had done our project and had not done the thorough investigative work we did, they probably would have brought Funding Factory to the Beloit College campus. Because Funding Factory would have paid the college money for recyclable materials, it would become incredibly hard to get Beloit to switch to a responsible recycling company because the college would have a financial interest in keeping the program. Despite our many setbacks, another significant accomplishment of our project was to convince the IT department to keep records on the amount of e-waste it sends to recyclers. Before this project, the IT department did not keep records on the electronic material it recycles. This information will be useful for any future group who decides to do an e-waste recycling project.

We have no guarantees that what we have started will continue once we leave this class. We did not institutionalize a new e-waste recycling program that lived up to either the e-Stewards benchmark or Wisconsin law. However, sometimes the best action is preventive action. The hope we have is that a future group uses our project, learns from our mistakes, and advances a broad electronic recycling program at Beloit that does not contribute to the dirty recycler industry. In addition, we hope that one day our project can be used by the Beloit IT Department in order to determine what e-waste recyclers they contract with. Our greatest hope is that our project is continued by a future Global Political Ecology group.

\textsuperscript{13} Appendix B
Appendix A: Recycling at Beloit College, prepared by Sherry Monahan, Beloit College

We recycle toner, batteries, and electronics such as old CRT’s, TV’s and AV equipment to name a few. Note: In regard to old CRT’s and TV’s we only recycle Beloit College tagged equipment. Tagged means this equipment was purchased by Beloit College. These tags are removed before they leave our Campus. We have been asked in the past to take “personal” equipment for recycling. These requests are referred to other avenues. There are area businesses that have their own recycling programs with no charge to you.

For your “personal” electronics free recycling

- American TV has a program called “E Cycle with American” towards a purchase in their store. They take TV’s, laptops, monitors and other electronics. They do have a daily limit of 2 e-cycled products per day per household. This service is not for a business. They have partnered with licensed professional recyclers to dispose of products responsibly. They average 70 tons of appliances and over 50 tons of electronics in a given month. I personally, took 3 TV’s to American of Rockford. They had me back up to the shipping dock and they took it out of the trunk and gave me $5 certificates to use in their store.
- Best Buy has a Trade-In and Recycling to get rid of your old electronics. They have a trade-in estimator: [http://www.bestbuytradein.com/bb/calculators.cfm](http://www.bestbuytradein.com/bb/calculators.cfm)
- The city of Beloit is now accepting electronics every Saturday from 9 a.m. – noon at the Public Works Department, 2351 Springbrook Court. Free of charge.

Toner

All toner on campus is sent over to Mayer Hall 219 for sale, return “Use & Return” Dell Program or recycling. We deal with this toner in a few ways.

Some of our Dell toner is “Use and Return”. When we purchase under those conditions we get a lower price from Dell. Dell supplies us with a return label and these are checked back against our records before the return is made.
**Toner Buyer** is located in Alabama. They purchase some new and empty printer, fax and copier cartridges. We use this money to purchase more toner for our labs on Campus.

The toner cartridges that are not “Use and Return” or we cannot sell we send to Staples Toner Recycling Program. It is free and it helps protect the environment. **Staples** are one of the largest US ink recyclers having recycled more than 110 million ink and toner cartridges over the last 2 years.

Staples recycles or reuses 100% of a cartridge's components - the plastics in many end-of-life cartridges are reused to make other products, including items like office trays, pen and paper holders, and even Sustainable Earth by Staples™ calculator casings.

Their process is:

1. Spent cartridges are collected for recycling
2. Carriers deliver used cartridges to collection center
3. Cartridges evaluated for recycling or reusing
4. Cartridges are recycled to extract components and raw material to be used in manufacturing new products or are sorted through ISO 9001 inspection process, remanufactured, tested and packaged for reuse.

**Batteries**

Batteries may be dropped off at Mayer 219. Also, we do have a box at the Mail Center. I pick them up and get ready for recycling. The rechargeable batteries are sent to Staples or to Beloit Recycling.

Staples have had this program in place since 1997. They work with their vendors to get them certified for ISO 14001 environmental management standards. ISO 14001 is the world’s most popular standard for quality management. It is now under review, with an updated version due to be available by early 2015.

Electronic items i.e. computers, printers, servers are first donated to PCI (Paul’s Computer Institute) Bamenda, Cameroon, Africa (west Africa). This is a school that trains in Information and Communication Technology.
It was founded in 1997 by Paul C. Mickelson, a retired Beloit firefighter. PCI is currently owned by a Board of Directors (Friends of PCI) with headquarters in Beloit, Wisconsin. More than 400 students a year graduate from PCI.

In the summer of 2009 a new facility was built.

Paul has some health issues and no longer our contact. We are working with Gene VanGalder.

After Gene comes for the donations the rest of the equipment in the Donation/Recycling room is then picked up by Beloit Recycling. Beloit Recycling is a family owned scrap metal recycler and electronic recycling company. They also take our batteries.
Appendix B: Electronics TakeBack Coalition Website Document

How Fake Recyclers Try to Greenwash You

How can you know if you are dealing with a responsible recycler or a fake recycler?

The best thing is to work with an e-Steward, a recycler who uses responsible recycling practices. But many community recycling events use other vendors. So how can you know if they are exporting your old products or not?

You can’t really know for sure. It takes specially trained auditors to review them, which is why we recommend using a certified e-Steward. But here are some warning signs and common misleading statements we hear from fake recyclers. Don’t settle for these as proof that these are legitimate recyclers.

Top ten warning signs and misleading statements by exporters

1. “We are EPA certified.”
   There is no such thing as EPA certification of recyclers. They might have an EPA ID number, but that has nothing to do with whether they export.

2. “We have a no landfill policy.”
   That’s good, we don’t want e-waste in the landfill. But that has nothing to do with whether they are exporting or not. If that’s the extent of their statements about environmental objectives, be concerned.

3. “We follow all applicable state and federal laws.”
   The problem is that there are virtually no laws that stop U.S. companies from exporting e-waste. There is one regulation that addresses exports of Cathode Ray Tube TVs, but it doesn’t prevent them from being exported.

4. “We use a fully permitted facility”
   There is nothing in any permitting process that addresses whether they export used electronics.

5. “We don’t export any equipment.” Beware of tricky wording! But do they sell to a broker who exports the equipment? Commonly e-waste travels that route – from collector to a broker who arranges the actual export. “We don’t do it” is not the same as “we follow the chain of custody all the way to final disposition and we can guarantee that nothing is exported to developing nations.” This is the most common language that exporters hide behind.
6. **“We don’t export any e-waste.” Beware of tricky wording!**

Many companies (and their industry association) never call old electronics “waste.” They call it scrap. They don’t consider your old TV to be waste, so they are not exporting waste according to their own definitions. This is not the same as saying they don’t export used, non-working electronics.

7. **“We provide a certificate of destruction/recycling”**

So can your ten year old kid. Anyone with a laser printer and a simple word processing program can print out a certificate. There is no oversight of this kind of certificate. Companies should never accept these as the only proof.

8. **“We process everything in the U.S. and only export commodities for recycling.”** More tricky wording! A commodity is anything that someone else will buy. So “exporting only commodities” is often a code for “we export whatever someone else will buy” even if it’s full of toxics.

9. **We are R-2 Certified.**

R-2 is a standard that some electronics recyclers have been certified to. But it’s a weak standard that allows recyclers to export toxic e-waste to developing countries, under some conditions. It’s only the e-Stewards standard that prohibits exporting non-working or untested e-waste to developing countries.

10 **We are ISO 14001 Certified**

ISO 14001 is a standard for how a company sets up and runs its environmental management system. But it doesn’t give any guidance for what the company will or won’t do regarding exporting e-waste.

**Follow the Money.**

Who is paying for the recycling? If they are collecting consumer products for free, either someone is paying the recycling costs, or they are probably exporting. If they are collecting TVs for free (or a small fee) then be particularly suspicious, as it costs money to process tube TVs safely. You may be in a state where there is a mandated e-waste program that the manufacturers pay for. But find out who is paying.
Recycling Standards – e-Stewards and R2

Why voluntary standards and certifications are important

It’s important to recognize that the electronics recycling industry is almost completely unregulated in the U.S. There are very few laws that guide recyclers on how they should handle electronics processing, including how they should protect their workers and the environment. There are almost no laws prohibiting the exports of toxic e-waste to developing countries. But unfortunately, the electronics recycling is an industry plagued with low-road practices, including dumping toxic e-waste in developing nations, sending it to unsafe prison recycling shops, incineration of e-waste, or warehousing and abandoning electronics here in the U.S.

When a recycler states that they adhere to all state and federal laws, that has very little meaning, since there are so few relevant laws. That makes it difficult for customers to know whether a recycler is doing the right thing, or is just a fake recycler. For this reason, the more responsible companies in this industry wanted to develop voluntary standards, so that they could show customers that they are meeting a higher level of performance by being certified to these voluntary standards by independent, trained auditors.

What are the recycler standards?

There are currently two standards for electronics recyclers in the U.S., with certification programs attached. Recyclers can be certified to show their conformance to these standards. One is called the e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment®, known as e-Stewards, and the other is called Responsible Recycling (R2) Practices, known as R2.

Which is Stronger?

The e-stewards standard is by far the strongest standard in this industry. It was developed by an NGO (the Basel Action Network) and it is the only standard that is endorsed and supported by environmental organizations, including the Electronics TakeBack Coalition, and the Natural Resources Defense Council, NRDC.

R2 stands for “responsible recycling,” but unfortunately, it falls well short of “responsible”, when it comes to handling toxic materials. In fact, the standard is so weak in key areas that the only two participating environmental groups (the Basel Action Network and the Electronics TakeBack Coalition) both withdrew in protest from the multi-stakeholder process in the final stages. This is the standard supported by the recycling industry association.

What’s Wrong with R2?

R2 fails to adequately address the four biggest problems in the electronics recycling industry:

1. Export: the global dumping of e-waste
2. Prison recycling
3. Incineration of e-waste
4. Worker protections for recycling workers
But because R2 claims that it deals with most of these issues, it fools customers into thinking that recyclers who follow R2 will be responsible recyclers. While some claim that R2 is the Gold Standard for recyclers, it’s really more like the Lead Standard. It’s the standard supported by the recycling industry association, ISRI.

**e-Stewards Recycling Standard**

Because the R2 process resulted in very low standards, the Basel Action Network (BAN) spearheaded an effort to develop a high-bar standard for the recycling industry. The e-Steward standard is now the highest standard in the industry.

**What’s ISO 14001?**

Many recyclers have been certified to ISO 14001. This is a standard for how to design a company’s environmental health and safety program. An ISO certification alone is no indication that a company is a responsible recycler, because it has no specific guidance for electronics recyclers. This is why the e-Stewards standard incorporates ISO 14001 into the e-Stewards standard: the e-Stewards part sets the bar for WHAT responsible recyclers should be doing, and the ISO part speaks to HOW they should be doing it. Recyclers being audited to the e-Stewards standard get their ISO 14001 audit at the same time. This is why the cost of e-Stewards audits appears higher than R2 audits – it includes the ISO auditing costs. R2 does not, and R2 recyclers would pay for their ISO audit (if they are doing one) separately.
Appendix D: E-Steward Certified Recyclers in Wisconsin

Universal Recycling Technologies

Certified processing locations:
Indianapolis, Indiana
Oakdale, Minnesota
Dover, New Hampshire
Clackamas, Oregon
Fort Worth, Texas
Janesville, Wisconsin (2 facilities)

Headquarters:
2535 Beloit Avenue
Janesville, WI 53546
(877) 278-0799
sales@universalrecyclers.com
info@universalrecyclers.com
www.UniversalRecyclers.com

Cascade Asset Management, LLC.

Certified processing locations:
Madison, Wisconsin
Indianapolis, Indiana

Headquarters:
6701 Manufacturers Drive
Madison, WI 53704
Toll Free: 888.222.8399
info@cascade-assets.com
www.cascade-assets.com

DP Electronic Recycling, Inc.

Certified processing locations:
Elkhorn, Wisconsin

Headquarters:
540 E. Centralia Street
Elkhorn, WI 53121
(262) 723-2550
info@dprecycle.com
www.dprecycle.com
Electronic Recycling Options

Attention City of Beloit Residents

In accordance with Wisconsin Statue 287.17(1), effective September 1, 2010 the electronics listed below are banned from being disposed of in landfills and the City of Beloit will no longer collect these items with your trash collection.

- Computers
- Printers
- Scanners
- Fax machines
- Televisions
- Computer monitors
- Laptop computers
- Keyboards
- DVD players
- VCRs
- Digital video players/recorders
- Cell phones

Electronics can be recycled at:
URT Processing
2535 Beloit Avenue
Janesville, WI 53546
(608) 754-3400

For more information, call the City of Beloit Department of Public Works
(608) 364-2929 Se habla español
Residential Electronic Recycling

Department of Public Works Operation Facility
2351 Springbrook Ct.
364-2929
Saturday's from 9:00 am to 12:00 pm

Items accepted:
- CPU (Tower)
- Monitor
- Printer
- Laptop
- Scanners/Copier/Fax
- Photocopier
- Fax Machines
- Zip Drive
- Keyboard, Mouse & Speakers
- Televisions
- DVD Players
- VCR's
- Digital Cameras
- IPOD's

In accordance with Wisconsin State Statue 287.17(1), effective September 1, 2010, these electronics are banned from being disposed of in landfills.

Effective September 1, 2010 the City of Beloit will no longer collect the items listed above curbside with your trash collection.
Appendix G: Electronics E-Stewards Website Document

What’s Driving the E-Waste Crisis?

**Huge volumes:** The rapid obsolescence of gadgets combined with the astronomically high demand for new technology has created mountains of e-waste. In fact, e-waste is the fastest growing waste stream our society produces.

**Toxic design:** Electronic equipment contains known toxins, including mercury, lead, cadmium, arsenic, beryllium and brominated flame retardants. These substances can cause cancer and birth-defects. Thus, when this equipment becomes waste, it is toxic waste. When burned, even worse toxins can form such as dioxins and polycyclic aromatic hydrocarbons, some of the most toxic substances known to humankind. Until recently, manufacturers gave little attention to the idea of eliminating toxic materials in their products.

**Poor design and complexity:** E-waste is full of many different materials (such as multiple kinds of metals, plastics and chemicals) that are mixed, bolted, screwed, snapped, glued or soldered together. Toxic materials are attached to non-toxic materials, which makes separation of materials for reclamation difficult. Little attention has been paid to designing equipment for recycling or for protecting human health and the environment. Therefore, responsible recycling requires intensive labor and/or sophisticated and costly technologies that safely separate materials.

**No financial incentive to recycle:** There’s usually not enough value in most electronic waste to cover the costs of responsibly managing it in developed countries, unless laws require such management as a service industry. For this reason it is exported to countries where workers are paid low wages and the infrastructure and legal framework is too weak to protect the environment, workers and communities.

**Reuse abuse:** Sending equipment and parts for reuse – an important solution – can easily be abused by falsely labeling scrap as reusable or exporting “refurbishable” equipment. Often importing countries are left to clean up the mess of bad batteries, mercury lamps and CRTs. The resulting hazardous waste is dumped in countries lacking any infrastructure to properly manage it. This is usually a violation of the Basel Convention and laws in the importing countries.

**Policy of “free trade in toxic waste”:** Some countries persist in freely trading in hazardous wastes despite the global norms. The U.S. is the only developed country in the world that has failed to ratify the 1989 Basel Convention, an international treaty controlling trade in hazardous waste from richer to poorer countries. In 1995, that treaty adopted a full ban on exports from rich
to poorer countries. Although this ban is not yet in full legal force globally, all European Union nations have fully enforced it. On the other hand, the U.S., Canada, Japan and some other developed countries, actively oppose this prohibition of toxics going from developed to developing countries. In Canada, the Basel Convention is not properly implemented, with unique definitions of hazardous e-waste resulting in export practices out of step with other Basel Parties. In these countries, it is perfectly legal for businesses to maximize profit by exporting toxic electronics to developing countries, even when this export is a violation of the laws of importing countries. The export of toxic electronic waste to developing countries disproportionately burdens them with a toxic legacy and allows for externalization of real costs.

**Prison laborers employed to process e-waste:** Unlike other countries in the world, the U.S. sends much of its hazardous e-waste to U.S. prisons to process in less-regulated environments without the same worker protections and rights afforded in the private sector. Moreover, such operations amount to government subsidies, undermining the development of responsible private-sector recycling infrastructure and distorting the economics of recycling.

**Lack of regulation requiring proper management:** Many nations either lack adequate regulations for this relatively new waste stream, or lack effective enforcement of new e-waste regulations. In the U.S., federal regulations exempt large volumes of electronic waste from environmental laws. Occupational health and safety agencies are not actively overseeing the exposures occurring in the e-recycling industry. In many jurisdictions, it is still perfectly legal to dispose of toxic e-waste in non-hazardous waste landfills and incinerators, depositing lead, cadmium, mercury, arsenic, etc. into inappropriate disposal facilities, and failing to reclaim valuable materials.
Appendix F: Emails

Friday September 20, 2013 at 5:01 pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu
Hi Jacqueline this is Russell.
I am writing this email because the group is thinking about meeting at 12:00pm tomorrow at the library to talk about our perspective as well as our group project. I thought that 12:00am in the library tomorrow would be a good time to meet. I was wondering if that worked for you?

I hope your day is going well.

Sincerely

Russell Hall

Friday September 20, 2013 at 5:03pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
Hi James this is Russell.
I am writing this email because the group is thinking about meeting at 12:00pm tomorrow at the library to talk about our perspective as well as our group project. I thought that 12:00am in the library tomorrow would be a good time to meet. I was wondering if that worked for you?

I hope your day is going well.

Sincerely

Russell Hall

Friday September 20, 2013 at 6:48pm
From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu
Hey Russell,

Yeah noon tomorrow works for me. See you then.

Jimmy

Saturday, September 21, 2013 at 11:02pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu
I’ll be there at 12:30 because it’s my only time I can eat lunch

**Saturday September 21, 2013 at 12:00pm**

From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu

Sorry I am late, I will be there in 5.

**Saturday, September 21, 2013 at 11:43pm**

From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu

Are you guys still here?

**Saturday, September 21, 2013 at 1:30pm**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Activist Prospective Sign up

**What Jimmy signed up for:**

-Problem to solve. Support with data. For example, if your project addresses waste, you need to collect data on waste (food, water, energy, etc.) Consider the following aspects:

  - Economics: how much is it costing us not to do anything about it? The cost/savings of implementing your project? In the short run? In the long run?

**What I signed up for:**

-Ethics: why is it wrong not to address this problem? Why is it right to do it?

-Science: gather some scientific data to explain the cause of this problem and suggest potential solutions.

**What Jackie signed up for:**

-Politics: provide the names of people or departments whose collaboration you will need to make the project possible. Explain how each person/department can contribute. Who should/can pay for it?

-Challenges you expect to find and how you will overcome them.
What we will do together:

- Strategy to follow: spell out the different steps you will take and provide a deadline when you will take each step.

- Measure of success: by the end of the semester you will need to show that you have implemented your project successfully. How will you measure success? How will you prove that your project made a difference?

- Division of labor: what will each member of the group do? Among other things, explain the tasks and goals for each component of the group. Make sure that you divide the project up clearly and assign each person a clear set of tasks.

Saturday, September 21, 2013 at 1:31pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
Activist Prospective Sign up

What Jimmy signed up for:

- Problem to solve. Support with data. For example, if your project addresses waste, you need to collect data on waste (food, water, energy, etc.) Consider the following aspects:

- Economics: how much is it costing us not to do anything about it? The cost/savings of implementing your project? In the short run? In the long run?

What I signed up for:

- Ethics: why is it wrong not to address this problem? Why is it right to do it?

- Science: gather some scientific data to explain the cause of this problem and suggest potential solutions.

What Jackie signed up for:
-Politics: provide the names of people or departments whose collaboration you will need to make the project possible. Explain how each person/department can contribute. Who should/can pay for it?

-Challenges you expect to find and how you will overcome them.

What we will do together:

-Strategy to follow: spell out the different steps you will take and provide a deadline when you will take each step.

-Measure of success: by the end of the semester you will need to show that you have implemented your project successfully. How will you measure success? How will you prove that your project made a difference?

-Division of labor: what will each member of the group do? Among other things, explain the tasks and goals for each component of the group. Make sure that you divide the project up clearly and assign each person a clear set of tasks.

Saturday September 21, 2013 at 1:33pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashyj@beloit.edu
Brief reminder that we have a meeting in the library at 1:00pm tomorrow.
Hope to see you then.
Russell

Saturday, September 21, 2013 at 1:33pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
Brief reminder that we have a meeting in the library at 1:00pm tomorrow.
Hope to see you then.
Russell

Sunday, September 22, 2013 at 1:45pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashyj@beloit.edu

Sunday, September 22, 2013 at 1:45pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
Sunday, September 22, 2013 at 1:49pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Hey can you print this out and tell us if the highlighted part is you or the page

Sunday, September 22, 2013 at 1:50 pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

One for each of us

Sunday, September 22, 2013 at 2:19pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramage@beloit.edu
I’ve shared an item with you.
Activism Proposal

Wednesday, October 2, 2013, at 9:59pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Hi Jackie, this is Russell.
I was wondering if you would like to meet up some time tomorrow to talk about our project.
Hope all is well.
Russell

Wednesday, October 2, 2013 at 9:59pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
Hi James, this is Russell.
I was wondering if you would like to meet up some time tomorrow to talk about our project.
Hope all is well.
Russell

Thursday, October 3, 2013, at 1:50pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

When do you want to meet?
Thursday, October 3, 2013 at 4:17pm
From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu
Russell,
That would probably be a good idea, I am free after 6:30pm

Thursday, October 3, 2013 at 4:21pm
From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu
How about 7:00pm in the library?

Thursday, October 3, 2013 at 4:22pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu
How about 7:00pm in the library?

Thursday, October 3, 2013 at 5:41pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu
7 is a little bad for me. Friday I'm more open. Can we meet then or since we are doing the proposal send my part? Or something till tomorrow

Thursday, October 3, 2013 at 5:46pm
From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu
Sounds good, see you then.

Thursday, October 3, 2013 at 6:40pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu
I can do anything tomorrow. I will meet with James tonight though.
Thursday, October 3, 2013 at 6:41pm

From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu

Just to let you know Jackie won’t be able to meet tonight. I will see you in the library however just to check in on how things are going.

Thursday, October 3, 2013 at 8:36pm

From James Ramage ramage@beloit.edu to Russell Hall hallr@beloit.edu

Alright, I finished the two topics I had signed up for on the proposal. Let me know what you think.

Friday, October 4, 2013 at 3:44pm

From James Ramage ramage@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

Hey guys, just letting you know I will be in the library at 4 to start working on the proposal. If you want to come by that would be cool otherwise see you at 5.

Friday, October 4, 2013 at 5:04pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

E-waste 3.docx View Download

Friday, October 4, 2013 at 6:11pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu


Friday, October 25, 2013 at 1:17am

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Should we write a proposal that we could give to them?

Friday, October 25, 2013 at 11:50am

From Pablo Toral toralp@beloit.edu to Russell Hall hallr@beloit.edu

Hi, Russ,

It worked this time. I received an email from Moodle to let me know that you uploaded your groups’ prospectus. I also received your email with the extra credit assignment. I will try to get them later today.

Thanks,

Pablo

Friday, October 25, 2013 at 7:49 pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Hey Russell! I hope the talk was great.

I was digging a little bit and in their environmental policy they mentioned that damaged cartridges go to a state-of-the-art facility to be used as energy and steam which later is sold. I want to know the facility and this is the Email I want to send I did not send it yet but could you just look it over

This would be good information to add when we make the final report, because I think Pablo is looking for this type of research depth

Here is a link to the environmental policy

Hello
My name is Jacqueline Ashby and I am a student at Beloit College who is looking into using this company for our E-recycling. As mentioned in your Environmental Policy, I was wondering if you could provide the name of the facility where all damaged cartridges are sent to be used to generate electricity and steam.

Tuesday, October 29, 2013 at 4:48pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Greetings,

My name is Jacqueline Ashby, I am a current student attending Beloit College. Fellow students and I are drafting a proposal that would ask Beloit College to use this organization for our electronic waste. However, I do have a few questions about the Environmental Policy. It is stated that ink cartridges are shipped to certified re-manufacturers, is it possible to acquire a few names of these re-manufacturers? In addition to the state-of-the-art facility that damaged ink cartridges are sent to. Also is it possible to acquire any of the names of the certified smelters facilities used for cell phones and other electronic devices that are beyond repair? This will greatly help with getting this proposal passed.

Thank you,
Jacqueline Ashby
Beloit College ‘15
International Relations Major
History Minor

Tuesday, October 29, 2013 at 5:02pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

I emailed Funding Factory so I can acquire more background research on their facilities. I have also started writing an introduction and background for the final report. I sent you the email I sent to the company and will forward it to you once I hear a reply.

Tuesday, October 29, 2013 at 5:14pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Before you email anyone, there is something I have to tell you. That is that through the extensive research I have done, Funding Factory does not recycle in a green way. In fact, it does not recycle at all. It sells its material to other companies who then ship that material off to China or other Third World Countries. I was going to tell you this at the meeting on Sunday but you were not there.

I hope to talk to you soon.

Tuesday, October 29, 2013 at 5:15pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Okay so are we trashing the project?

Tuesday, October 29, 2013 at 5:24pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Are we going to start a new project? Because we don’t have that time.

Tuesday, October 29, 2013 at 7:25pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

So are we doing a new project?

Wednesday, October 30, 2013 at 9:11am

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Dear Jackie

I’m not sure what we are going to do. Jimmy and I were thinking about trying to find an electronic company that recycles in a responsible manner. Would you like to meet sometime on Thursday to talk about our situation?
I hope something goes well.

Sincerely

Russell Hall

**Wednesday, October 30, 2013 at 9:20am**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

http://e-stewards.org/find-a-recycler/certified-recyclers/

Dear Jackie

This website is a website that lists all of the responsible E-Waste recyclers in the United States. E-Stewards is the Amnesty International of responsible electronic recycling associations. On this website I found three companies that were located in Wisconsin. They are Cascade Asset Management, LLC, DP Electronic Recycling, Inc. and Universal Recycling Technologies. Of all the three Universal Recycling Technologies is headquartered in Janesville, Wisconsin.

Hope to meet with you soon.

Sincerely

Russell Hall

**Wednesday, October 30, 2013 at 9:21am**

From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu

http://e-stewards.org/find-a-recycler/certified-recyclers/

Dear Jimmy

This website is a website that lists all of the responsible E-Waste recyclers in the United States. E-Stewards is the Amnesty International of responsible electronic recycling associations. On this website I found three companies that were located in Wisconsin. They are Cascade Asset Management, LLC, DP Electronic Recycling, Inc. and Universal Recycling Technologies. Of all the three Universal Recycling Technologies is headquartered in Janesville, Wisconsin.

Hope to meet with you soon.

Sincerely
Wednesday, October 30, 2013 at 12:06pm

From Jacqueline Ashby <ashbyj@beloit.edu> to Russell Hall <hallr@beloit.edu>

I can definitely meet today if you just tell me a time.

Wednesday, October 30, 2013 at 12:33pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

I would like to meet between 1:00pm and 2:00pm. I am sorry but I am going to be busy later in the afternoon and into the evening. Tell me if that works for you. Personally, I would prefer one.

Russell

Wednesday, October 30, 2013 at 2:05pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

I can’t do any of those times. I have advising things I have to do. I can do later after 4.

Wednesday, October 30, 2013 at 2:31pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

I think we will have to meet sometime tomorrow because I am going to be off campus after 4:00pm. However, I would still like to talk to you.

I still think we can make our project work out. I have been doing some research on companies that recycle in a responsible way and I so far have been finding some good results. The only problem with these other recycling companies is that I am not sure if they would be willing to pay the college money for our electronic waste. In addition, I think we might want to talk to Pablo to get his advice on what we should do. I am incredibly disappointed that our project fell through but I do think that we will be able to find a way out of it. I sent you a list of companies
that recycle in a responsible manner. If you have any questions you can email me back any time you like.

Sincerely
Russell Hall

**Wednesday, October 30, 2013 at 4:29pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Ok we will meet tomorrow after 5 because I have work. Until then I will stop by the library then.

**Thursday, October 31, 2013 at 12:44pm**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Does 5:30 sound good to you?
Russell

**Thursday, October 31, 2013 at 6:13pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Are you in the library now?

**Thursday, October 31, 2013 at 6:18pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Do you have a cellphone?

**Thursday, October 31, 2013 at 6:28pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu
If you have a cellphone it’s better to text or call because I don’t have a computer and my phone is not registered on the Beloit Network and I get no signal so checking emails is really difficult sometimes unless it’s at night when I’m on the library.

**Thursday, October 31, 2013 at 6:39pm**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

I will be there in just a few minutes.

**Thursday, October 31, 2013 at 6:56pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

OK I’m coming now give me 10 minutes.

**Thursday, October 31, 2013 at 7:13pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

WHERE ARE YOU?

**Thursday, October 31, 2013 at 8:09pm**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

I think we missed one another. I was there at the library earlier. Let’s exchange phone numbers so we don't keep missing one another. My cellphone number is 269-492-8124. I am so sorry for the inconvenience. Let’s just meet in class tomorrow and I will tell you everything. If you want to meet tonight however, just call me on my cellphone.

Once again I am terribly sorry.

Russell

**Monday, November 4, 2013 at 2:04pm**
Hey guys when did we agree to meet tonight?

**Monday, November 4, at 6:08pm**

From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu

8:00pm in the library.

**Monday, November 4, 2013 at 6:09pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramage@beloit.edu

I have a study room if you guys want to meet me here.

**Tuesday, November 5, 2013 at 6:39pm**

From Russell Hall hallr@beloit.edu to James Ramage ramage@beloit.edu


http://www.aljazeera.com/indepth/features/2013/10/inside-ghana-electronic-wasteland-
2013103012852580288.html.

http://e-stewards.org/find-a-recycler/certified-recyclers/

**Tuesday, November 12, 2013 at 7:44pm**
Hello

My name is Jackie Ashby, my fellow classmates and I would like to know if we could schedule a meeting with you? We would like to ask a few questions about Beloit College's E-waste system. If you can send us any of your available times, it would be highly appreciated.

Thank you

Jacqueline Ashby
Ashbyj@beloit.edu

Is there anything that I should add before I send this to ISR? Email back any additions or changes is you have any.

Sunday, November 17, 2013 at 9:49 PM

From: Jacqueline Ashby <ashbyj@beloit.edu> to ISR Networking <isrsn@beloit.edu>

Hello

My name is Jackie Ashby, my fellow classmates and I would like to know if we could schedule a meeting with you? We would like to ask a few questions about Beloit College's E-waste system. If you can send us any of your available times, it would be highly appreciated.

Thank you
Jacqueline Ashby
Ashbyj@beloit.edu

Tuesday, November 19, 2013 at 2:58pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall<hallr@beloit.edu>

This is the email I sent still no reply

-------- Forwarded message --------
From: Jacqueline Ashby <ashbyj@beloit.edu>
Date: Sun, Nov 17, 2013 at 9:49 PM
Subject:
To: ISR Networking <isrsn@beloit.edu>
Hello

My name is Jackie Ashby, my fellow classmates and I would like to know if we could schedule a meeting with you? We would like to ask a few questions about Beloit College's E-waste system. If you can send us any of your available times, it would be highly appreciated.

Thank you

Wednesday, November 20, 2013 at 8:22 AM

From Jacqueline Ashby <ashbyj@beloit.edu> to Russell Hall hallr@beloit.edu

She replied those are her house when can we go in

Begin forwarded message:

From: Sherry Monahan <monahans@beloit.edu>
Date: November 20, 2013, 8:22:48 AM CST
To: Jacqueline Ashby <ashbyj@beloit.edu>
Subject: Meeting times

I am here from 8 - 4:30 (except lunch or meetings).

What time works for you?

Thanks!

Sherry

Thursday, November 21, 2013 at 8:45pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

Great Job on setting the meeting up.
I can meet anytime between 1:00pm and 4:00pm.
Once again thank you so much for setting up the meeting.

Russell Hall
Wednesday, November 27, 2013 at 2:12pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramage@beloit.edu

Meeting with ISR IS 1pm Monday after break.

Sunday, December 1, 2013 at 7:28pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

Our meeting is at 1PM tomorrow, I will meet you in front of Mayer building.

Sunday, December 2, 2013 at 11:01pm

From Russell Hall hallr@beloit.edu to sales@universalrecyclers.com

I am a student at Beloit College and will be speaking tomorrow with our IT department, which is interested in starting an electronic recycling program at Beloit. I recently learned that your organization works with the University of Wisconsin and with the city of Beloit on electronic recycling. I am writing to see if you could provide me with information on the types of services you provide to Beloit, the University of Wisconsin or other colleges.

Thank you for your help,

Russell Hall

Monday, December 2, 2013 at 12:03pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramage@beloit.edu

I can’t make it to the meeting so it will be just you two. I have a medical issue I need to take care of.

Monday, December 2, 2013 at 1:15pm
Hi Jackie,

I am so sorry to learn that you are out ill.

I met with Russell and went over our program here at the college. I have a packet for you that Russell will make sure you get. I have also, put together some notes for your review (attached).

If you should ever have any questions, please do not hesitate to stop in (Mayer 219A); email = monahans@beloit.edu or call 2149.

Get better soon!

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**Tuesday, December 3, 2013 at 9:06am**

From Corine Boelk cboelk@universalrecyclers.com to Russell Hall hallr@beloit.edu

Hi Russell,

Thank you for your interest in Electronics Recycling program! We do work with many universities, both public and private!

I would welcome the opportunity to stop by and discuss our programs with you! Please let me know if you are available this week or early next for a call and/or visit. I look forward to hearing from you!

Regards,

Corine

**Corine Boelk**

_Regional Account Manager_

_Direct: 608-314-8156_

_Cell: 608-247-1451_
Wednesday, December 4, 2013 at 6:58pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu

Sorry I am late I needed to do a lot of things to deal with my illness before I could meet with you (set up appointments) and it took time because I am far away from home meaning takes a while for my credentials and information to transfer from my hometown to here.

Wednesday, December 4, 2013 at 7:29pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

We met at 5:00pm. Do you want to meet again tonight?

Sunday, December 8, 2013 at 2:51pm

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

Hey guys when are we planning to meet to work on this presentation?

Sunday, December 8, 2013 at 4:31pm

From Russell Hall hallr@beloit.edu to James Ramage ramagej@beloit.edu

How about 6:00 or 7:00pm in the library.

Sunday, December 8, 2013 at 4:34pm

From Russell Hall hallr@beloit.edu to James Ramage ramagej@beloit.edu

I think we should maybe ask Pablo for an extension at least on our Final project. Not our presentation. I will tell you more about it when we meet tonight.
Sunday, December 8, 2013 at 4:38pm
From James Ramage ramagej@beloit.edu to Russell Hall hallr@beloit.edu
I thought the paper was due on the day of the presentation? And 7 works better for me if that works for you.

Sunday, December 8, 2013 at 5:47pm
From Russell Hall hallr@beloit.edu to James Ramage ramagej@beloit.edu
I will explain what I mean latter. See you at seven.

Sunday, December 8, 2013 at 7:26pm
From Russell Hall hallr@beloit.edu to Pablo Toral toralp@beloit.edu
Dear Professor Toral

Given the situation with Jacqueline, I am writing this email to request that we are given an extension until Monday to complete our final report for the semester. While we can still do our PowerPoint presentation on Wednesday, we would deeply appreciate being given an extension until next week. I don’t have any exams then and I think that would give us plenty of time to finish the project.

See you in class tomorrow.

Sincerely
Russell Hall

Sunday, December 8, 2013 at 8:17pm
From Pablo Toral toralp@beloit.edu to Russell Hall hallr@beloit.edu
Hi, Russ,

Thanks for your email. I totally understand. Please submit your final report on Monday.

Monday, December 9, 2013 at 2:30pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu

So how are we going to do this all before Wednesday?

**Monday, December 9, 2013 at 5:25pm**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and James Ramage ramagej@beloit.edu

Let’s meet tonight sometime? What time works best for the both of you?

**Monday, December 9, 2013 at 8:51pm**

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

I am not free tonight but I am free tomorrow at 5 or before 10 if that works for anyone. I have an assignment due at 11:30.

**Tuesday, December 10, 2013 at 11:00am**

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and James Ramage ramagej@beloit.edu

Let’s meet tonight at around 5:00pm in the library if that works for you.

**Tuesday, December 10, 2013 at 1:42pm**

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

Yeah sounds good, sorry I missed that E-mail yesterday about the meeting.

**Tuesday, December 10, 2013 at 3:37pm**

From Russell Hall hallr@beloit.edu to James Ramage ramagej@beloit.edu

See you then, I am still waiting for Jackie to reply.
Tuesday, December 10, 2013 at 3:44pm

From James Ramage ramagej@beloit.edu to Russell Hall hallr@beloit.edu

She responded to me but I don't think she hit reply all. She will be there.

Tuesday, December 10, 2013 at 5:11pm

From James Ramage ramagej@beloit.edu to Russell Hall hallr@beloit.edu

Sorry I'll be there ASAP just got out of a meeting with a professor.

Wednesday, December 11, 2013 at 5:37am

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

Hey guys this is probably just a case of being nervous before a presentation but what do think of moving slides 2 and 3 ("4 pillars of policy" and "principles" slides) behind slide 6? I think that would make more sense because I'm going to be referencing things in #2 and #3 that we haven't explained yet. I've already made the change on my computer so let me know what you think whenever you get the chance.

Wednesday, December 11, 2013 at 5:39am

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

When I say "I've made the change on my computer" obviously that means if you disagree we can just stick to the one we have.

See you guys soon!

Friday, December 13, 2013, at 3:16pm

From Pablo Toral toralp@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu
Hi!

Here are some thoughts on your presentation.

- Introductions: Nice job introducing yourselves at the beginning of your presentation.

- PP: You did not crowd your slides with data. Great job! By including just a little text you made sure the slides were not competing with you for the audience’s attention. Excellent!

Make sure you spell out the idea behind each of the principles that you used for analysis. Provide the name of the author who came up with those principles.

Add some photographs to each of the sections, not just at the end. Integrate them into your presentation so that they provide visual aid to help us understand your analysis.

- Body language: you stood on both sides of the screen. You spoke slowly and clearly. Great job! You were a bit nervous. Relax. Nobody knows more about this project than yourselves. You should also look around the room to make eye contact with all of the people in the room. Making eye contact engages the audience by making people think you are speaking directly to each one of us.

- Problem: Great job highlighting some of the challenges behind e-waste. Make sure you bring this up to the beginning of your presentation. Do this before you go on to explain how your strategy to overcome it dealt with the holy trinity + 1. You also need to show some supporting data. You did a great job illustrating the challenges of current use of prison labor to deal with e-waste. However, when you explained that e-waste is a serious problem in developing countries, you did not give us evidence. When you point out that Beloit College does not have the best e-waste policy, you also need to analyze its current approach and explain why it is failing.

- Clear goals: well grounded on your previous analysis of the problem.

- Challenges: clearly spelled out. Add a line to each of the challenges you spelled out in your slide to make the challenge a bit clearer.

- Analysis: great job highlighting the principles from our readings. As I explained above, make sure you provide the name of the authors to give them credit.

Good job clarifying two of the certification schemes. Make sure that your slide provides two columns in which you compare the two schemes side by side. By doing this you’ll make the differences and similarities clearer. You explained this, but you went through this very quickly and the differences were hard to follow.

Great detective work checking what is behind each scheme.

- References: when you provide quotes, you need to identify the source.
- Accomplishments: great job listing your accomplishments. As I suggested for other sections, you should spell out what each accomplishment meant. Add some language to help us understand.

Here you need to highlight how your project has affected the college’s e-waste policy. What difference have you made? Lena’s question went along these lines.

You should also explain what guarantees the sustainability of your project into the future. How are you persuaded that the college will take it from here. Who will? What office/department?

- Time: you went really quickly through the “accomplishments” section. This is very important. You need to time yourselves better so that you can go through every section slowly and clearly. When you speed up you make it very hard for your audience to get your main points.

Grade: 88

I’m looking forward to reading your final report.

Saturday, December 14, 2013 at 1:42pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

What time do you want to meet today?

Saturday, December 14, 2013 at 1:57pm
From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu

In addition if you could send me what parts you want me to write for the final report that would be great get back to me soon!! I know jimmy made a Google doc and I hope you were connected to it.

Saturday, December 14, 2013 at 3:15pm
From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and James Ramage ramagej@beloit.edu

How about let’s meet at 5:00pm if that is okay with you guys.
Saturday, December 14, 2013 at 3:51pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu

Is it ok if I come at 6:00pm?

Saturday, December 14, 2013 at 4:06pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and James Ramage ramagej@beloit.edu

Yes that is just fine, let's meet then.

Saturday, December 14, 2013 at 5:45pm

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu

Hey sorry I just got out of a 3 hour calculus final so I'm exhausted.. is it OK if I work on it online through the Google docs for now?

Saturday, December 14, 2013 at 7:18pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu


Saturday, December 14, 2013 at 7:25pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu

NPR. "After Dump, What Happens To Electronic Waste?,”

Piven, Ben. "Q&A: E-waste goes to post-recycling afterlife: Modern information-age society produces a massive amount of computer, mobile phone and battery waste every
year," Al Jazeera.


Electronics TakeBack Coalition. "Responsible Recycling vs Global Dumping."


Sunday, December 15, 2013 at 6:08pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu

Hey guys so I finished writing the parts of our final and we need to start putting these things together. I know Russell is working on his from a word document, so a reminder to you Russell that the Google doc is still in operation and where me and Jimmy worked.

But moving on I have finished what I was assigned to write (goals, accomplishments, advice for future students and I did the problem) and I do not know who is doing the conclusion, I know Russell is doing appendix and challenges.

Jimmy for you is your strategies part finished?

I really want this in on time! I was just sending you guys my update. I can meet tonight if anyone you guys want to so we can pull the whole assignment together

Sunday, December 15, 2013 at 7:07pm

From James Ramage ramagej@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and Russell Hall hallr@beloit.edu
I will be finished with the strategies soon, I'm working on it on a word document as well. Sorry I still have another exam tomorrow too so I'm trying to balance everything. I can have it up before 10pm? I'd also be willing to write the conclusion.

Sunday, December 15, 2013 at 7:30pm

From Jacqueline Ashby ashbyj@beloit.edu to Russell Hall hallr@beloit.edu and James Ramage ramagej@beloit.edu

I am fine with this. Good luck on your other final! Just reminding everyone that my portion is in the Google doc.

Sunday, December 15, 2013 at 8:14pm

From Russell Hall hallr@beloit.edu to Jacqueline Ashby ashbyj@beloit.edu and James Ramage ramagej@beloit.edu

I will look though everyone's work, combine it into one document and turn it in online sometime tomorrow. I don't have a final tomorrow so I will be able to go through everyone’s work. If you want to meet with me sometime tonight, just email me back. Nice working with the two of you. Good luck next semester.
Appendix G: Sources

Al Jazeera. "Heavy Metal: Fengjiang is home to a vast digital dumping ground, but e-waste could be endangering those who live and work there."

Al Jazeera America. "UN says 'e-waste' problem growing fast: A new report predicts that the amount of electrical waste will balloon to 72 million tons in the next 4 years."

BBC. "'Mountains' of e-waste threaten developing world: Urgent action is needed to tackle the "mountains" of e-waste building up in developing nations, says a UN report."


Electronics TakeBack Coalition. "Prison recycling workers exposed to heavy metals."


Electronics TakeBack Coalition. "Responsible Recycling vs Global Dumping."


Electronics TakeBack Coalition. "Quickly Obsolete: Examples of how electronics are “designed for the dump”."
http://www.electronicstakeback.com/designed-for-the-dump/quickly-obsolete/.


Electronics TakeBack Coalition. "Legislative Toolkit Toolkit For State Legislative Advocates: Information about the existing state e-waste laws and programs."

E-Stewards. "The International e-Stewards Certification Program."


http://m.digitaltrends.com/computing/how-to-recycle-your-old-computer/.


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Environmental Activism Project Report

Bringing Kallari to Beloit College

Katia Colin, Erika Mendez, Elizabeth Osorio, & Sarah Pipal

Table of Contents
Introduction:

Our group worked to make the Kallari Cooperative products available to Beloit College student and to educate the students and community on the human rights abuses of the mainstream chocolate industry. Founder Judy Logback '95, a Beloit College Alumni, introduced our group to Kallari, hoping to spread awareness across the college campus and the community. She began this initiative at the request of the Kichwa tribe in order to
expand their market, maximize their profits, and empower their people. Beloit College’s support will help expand the range of the Kallari products, contributing to the economic success of the Kichwa tribe and the sustainability of the Amazon rainforest. Our campus will benefit from the chocolate as Kallari provides fair trade, organic chocolate products with a richer taste than mainstream alternatives.

Goals:

- To educate the student body on the Kallari Cooperative and the evils of the mainstream chocolate industry
- To make Kallari chocolate available to Beloit College students through Bon Appetit

Students at beloit College have always been very enthusiastic about getting involved in the world outside of academics and making a change in any way possible. Through this project that's exactly what we aimed to do. The original focus of this project was to garner support for kallari chocolate, a fair trade co-op based in Ecuador co-founded by the Kichwa tribe. This small company that started producing chocolate in 2005 has recently started expanding and is now available for international sale. It's currently available at market chains that are similar to whole foods and other stores that sell natural or organic products. Now that Kallari has established itself in the American market, in order to ensure that it remains successful it is important that people become more informed on the story behind the development of this company and how the purchase of their products affects those involved in the chocolate industry. This is where our group comes in to play we teamed up with former Beloit College alum, Judy logback, in order to get students on board with the message that Kallari wanted to relay through their products. After extensive research our goals and the way wanted to reach these goals became clearer.

Ultimately it was decided that in order to garner support from students and get them more involved we would need to educate them. We wanted people to understand that there's a lot more to the chocolate that they already bought, they needed to understand that there was more to chocolate than just a wrapper and a product. We wanted them to know about what goes on in the chocolate industry, how people in the chocolate industry were affected, and how Kallari was different in a good way. We knew they needed to hear Kallari’s story for them to see how their chocolate differed from commercial chocolate in order to get on board.

Once students were well acquainted with Kallari our second goal was to move on to bringing Kallari to not only the college but the community as well. Bon Appétit is our schools food provider, so we decided to get them on board with purchasing Kallari chocolate as a better alternative to the chocolate already being used in our food. We aimed to have the chocolate available for sale at the java joint café and wanted to see the chocolate used in our dessert pastries as well. Overall we wanted Beloit college to set an
example, with it’s support for Kallari it also shows that we don’t approve of illegal child labor, worker exploitation, and believe in providing our students with healthier food options.

Four Elements of Approach:

Economics

In order to give the campus an opportunity to taste the chocolate, we needed the funds to buy chocolate bars first, so we wrote a funding proposal for the class to review. Originally, the proposal asked for $50 because we were only going to buy the supplies needed for the raffle, which included two baskets, 8 chocolate bars, and the raffle tickets. However, we revised our proposal to $100 because the fund had enough money, and because we also raffled three Kallari crafts worth $28, and because we realized that Sarah could get reimbursed for buying the movie worth $10. We also had to describe the logistics of the Kallari Cooperative to Ken Hnilo, the general manager of Bon Appetit. When we presented our proposal for bringing the initiative to campus, we discussed the prices of the normal, artisanal, and couverture chocolate products. We compared the Kallari Cooperative to mainstream chocolate industries, covering production processes, working conditions, health benefits, product quality, and costs. In order to prepare for this presentation, we made sure to learn as much as we could about the economics of the cooperative.

Politics

We worked to create alliances that would help us meet the goals of our project and garner campus support. In order to effectively work with organizations, we first had to find out who to contact and how to contact them, so we consulted the Beloit Link website. We decided which clubs to contact by comparing our goals to their missions. We sent emails to club members in Peace and Justice, Slow Food, the Outdoor Environmental Club, Voces Latinas, the Black Student Union, and Spanish Club, detailing our project and asking for their support. Slow Food and OEC agreed to encourage members to attend Judy’s presentation on the Kallari Cooperative, Peace and Justice agreed to co-host the first documentary showing of “The Dark Side of Chocolate” as part of their Justice Week, and ONE, OEC, Wealth Gap Club, and Slow Food signed up to co-host the second showing. In order to ensure the clubs’ participation, we sent them updates on how the events would proceed, and we sent them various reminders as well. We also asked if they wanted to add to the event in any way in order to maintain a working rapport. ONE and Wealth Gap Club helped significantly, with promoting the event and encouraging their
members to attend respectively. As a result of our cooperation with clubs, we were able to increase attendance to Judy’s presentation and our documentary showings.

Ethics

We hosted Judy’s presentation and showed the documentary “The Dark Side of Chocolate” in an effort to educate the campus about the immorality of the mainstream chocolate industry. During her talk, Judy discussed how the Kallari Cooperative works to empower the Kichwa people against oil companies threatening their home in the Amazon. She also covered how the major chocolate corporations use slave labor and inadequate working conditions to reduce the price of their product. We planned to show the documentary in order to go more in depth into the abuses of this industry as it focuses exclusively on this issue. It describes how child slaves are stolen from their homes, how plantation owners force them to work, and how the chocolate industries justify buying from their farms. The Ivory Coast makes up 40% of the cacao bean production, but slavery is fueling the industry as children are forced to work for no pay. The US Department of State estimates that nearly 109,000 children are experiencing “the worst forms of child labor.” Giants like Hershey’s, Mars, Mondelez (formerly Kraft), and Nestle also support the human rights abuses of mainstream chocolate production. Although they have released public statements detailing their commitment to eliminating inhumane, child labor, they continue to buy cacao from abusive plantations. By educating the campus about this issue, we hoped that we would garner support to discourage Bon Appetit from supporting these corporations. In addition, we also hoped that the educational campaign would serve to influence their decisions when buying chocolate in the future.

Science

Judy’s presentation also helped educate the campus about how the Kallari chocolate products are superior to mainstream alternatives. She discussed how the cooperative cuts out the middlemen, improving the quality of the chocolate. Most cacao farmers do not produce their own chocolate, which means that they do not receive a fair exchange for their work, and that the cacao beans are not used for a long time. On average, cacao beans are used two to five years after their harvest since the transportation and transactions between intermediaries requires longer storage. Middlemen also tend to store the beans in warehouses for months and even years, in order to prepare for shortages in the future. The cacao beans then experience mildew, mold, fungus, and rodents that intermediaries try to control with chemicals. Since the Kallari Cooperative harvests the cacao beans and produces their chocolate, their products do not require the same level of treatment as mainstream alternatives. Their cacao does not need to be over-processed because it has not developed the acidic flavors that long storage and careless processing
initiate. Since the families direct every step of the production of their chocolate goods, they do not require diluting and flavor-enhancing ingredients. By presenting this knowledge, we hoped that Judy’s talk would encourage students to think about what is in their food, and more specifically their chocolate, because mainstream products often contain a lot of unhealthy chemicals.

**Accomplishments:**

**Judy’s Presentation** - The presentation given by Judy and a Kichwa delegate was a great addition to our project. Although Judy’s visit was quite unexpected, we were able to advertise and promote a presentation and chocolate tasting that were vital to our educating the students. There were about 15 students in attendance, and many expressed great interest in Kallari by talking to Judy and the Kichwa representatives after the presentation. This gave an opportunity for students to learn about Kallari straight from the experts and to experience a casual chocolate tasting without cost to them. Through this presentation we were able to counteract future discounting, where people have difficulty seeing a problem as severe in the future if it is not severe in the present, by tactics of capacity building where the public is trained in positive actions for the environment like buying quality chocolate that is better for their health and supports ethical labor.

**Documentary Screenings** - Our two screenings of “The Dark Side of Chocolate”, a film regarding the child-slave labor used on cocoa plantations, fulfilled our goal to educate the campus. Our first showing in October had about 12 students in attendance and the second one in late November had 21 students and community members. These numbers are superb for a small-school setting, and it gave us proof that people are willing to learn about and support the cause of buying chocolate from ethical sources. A survey was sent out following the screenings, and the results were very positive (see Appendix for survey and results). The majority of the responders said they were surprised by the documentary’s information and were willing to buy an ethically-made chocolate bar even if it were more expensive. The screenings made an effort to provide transparency and to shame the chocolate making industry, which helped counteract the lack of awareness of the issues.

**Raffle** - The raffle we held throughout the week of our second documentary screening greatly aided our goals. By having the raffle baskets on display outside of Commons, along with a poster for the second documentary showing, we were able to draw the

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15 2009, O'Neili, Kate. *The Environment and International Relations.*
16 2009, O'Neili, Kate. *The Environment and International Relations.*
attention of many students and staff. We sold 8 raffle tickets in total, which was not as many as we had hoped for, but many students were informed that if they came to the documentary, they would receive a free ticket. This gave us a larger attendance (21 people) and raised awareness of Kallari on campus.

Library Display - Our group was successful in our initiatives in bringing Kallari and the evils of the chocolate industry to the library. We were able to set up a display in the entranceway of the Morse Library on campus with photos and information on the Kallari chocolate process, a handicraft made by the Kichwa tribe, and a poster for our second documentary showing. The library also agreed to carry “The Dark Side of Chocolate” documentary on DVD as well as the book Bitter Chocolate: The Dark Side of the World’s Most Seductive Sweet, which was a book recommended by Judy. Katia wrote an article for the Round Table All of these accomplishments added to our initial goal of educating the campus, and now these resources are more accessible for the campus.

Mail Center- Our group was able to aid a community member who has been selling Kallari chocolate and crafts once a semester on campus. By helping set up the tables, which were in the basement of Pearson’s, and assisting in selling the items allowed us to interact with students and tell them about Kallari more efficiently and gave them an opportunity to purchase the items. The prime location of Pearson’s meant there was a large flow of traffic throughout the day, and many people were thus exposed to Kallari. The sales of chocolate and crafts totaled $1,250 over two weeks- a number that shows great interest of students and staff.

Bon Appetit - Perhaps the largest goal we had for this project was getting Bon Appetit’s approval to sell or use Kallari chocolate in its recipes. After meeting with the general manager Ken in late November, he agreed to a trial semester in the Spring of 2014 to carry the Kallari “Leaf” bars in Java Joint and D.K.’s to sell to the students and staff. With the help of the information Judy provided us with on the logistics of buying from Kallari, we were able to craft a successful presentation and sales pitch, especially giving attention to the already-established goals of Bon Appetit and how Kallari would exemplify those.

Promotion - A large accomplishment of our group in our endeavors is the promise to continue promoting Kallari on campus and in the community. Our goal of Bon Appetit’s approval to sell the chocolate was achieved, and now we have our sights set on bringing Kallari to such locations as Bushel and Pecks in downtown Beloit, as well as the Basics Natural Food Cooperative in Janesville. We, as a group, have committed to work with Kallari for the remainder of our time at Beloit. Judy has mentioned another visit in the spring where further promotion on campus can be made, and we would also like to make Beloit students aware of internship opportunities with Kallari.
Challenges and Solutions:

**Documentary** - Our group agreed that the best way to demonstrate the positive aspects of Kallari chocolate in a convincing manner was to foreground the negative conditions under which cocoa beans are harvested by major corporations. Most students were not aware of those negative aspects until we brought it to their attention in a method of foregrounding. The documentary “The Dark Side of Chocolate” was an ideal way to contrast Kallari with name-brand chocolatiers, but none of the members of our group had the knowledge or experience with hosting an event. We needed to establish a direction with the project and agreed that the first step we had to take was to contact Student Activities and brief them on our plans. Jen, the director of Student Activities, was able to assist our process and make our screenings actual events.

**Interest** - Our second challenge was attracting Beloit college students and staff members to the events and the ideal time/place to have the events. We had to develop a strategy that interested the students on the issues that we wanted to discuss. Advertising played a significant role in attracting students to the events initially. After our first event we began using about other ways of advertising (like Stuboard e-mails, master calendar, raffle) that increased our student turnout. Additionally, the group members and allied organizations e-mailed professors and asked them to remind their students about upcoming Kallari events.

**Kallari Chocolate** - One of the biggest challenges that our group faced was getting the students interested in Kallari chocolate because of its distinct bitter flavor and its price. This issue is greatly related to loss aversion, where people, in regard to climate change policy, are resistant to changes that would be of immediate cost to them, and therefore opt for more immediate rewards rather than future benefits. To address this challenge, our group explained the differences setting Kallari Chocolate apart from other forms of chocolate. Kallari Chocolate uses less than half the sugar of regular chocolate bars and produces it in a manner that is sustainable. This leads to an increase in price because the cost of labor is more, there is a higher content of cacao in Kallari bars, and the majority of the profits go directly to the Kichwa tribe. These details made a significant difference in the way the students looked at the pricing for a bar of chocolate.

**Availability** - We had to find a way to make Kallari Chocolate more accessible to the college because the closest establishment that carries this product is Whole Foods in Madison. This was a huge challenge for our group because student accessibility to the

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product was the objective of our project. The most convenient approach to this challenge was presenting Bon Appetit with our research and student response (from the events we held) to propose that they offer a positive alternative to the students. A strategy that we used to convince Ken, Bon Appetit manager, was relating Bon Appetit’s mission page to the Kallari’s objective because both Kallari and Bon Appetit share similar values and goals regarding the ethics and science of their products.

**Price** - Although Bon Appetit agreed to hold Kallari bars at the café and covering bags for desserts at commons for Spring semester of 2014, Ken believes that students will be hesitant to Kallari products at Beloit because of its price might increase the price of the meal plan, again showing the prevalence of loss aversion. This is an ongoing challenge that our group believes can be overcome with additional activism for Kallari on campus. We will continue to work with Kallari after the conclusion of this course to ensure a steady flow of Kallari products on campus.

**Clubs** - We had to get clubs interested to help us and highlighting the similarities that their organization has with Kallari. We believed that cooperation amongst interest groups and organizations on campus would play a significant role in educating the campus on the issues that the chocolate industry take part in and promoting Kallari using student resources.

**Meeting times** - Minor challenges that our group faced were finding times to meet because each of the members had very different schedules that sometimes interfered with our work. We also had to work very closely with each other during the beginning of the project in order to assess each individual’s strengths and determine who should focus on what task, based on that assessment.

**Future Advice:**

**Prospectus** - We strongly believe that the prospectus should be taken very seriously when outlining and planning the project. It serves as the foundation and the reference point of the project. We advise that future groups provide detailed background information on the project that you plan to take on because promoting or taking part in activism projects requires the group to be very familiar with the material that could make or break your project. This includes identifying which resources you can use to your advantage and using the schools databases to better prepare for any unseen challenges.

**Communication** - Establish means of communication early by setting up Google documents and having group e-mails sent out regularly. Everyone needs to be involved in each step, or at least aware of what others are doing.
Clubs - We would also recommend that future groups use clubs as resources earlier and more effectively. Organizations on campus are a good starting point for garnering support for projects. By contacting them through email or going to one of their meetings, groups have the opportunity to directly promote their projects. They are often excited to co-host events with groups, which allows for extra help with promoting events and raising attendance numbers. Clubs tend to financially support projects/events that fit their mission statement, so if they are adequately informed, they can serve as viable monetary resources. The support strengthens when groups maintain good communication with them.

Conclusion

Overall, we believe that our efforts in bringing Kallari to the Beloit College Campus were successful. Ken, the general manager of Bon Appetit, agreed to give the products of the Kallari Cooperative a trial run. In addition, the various methods we used to educate the campus about the cooperative and the mainstream chocolate industry helped bringing Kallari to campus possible. Despite various challenges common to environmental activism endeavors, our group made it possible for the students, and soon hopefully the community, to participate in ousting the current immoral production of cheap chocolate by buying a quality bar of Kallari dark chocolate. As a sustainable and ethical chocolate-making practice, Kallari’s presence on campus has the ability to maintain and heighten Beloit’s promise of environmental sustainability

Bibliography


Appendix

September 29th-October 1st Email series with Jen, Director of Student Engagement and Leadership:

   From: Sarah P
   Date: Sun, Sep 29, 2013 at 6:02 PM
   To: Jennifer

   Hi Jen,

   My group and I are working on a campus activism project for our Global Political Ecology class. We have recently met with ONE and they have graciously decided to help
us set up a showing of a documentary called "The Dark Side of Chocolate." We are trying to incorporate Kallari, a brand of chocolate where 100% of the profits go to a tribe in Ecuador, onto the campus and the documentary would be a great way to get the campus educated on it.

We'd like to meet with you to discuss getting the rights to show the documentary, as well as anything else we need to do before we can host it hopefully in late October.

Do you have any open afternoons this week? Please let me know.

Thank you for your time!

Sarah

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From: Jen
Date: Mon, Sep 30, 2013 at 8:28 AM
To: Sarah P

Sarah,

This is a unique situation, since the documentary can be viewed online for free. I found a site that gives you a 'toolkit' for watching the film at http://www.globalexchange.org/fairtrade/cocoa/darkside

I am available this afternoon after 2:30pm to talk more about this. What works best for you?

Jen
Director of Student Engagement and Leadership

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From: Sarah P
Date: Mon, Sep 30, 2013 at 9:30 PM
To: Jen

Jen,

I'm so sorry I didn't get back to you before now, but I did have class all afternoon today. I'm free Tuesday at 2:30 and Thursday after 2, when I get done with work.

Thanks again,

Sarah
Sarah,
I can do 3:30pm on Thursday, if that still works for you!

Jen

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From: Sarah P
Date: Tue, Oct 1, 2013 at 12:05 PM
To: Jen

That'd be great, thanks so much!

October 2\textsuperscript{nd} Meeting with Teaching Assistant Keston
Length: 60 minutes
All members present
Our meeting with Keston, the teaching assistant for Global Political Ecology, began by informing him where we were at, in general, with our project. He then read our prospectus and asked for a copy of it. Afterwards, he presented all his advice for our project. Such items include:
- Awareness should be a key goal
- Contact clubs like Peace and Justice and Slow Food to help campaign
- Get marketing information, as it is really important in the Bon Appetit process
- Aim for one vendor, like Café Fromage or Bushel and Pecks in addition to Bon Appetit and this should be okay because it is a Beloit alum’s efforts being offered; Bushel and Pecks also does documentary showings
- Make sure roles are assigned within the group and make this a top priority; little can be done if tasks are not assigned and organized
- Pitch to Bon Appetit first because they have a such a strong commitment to “real food” from good sources, as well as look at their mission statement and see how getting Kallari chocolate can apply
- The Office of Alumni may be interested in helping out
Perfect an “elevator pitch” that will make it easy for us to get the idea of Kallari out without taking too much of people’s time. This will especially be helpful should we want to spread the word to all the groups, business, and students that have been discussed.

We then produced an updated list of short and long term goals.

Short term:
1. Meet with Jen for documentary clearance
2. Email Judy/skype call- especially ask about marketing techniques, facts, etc. BEFORE BREAK
3. Talk to Ken/Mike for Bon Appetit pitch/presentation

Long term:
1. Get one vendor
2. Successful documentary showing

**October 3rd Meeting with Jen of Student Engagement and Leadership**

Length: 20 minutes
Attended by: Sarah

Sarah met with Jen Walsh, the head of Student Engagement and Leadership. ONE made it clear that in order to show a documentary, the group must get the rights to play it for a large group of people. This meeting was to see what this process would entail for “The Dark Side of Chocolate.” Jen provided a website that has a “toolkit” for viewing the documentary, as well as the link to purchase the DVD for a suggested donation of $6. She said that we would be good to purchase the DVD and to contact the Student Engagement and Leadership Activities secretary, Kim, to set up a reservation for a room in Pearson’s.

**October 8th Email series with Professor Pablo regarding contacting Judy via Facebook:**

On Tue, Oct 8, 2013 at 1:59 PM, Sarah Pipal <pipals@beloit.edu> wrote:

Hi Pablo,

I'm not quite sure as to who said they were going to friend Judy on facebook first, but I believe it will either be Katia (listed as Katia Pilar Colin on facebook) or I. Let me know when I can send the friend request!

Thanks,
Sarah P

From: Pablo
Date: Tue, Oct 8, 2013 at 2:21 PM
Subject: Re: Facebook
To: Sarah P

Hi, Sarah,
Thanks for your reminder. I already told Judy. Please go ahead and send her your friend requests.

Pablo

October 9th- Debrief/ setting up meeting with Angie( ONE president)

From:Erika
To: Angie
Date: Wednesday, Oct 9, 2013 at 11:22 am
Subject: ONE collaboration with Kallari

Hey Angie,
I am writing you this e-mail to brief you on our updates for the project. We have recently met with Jen, who advised the group to purchase the documentary which is a 6-10 dollar price. With that being said our group is going to try to find sponsors to help with the movie and raffle donation(probably from VOCES,slowfood, and /or peace and justice).
Besides that we have a general idea regarding when we would like to show the documentary( the week of november 1st), and we would like your input regarding what day you would advise is best.
(We aren't sure which date would produce the best student turn-out/ staff member turnout)
Finally, i’d like to meet with you whenever you are available to watch the documentary together to come up with discussion questions and the survey’s that will handed out to the students at the event.
I would love to hear back from you with some feedback
and i look forward to working with you!
Best regards,
Erika

Cool! Do you want to meet sometime after break...or we can have a mini skype session over break where we watch the movie together!!
Do you want to call me and talk over the phone..I'm much more responsive this way!! November 1st seems like a good time to do the event. The only thing I am worried about is it being a Friday night. People might want to party or just take a break from the week. A good time to determine when to show it would depend on if you could get teachers to give their students extra credit. Do you want to meet up tomorrow?

**October 25th: Meeting Notes**
**Meeting: October 22nd**
**Attended: Katia, Sarah, Erika**

**Duration: 38 minutes**

**Goals**
- created poster for events (October 24th and November 1st)
- ask Pablo if we can revise prospectus
- Ask about extra credit and samples of the chocolate for documentary
- Get bitter sweet in the library

![Poster template](image)

**October 27th Meeting with Angie of ONE**
**Length: 30 minutes**
**Attended by: Katia, Sarah, and Elizabeth**

Our meeting with Angie began with her asking us who we wanted our audience to be for our second showing of “The Dark Side of Chocoloate.” We talked about getting our flyers out, as well as what ONE wanted to talk about for the documentary. We then jumped to how we would
provide incentives for people to come to a documentary on a Friday night, including getting a free raffle tickets and advertising by putting up a lot of flyers. ONE is talking to a few sociology classes and would be able to mention our documentary showing. Angie invited us to the next ONE club meeting to make sure everything would be sorted for our documentary. We asked about having a discussion after the documentary, since that was something we thought we were going to do after the first showing, but it did not happen because we did not really know how to go about beginning the discussion.

Our idea for the raffle is to be outside of Commons a few days during the week of 10/28-11/1 with a few bars of Kallari wrapped up nicely or in a gift basket. Erika has already purchased the raffle tickets, and we would be selling each ticket for one dollar. All proceeds would go to Kallari, and the logistics of getting that money to Kallari will be worked out with our meeting on 10/28 with Judy when she is on campus. Alternatively, if a student comes to the Friday night showing, they would receive a free raffle ticket. The winner will be selected Friday night. If no one ends up buying a ticket but instead decides to show up to the showing, that is still considered a positive because our ultimate goal is to get the campus educated on the chocolate so when it does show up on campus, they will be more inclined to purchase it.

**October 28th: Judy’s presentation to Kallari Representative at Beloit**

**Meeting notes and presentation notes**

- Meeting tomorrow Tues with ONE to go over and refine objectives
- look for Kallari you tube video to include in at the Bon Appetit and for documentary
- Wed- 8-9pm Kichwa representative speaks at moore lounge
- Friday- 7pm moore lounge documentary/ blind tasting document it

**Notes taken from judy presentation**

South America is prominent region where the cacao is produced
20 degrees north and south of the ecuator
4 regions in Ecuador where cacao is mainly produced
January –increases
July- production begins to decrease
50x the land
20x the labor
To produce the chocolate and the price does not reflect that work
This reflects the huge disparity between developing countries and developed countries
Chocolate is the most exploitive industry in the world
Cacao grows buy the river because the terrain/soil is rich and full of nutrients
Organic certification
No fumigation
Traditional planting scheme
Women runs and cultivates the gardens, cacao, all harvest
Chocolate bars came to the US in 2005
Longer process to produce and harvest beans because it takes a very long process
Regular cacao production and manufacturers are making mass amounts of this product and don’t take the time to make quality product. 1 metric ton per hour
Fermentation is a process that releases acidity from cacao
Solar dried cacao beans
Kallari 50% more than regular cacao and chocolate
Sell directly to distributor rather than cacao going through long chain
Supply chain = quality control
No labor issues
FRESHER CACAO
2-5 years
WHO is Bon appetite buying from?
What brand?
Do you know where the beans are sourced?
Do you know how its processed?
It’s important to know this information because intermediaries buy bulk of the harvest when the prices are the cheapest
They sit on this product for 8 months until the market is at its highest and then they sell it for 40-50% more to make maximum profit
Stored in a warehouse, spray it with chemicals
NOT FRESH
KALLARI IS A FRESH BEAN, local chocolate
Coffee, cacao, other products aren’t found in the US Kallari provides the freshest cacao
Overcooked and over roasted because to kill fungus and other chemicals because they’ve stored the cacao for so much (120 hours)
Kallari lightly roasts the beans to get maximum antioxidants (20-40 hours)
Coverture - higher quality chocolate 40% chocolate
Chocolate-1 % chocolate
No dairy at all
The more you dilute the cacao with sugar and milk the more you can sell it
And the use of less cacao
Kallari is the ethical option
Hershey labor issues
Chocolate tasting /blind testing (video tape) at documentary showing
Blind tasting name brand chocolate vs. Kallari
Why don’t they have cacao that is fair trade or farmer owned?
Benefits of dark chocolate for health
BSU or ONE- human rights in AFRICA

Cordillera(Colombia)? El rey (Venezuela)? Calbo 25% of cacao production? What country is it coming from?

CARGALL? Controlling most of market (the informant)
Archer daniels? Commodity trading
Fungus leaves toxins (OTA) peanuts, coffee, and nuts
Cacao beans can be stored for up to 20 years

3 Major companies are able to fix prices and it's illegal but the fees and fines they pay is close to noting compared to what the make Callbaut ADM and carlleyo
Survey sent out on November 2nd to those present at October 24th documentary screening:
"The Dark Side of Chocolate" and Kallari

Thank you for coming to our screening of "The Dark Side of Chocolate"! We would love to find out your reactions to this film by completing this survey.

We hope to have Kallari chocolate on campus for you to buy soon, so keep an eye out!

To learn more about the Kallari cooperative you can visit their website at www.kallari.com, or you can ask any of our group members- Katia Collin, Elizabeth Osorio, Erika Mendez, and Sarah Pipal- any questions you have.

Thanks again!

1. Were you familiar with the child-slave laborers issues in chocolate production prior to this documentary?
   ○ Yes
   ○ No
   ○ Somewhat

2. Did you find the documentary to be informative?
   ○ Yes
   ○ No

3. Were you surprised to find out how the cocoa is produced (child labor)?
   ○ Yes
   ○ No
   ○ Somewhat

4. Would you be willing to spend a few dollars more on a chocolate bar if it meant the chocolate was produced ethically and in an environmentally sustainable manner?
   ○ Yes
   ○ No

5. Will you take this documentary into account the next time you buy chocolate made from a major corporation?
   ○ Yes
   ○ No
   ○ Other:

6. Would you like to see Kallari chocolate sold at Java Joint/DK's?
   ○ Yes
   ○ No
   ○ Indifferent

7. Do you have any suggestions for our group in bringing Kallari chocolate products to campus?

October 24th -25th Email series with Deb and Chris regarding the purchase of “The Dark Side of Chocolate” and “Bitter Chocolate”

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On Thu, Oct 24, 2013 at 7:14 PM, Elizabeth Osorio <Osorioe@beloit.edu> wrote:
To: Deb

Hey Deb,
I'm working with a group of students on a campus wide group project for my global ecology class and our goal is to bring in fair trade chocolate to the campus. The reason behind this is to educate students about what really happens with workers that harvest cacao beans for large chocolate companies and the injustices endured by these people. As part of our initiative to educate students about the chocolate industry and teach them about supporting fair trade chocolate as opposed to products from major chocolate companies my group and I were wondering if we could possibly convince the library to bring in some texts and films as reference for students to have access to. We were mainly referring to the film "The Dark Side of chocolate" directed by Miki Mistrati and U. Roberto Romano and the book "Bitter Chocolate: Anatomy of an Industry" by Carol Off. We would really appreciate it, hope to hear back from you soon.

Best,
Elizabeth Osorio

From: Deb
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Fri, Oct 25, 2013 at 8:48 AM
Subject: RE: The Dark Side of Chocolate

Dear Elizabeth,
The purchase requests have been submitted.  
If there are additional items, let me know.
Well done, well done indeed.
Best,
Deb

Email Forwarded to Chris by Deb

From: Chris
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Fri, Oct 25, 2013
Subject: Requests for Dark Side of Chocolate and Bitter Chocolate

Hi Elizabeth,

Thanks for your message regarding library sources on fair trade chocolate.

I have placed an order for the book Bitter Chocolate by Carol Off. Amazon's availability estimate is "ships in 1 to 3 months" so I hope it will not be too long in arriving.
I am checking with another staff member about ordering The Dark Side of Chocolate. It looks like we need to contact someone in their sales department, and availability on DVD isn't clear. I'll keep you posted about what we find out.

http://www.thedarksideofchocolate.org/

Please check back with Deb or me if there's anything else we can help with.

All the best,
Chris

November 29, Messages with Bushel & Peck’s to hold Kallari

Conversation started October 29

10/29, 2:19pm
Elizabeth Osorio

Hello My name is Elizabeth Osorio,
I am currently a student at Beloit College and throughout the semester I've been working on a Group project to bring Fair-trade chocolate to Campus. We have been working with a co-op called Kallari formed by members of the kichwa tribe in Ecuador. We've set forth many efforts to bring their chocolate to campus and we thought it would be a good idea to reach out to the community and local businesses, such as yourself, as well to learn more about Kallari and see whether you would be interested in supporting Kallari and possibly having it there. Tomorrow a representative from Kallari will be speaking here at Beloit college from 8-9pm in Pearson’s moore lounge on the second floor feel free to drop by. We hope to see you there.
Best,
Elizabeth Osorio

10/30, 12:31am
Bushel & Peck’s Local Market

Hi Elizabeth, Thank you for the invite, we won't be available tomorrow evening due to other commitments. We have reached out to Kallari to carry their chocolates but have never heard back from them. If you would like to
ask them to contact us, we'd be happy to carry their products. Thanks much,
Jackie

October 30

10/30, 3:49pm
Elizabeth Osorio
Hi Jackie,
I've put in a word with one of the representatives from Kallari hopefully she contacts you guys soon.

Meeting on Sunday, November 3rd:
Length: 2 hours
Attended by Katia, Sarah, and Erika

Erika and Sarah developed the PowerPoint presentation that will be shown to Ken, the general manager of Bon Appetit at Beloit, on November 5th. Also discussed were plans for the next showing of “The Dark Side of Chocolate,” as well as what was to be decided on at the meeting with ONE tonight (Sunday at 5:30PM).

At the meeting with the executive board of ONE, Katia, Erika, and Sarah suggested new dates for the documentary showing. The final decision, as approved by ONE, is Thursday, the 21st of November at 7:30PM in Moore Lounge. ONE suggested multiple methods of advertising, as that was something they had voiced concern for when we had previously scheduled to show the documentary with them on November 1st (which had been canceled as of October 29th due to lack of advertising in the week prior, per ONE’s suggestion). They suggested a minimum of three methods of advertising including Stuboard announcements, the Master Calendar on the Terrarium, small flyers in mailboxes, and larger flyers around campus.

ONE also asked us what we would like from them and what our main goals were with this documentary showing. We stated that our goal is to get students to buy Kallari chocolate when it is sold on campus. We would like ONE to share their knowledge of how to have successful presentations and documentary showings in order to make our event better. Because they have experience in talking about human-rights issues, their presence and input at the presentation may give students a better understanding of what we want them to know about the chocolate industry.

November 4th - 5th Series of Emails regarding Kallari Display in the Library
On Monday, Nov 4, 2013 at 11:20 PM Elizabeth Osorio <osorioe@beloit.edu> wrote:
To Deb and Chris Nelson
Hello Ladies,

As you both know, I have been working with my group on campus to bring Kallari Chocolate to Beloit and after meeting with judy we've been provided with more resources to better present our
proposal to the students. But, the issue is that we've been having a little trouble grabbing the students attention and gathering enough support for this project. I've been doing a lot of thinking and I was wondering if it there was a possibility that we could set up a display here at the library in front of the reference desk since that's typically the first thing students see when they come in. I look forward to hearing back from both of you. Thank you for your time.

Best Regards,
Elizabeth Osorio

From: Chris
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Tue, Nov 5, 2013 at 6:26 AM
Subject: RE: Display For Kallari Chocolate

Hi Elizabeth,

Your idea for a display is excellent. We expect the current display to be changed this week. Would you be able to install something on Friday or over the weekend? Let me know what you plan to put in, what materials you may need, and so on.

Best,
Chris

From: Deb
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Tue, Nov 5, 2013 at 8:28 AM
Subject: RE: Display for Kallari Chocolate

Dear Elizabeth,
Yes, please count me in - let me know how I might be helpful.
This is such a great project!
Best,
Deb

Nov. 7th Series of Email With Gillian on providing Crafts for Display in Library
On Thu, Nov 7, 2013 at 7:55 PM Elizabeth Osorio <osorioe@beloit.edu> wrote:
To Gillian

Hello Gill,
My name is Elizabeth, I am currently working with a group on campus to bring Kallari chocolate to campus. You may have probably already met the girls in my group while selling chocolate and jewelry
earlier this week, the reason I'm sending you this message is that we were wondering if there was any jewelry or crafts left over after the sale. We want to acquire some pieces to put in a display we will be putting up in the library over the weekend to bring awareness among the students here at Beloit about fair trade chocolate and the Kallari co-op. We would be willing to buy the pieces if need be. Hope to hear from you soon.

Best regards,

Elizabeth Osorio

From: Gillian
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Thu, Nov 7, 2013 at 9:17 PM
Subject: RE: Kallari Jewelry

Hi, Elizabeth.

That's great!
Indeed I do have both chocolate and jewelry left over. You'd be welcome to borrow jewelry, though perhaps you should pay for any chocolate.

We'll be gone all day tomorrow, Friday, home some time in the evening. The best thing probably would be to try calling me Friday evening at home, perhaps between 9pm and 10pm, and then we can arrange when to meet, perhaps later on Saturday morning, or Sunday. Or you could try me on the cell phone, which I'll try to remember to turn on (! i'm not a great fan of cell phones, however useful they may be!).

Katia was thinking about selling chocolate and jewelry again in the campus Mail Center on Monday and Wednesday.

Hoping this works out,
Gill

November 7 - 8th, Emails with Chris regarding setting up the Display
On Thu, Nov 7, 2013 at 7:47 PM Elizabeth Osorio <osorioe@beloit.edu> wrote:
To Chris Neslon

Hey Chris,
So I talked to my group and we decided it would be better to set up on Saturday. We were wondering if the Library would be able to provide us with markers and and also do you know if the movie and the book have made it to the library yet?? We want to include them in the display.
Hi Elizabeth,
Thanks for the update. Saturday will be fine. I'll leave some items for you at the Reference Desk-- markers and some color print-outs on the labor-chocolate issue.

The book and DVD have not come in yet. They don't seem to be easily available, so we may have a bit of a wait. I'll keep you posted.

As possible substitutes for display information on the topic, I've printed out a few articles (in color) that could be eye-catching. I found them in Academic Search Premier with a search on chocolate and labor. Citations to those articles and more are below. Let me know if you need anything else.

Best,
Chris


Blood Chocolate: A Just Desert?
http://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie.ip.cpid&custid=s6221971&db=hus&AN=504185941&site=ehost-live&scope=site

The Dark Side of Chocolate.

Is it Fair to Eat Chocolate?
Dunn, Deborah
Slaves to chocolate.
Athreya, Bama; Newman, Tim
http://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,cpid&custid=s6221971&db=aph&AN=38599052&site=ehost-live&scope=site

Won't You Be My Fair-Trade Valentine?
http://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,cpid&custid=s6221971&db=aph&AN=57815898&site=ehost-live&scope=site

**November 3rd: Meeting Notes**

Group meeting  
Duration: 30 minutes  
Covered: Raffle, Proposal for Political science/international relation department for $100, Buy “bitter Chocolate” for library and special interest houses, chocolate bars for raffle and tasting  
- Email: special interest houses and see if they would be interested in having “Bitter Chocolate” in their libraries; Documentary- 2 weeks from now- November 21th, 7:30  

Goals for this week: tie international education to kallari  
e-mail professors and discuss how this event is beneficial to students( extra credit)  
chocolate bars as flyer( talk to people at the mail center)  
talk to voces about how they put flyers in mail boxes  
stuboard  
Terrarium  
master calendar  
talk to OIE, so that they can advertise it for international

**November 7th: Meeting Notes**

Group meeting: November 7th  
Topics: Library display, Bon appetit presentation, Master calendar event, advertising for event (21st)  

Duration: 37 minutes
- Filling out Master Calendar application
  Ask Pablo if he can be our event advisor
  we sent in application for master calendar

- Display in the Library
  friday or weekend to set up display
  poster, movie documentary, ask Gill about jewelry for display, display chocolate, book, movie

- Advertising
  who do we e-mail to put mail in mail boxes
  - stuboard
  - master calendar
  - posters on campus
  - facebook
  - mailboxes
  - TEXT YOUR FRIENDS

November 8th Email confirming Master Calendar Event:
Master Calendar
"The Dark Side of Chocolate (2010)," documentary screening
From site: News & Events

Date: Thursday, November 21st, 2013

Time: 7:30 pm

Location: Moore Lounge, Pearsons Hall

Sponsored by: ONE

Contact: toralp@beloit.edu, Advisor: Pablo T / Student Coordinator: Sarah Pipal

Import into your calendar program using iCal

Import into your Google Calendar

A team of journalists investigate how human trafficking and child labor in the Ivory Coast fuels the worldwide chocolate industry. The crew interview both proponents and opponents of these alleged practices, and use hidden camera techniques to delve into the gritty world of cocoa plantations.

After the screening there will be a short presentation on the Kallari chocolate cooperative. Kallari chocolate for sale, as well as free samples and a gift basket of the chocolate to be raffled.

This event is free and open to the campus and community.

Rating: Unknown

Running time: 46 mins.
Directors: Miki Mistrati & U. Roberto Romano

Categories: All

Audiences: All

Jenny Communications and Marketing

The Beloit College Office of Communications and Marketing assists college offices and departments with their promotional and special events needs. To open a project with our office, please use our special event planning form or our creative project request form. We will process your request and respond within two business days.

November 10th Meeting with Gillian for Kallari Crafts & Jewelry
Length: 30 minutes
Attended by: Elizabeth

Elizabeth met up with Gillian in front of the Library Saturday afternoon to acquire the Jewelry and crafts that would be used in the Display. She further explained to Gillian what our goal was by setting up the display to garner more attention from the student body. They talked about the potential set up and location for the display as well.

They also discussed the possibility of holding a second round to sell chocolate at the mail center. Gillian was provided with contact information and possible hours that she may be available to sell chocolate and promised to email her with more information about the selling schedule for the rest of the group for the upcoming week.

November 10th email confirming Chocolate sale schedule
On Sat, Nov 10, 2013 at 5:49 PM Elizabeth Osorio <osorioe@beloit.edu> wrote:

Hello Gillian,

So I emailed the girls in my group and here are the times we are all available to sell Chocolate.

Erika - Wednesday 12:30 - 1:30, Tuesday 11:45 - 12: 45
Katia - Monday and Wednesday 12:30 - 2:00
Sarah - Tuesday 10 - 11:50
Me: Tuesday 12:45- 2:00

Best,
Elizabeth Osorio

From: Gillian
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Sun, Nov 11, 2013 at 8:32 AM
Subject: RE: Kallari Jewelry

Many Thanks!
Gil

November 12th Meeting:
Length: 1 hour
Attended by: Erika and Sarah

   Erika and Sarah began by discussing goals for the week. Erika suggested sending e-mails to department heads to ask if they would give extra credit/announce the documentary to their students.

   Next, we decided that for the raffle we need to buy chocolate from Gill, who helped with the sales outside of the mail center. Ideally this would be done before the end of the sales tomorrow, Wednesday the 13th, at 2:00PM, but we still may not know if we have received the funding by that time. We decided that it is necessary to have the bars for the raffle, however, so we will purchase them tomorrow regardless if our proposal was accepted. Below is a picture of the setup of the Kallari products that was used in selling them last week (Nov. 4th-6th) and this week (Nov. 11th-13th). Every member of the group volunteered to work at the tables.

   We then discussed what we needed to do for the display case in the library. We obtained two empty chocolate bar-boxes of the Sacha variety as well as flyers about Kallari that were used on the tables outside the mail center. We chose photos that we wanted to print and would have Elizabeth get them in color from the library. Sarah worked on the poster for the documentary on the 21st and Erika looked for photos that represented Kallari.
November 12 Emails to Deb to acquire more material for Display
On Tue, Nov 12, 2013 at 12:47 PM Elizabeth Osorio <osorioe@beloit.edu> wrote:
To Deb

Hey Deb,
Do you know if we have the Beloit college magazine, the 2002 edition?? There's an Article in it about kallari chocolate and Judy.
Best regards,
Elizabeth Osorio

From: Deb
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Tue, Nov 12, 2013 at 1:20 PM
Subject: RE:

I am sure they do in Archives
Fred is out this afternoon yet he'll be here tonight 7pm to 10:30pm
let me do some checking and I'll let you know the scoop
Best,
Deb

Kallari Products being sold at the Mail Center, Pearson's on November 12th
From: Deb
To: Elizabeth Osorio <osorioe@beloit.edu>
Date: Tue, Nov 12, 2013 at 3:37 PM
Subject: RE:

Elizabeth,
We have copies on the lower level. You won't need to work through Archives. I pulled the bound issues that include 2002 and found the feature of "Giant Judy" - the issues are on the HOLDS shelf for you, under your last name
hope this is helpful.

best,
Deb

November 12th Morse Library Display (constructed by Elizabeth):
November 12th Email to Angie of ONE:
Hi Angie,
So I have a template for the posters that I want to put up around campus, and they include a little bit of color. I know you guys said you could help out with those, since it costs money to print them at the print shop. Let me know if that's still possible? The poster's attached! I hope it's not too messed up in formatting.
Thanks,
Sarah Pipal

From Angie on Nov 13th:
November 13th Proposal Document sent out to all students in Global Political Ecology: Proposal for Funding: Bringing Kallari Chocolate to Beloit College

In order to maintain Beloit College’s promise for environmental sustainability and human-rights awareness, our group is working to bring Kallari chocolate to campus. The Kallari cooperative is a group of over 900 families of the Kichwa tribe in Ecuador who plant and harvest cocoa beans in their own groves. The cocoa beans are then dried, fermented, and turned into high-quality chocolate all within the borders of Ecuador. This is rare in the chocolate industry, where cocoa beans are sent overseas and are then left to sit for months- or even years- before they are made into chocolate products. Having control over all aspects of the chocolate-making process gives Kallari the ability to make superb chocolate while avoiding the common exploitation of the chocolate-making industry. The profits from Kallari go directly to the Kichwa tribe, and in having a viable source of economic growth, the tribe does not have to resort to selling its land in the Amazon rainforest to the oil or mining industries. It is the chocolate made by these indigenous farmers that we would like to have available on campus.

The purpose of our project is two-fold: first, we would like to have Bon Appetit use Kallari’s chocolate in its baking, as well as to be purchased by students in Java Joint and DK’s Cafe. Second, we would like to make the students of Beloit aware of the unethical nature of regular, corporate-made chocolate and encourage them to buy justly-made and higher-quality items like Kallari. Kallari is a great starting point in bringing this awareness to campus, and having this chocolate available to the students is imperative for success.

Because Kallari chocolate is of the highest-quality and is harvested and produced in the same location, the price is higher than that of a normal chocolate bar. By receiving funding of $50 to purchase Kallari chocolate and to give out samples, students will be able to first try Kallari without feeling the hesitance of spending money. Having chocolate at our documentary showing will appeal to students as it is an actual, tangible result of the chocolate production on which we plan to inform them. Having the necessary funds to purchase the chocolate also means our group can plan to raffle off the chocolate to get students invested in the Kallari project prior to learning about it at our November 21st presentation, where the chocolate prizes will be given out. We plan on buying the Kallari “Leaf” Organic Cacao bars, commonly sold for $5.99 per 70 gram bar, and thus any funding would help us reach our goals.

Bringing Kallari to campus would greatly heighten Beloit’s position as a leading institution devoted to environmental sustainability. Kallari ensures that valuable land in the Amazon is being used sustainably, as well as providing successful means for families who reside on the land to make a living. Kallari was a project begun by a Beloit alumni, Judy Logback, and helping the cooperative will also add to Beloit’s legacy of successful alumni working on revolutionary projects. Providing an alternative to
chocolate made in an industry plagued by child-labor and other human-rights issues will also benefit the campus as a whole, making Beloit a college where the students are not only informed on the current ills of the world, but they can act upon that knowledge, too.

Thank you for your consideration in funding the Kallari project on the Beloit College campus. Please contact any of our group members if you have any questions.
Katia Pilar Colin at colink@beloit.edu  Erika Mendez at mendeze@beloit.edu
Elizabeth Osorio at osorioe@beloit.edu  Sarah Pipal at pipals@beloit.edu

November 14th Meeting:
Length: 40 minutes
Attended by: Katia and Sarah

Second Version of Survey, sent out November 22nd after the November 21st Documentary Screening (Results of both surveys (NOV 2ND AND 22ND, TOTAL OF 13 RESPONSES) listed in red)
"The Dark Side of Chocolate" and Kallari

Thank you for coming to our screening of "The Dark Side of Chocolate"! We would love to find out your reactions to this film by completing this survey. Keep an eye out for Kallari chocolate on campus and in the Beloit area! To learn more about the Kallari cooperative you can visit their website at www.kallari.com, or you can ask any of our group members- Katia Colin, Elizabeth Osorio, Erika Mendez, and Sarah Pipal - any questions you have. Thanks again!

1. Were you familiar with the child-slave labor issues related to mainstream chocolate production prior to this documentary?
   ○ Yes 2
   ○ No 4
   ○ Somewhat 5

2. Did you find the documentary to be informative?
   ○ Yes 11
   ○ No 1

3. Were you surprised to find out how the cocoa is harvested (child labor)?
   ○ Yes 5
   ○ No 6
   ○ Somewhat 2

4. Would you be willing to spend a few dollars more on a chocolate bar if it meant the chocolate was produced ethically and in an environmentally sustainable manner?
   ○ Yes 11
   ○ No 2

5. Will you take this documentary into account the next time you buy chocolate made from a major corporation?
   ○ Yes 10
   ○ No 1
   ○ Other: If I have a choice to buy ethically, I will. If no ethical option exists I will probably buy normal chocolate; I don’t eat chocolate.

6. Any comments or questions for our group? Well done, this was very appropriate. Thank you!: Good luck!: Large companies took the easy way out by saying that they are not responsible for that side of the chain. I believe that some of the money that they receive in profit can go towards ensuring and enforcing child labor be banned.; Thank you; Very well organized. Thanks for bringing awareness to this issue on campus and for the chocolate samples!
Activism Report: Friends of the Boundary Waters Wilderness

Fall 2013
POLS 255: Global Political Ecology
Instructor: Pablo Toral

By: Jonathan Hammon, Sophie O’Connor, Philip Amsden, Nora Holte
The Problem

The Friends of the Boundary Waters (FBW) is an NGO dedicated to protecting and restoring the Boundary Waters Canoe and Wilderness Area (BWCAW). Its mission is "To protect, preserve and restore the wilderness and the Quetico-Superior Ecosystem." Two companies, PolyMet and Twin Metals, have proposed sulfide mines in the area around the BWCAW. The proposed mines would extract copper, nickel, palladium, and platinum from sulfide rich rock. While the area around the BWCAW has been home to Iron ore mining before sulfide mining has a greater risk of environmental hazards associated with ore extraction. The FBW requested a research paper to explain the economic markets and political environment of the copper, nickel, palladium, and platinum industries so that they could better understand the incentives the mining companies face. Another goal of the FBW is to inform the public of the hazards and risks associated with sulfide mining projects.

Goals

Our goal was to produce two documents requested by the FBW, the first was a report on the economics and politics of mining for four metals, copper, nickel, palladium, and platinum. The second document was a press release that summarized the findings of the report. We wanted to provide the FBW with a better understanding of the politics and economics of mining in a global context and for the FBW to be able to use these documents to their advantage when combating the mining projects proposed by Polymet and Twin Metals.

- The report not he economics and politics of mining was broken up into four metals, copper, nickel, palladium, and platinum. For each metal there were several points the FBW wished to be further analyzed. These points included, and overview of the world's market for each metal, the main producers including firms and countries, following the ore from the mine to consumer, a discussion of stockpiles and incentives to accumulating them. Profit was investigated, and the markets for each metal were determined, consumer and the uses of each metal were tracked. Finally we discussed the growing role of China in the global metal market.
- The second document was a two paged press release, the goal of this was to provide FBW with a document that summarized the report in a way that was accessible to citizens and the media.
- The third goal of this project was to visit the headquarters of the FBW in Minneapolis, MN to talk to the NGO about the report and its significance of our findings.
Strategies
In order to do all of the research required to write a comprehensive, quality report, we delegated each member of the group to research the different aspects of the world markets for nickel, copper, platinum and palladium. Each member completed their section using a common outline and the sections were then compiled into a final document. This made our presentation to the FBW easy, since each member acted as an expert for their metal.

From a wider perspective, we used the principle of economic convergence to argue against the mining project. First of all, the damage that the mining projects would likely cause would damage the tourism industry, which is an important and growing sector in the Boundary Waters. Secondly, mining projects such as this one can lead to economic dependences known as Dutch Disease. This is when an area becomes too dependent on a single industry and surrounding industries suffer. Since mining is not a sustainable project, the Twin Metal and PolyMet projects will only temporarily alleviate the poverty in the area surrounding the boundary waters. Finally, this all acts on the precautionary principle. The mining companies are arguing that there will be minimal environmental damage, but their track record is mixed at best. In this case, the risks associated with the project are not worth the reward.

Challenges
In writing the report and organizing the presentation, we ran into the natural challenges inherent to working with three other people. Organization was difficult, and four busy schedules were tough to plan meetings around. Formatting the final document was also difficult, since each member was inclined to write in their own style, using different types of citations, sections division, figure captioning and so on. We overcame these problems by delegating the work, so that our meetings could be short and infrequent. Only when producing the final draft and presentation did we meet more than once in a week. In order to ensure continuity within the report, we created a basic outline for each metal, which group members followed when giving information.

With regards to the mining project as a whole, we faced challenges from the mining companies and project supporters. They cited the development imperative, saying that the benefits of the economic boon of jobs and increased income into the region far outweighed the environmental costs, and that the area had a right to develop economically and lower the high unemployment rate. We used the strategies and principles in the previous section to show that protecting the wilderness would stand to benefit the area.

Accomplishments
The general research that we were set out to accomplish was clear from the beginning, since the Friends of the Boundary Waters provided us with a strict outline. However, what was unclear was how much our accomplishments would mean to them, and what else we could
provide to them as experts in our field. We first accomplished developing a thorough research paper that tracked and understood the world market for four different metals, a topic that none of us were very familiar with beforehand. Since we split the paper up with each person focusing on a different metal, we were all able to become experts in our respective metal by the end of our research.

The real accomplishment from this research was evident when we met with the people at the Friends of the Boundary Waters to explain and discuss our research, and to answer further questions. It was apparent not only how useful this information was to them, but how much they trusted and listened to us about this information. From this research and from our knowledge about the organization, we were further able to help them think about ways to address their large scale issue, which was incredibly interesting. Our final accomplishment, in collaboration with Pablo’s work, was solidifying this relationship between the Friends of the Boundary Waters and Beloit College students for future collaboration. Though they may have been apprehensive at first, we helped prove that as undergraduates we could provide true help, and have the potential to do even more.

**Advice for the future**

We learned that in order to create a successful cohesive report, we had to stay consistent, with strict organizational measures. When writing a paper with multiple people, it is so easy to fall back on your own individual style in terms of writing, citing, and labeling figures, instead of working with the group to maintain consistency. Like we learned, it is important that groups set ground rules so problems in this realm do not arise, and so the paper is can be easily read by the organization. Additionally, it is important to keep in mind that even though an organization can be asking you to do something in particular, like write a research paper on the world market for metals in our case, to also be prepared to relate this on a larger scale to their own project.

**Conclusion**

We met our goals of producing two documents. The research paper on the economics and politics of mining included each of the points the Friends of the Boundary Waters asked us to touch upon and an in depth analysis of each metal. A press release that summarized out findings and was accessible to the public was produced. Three out of the four group members were able to visit the NGO’s headquarters in Minneapolis to discuss the research with Friends of the Boundary Waters.

Each member was put in charge of researching and becoming an expert on one metal. This research and other principles were used to argue against the development of sulfide mines in the area around the Boundary Waters. Difficulties in communication and organization occurred but were overcome by copious emails and weekly meetings.
We accomplished each of the goals laid out for us by the Friends of the Boundary Waters, our largest accomplishment was achieved when we were able to communicate the information gathered and relate it to the larger problem that the FBW faces. In addition to the goals that we set out for ourselves we were able to form a relationship with the Friends of the Boundary Waters so that future collaboration can occur be it between us or other Beloit students.

Appendix

Timeline
September 4th-
- Discovered Possibility of working with the NGO “The Friends of the Boundary Water Wilderness.
- Pablo asked students to think about working with them
September 6th,
- Jon Hammon, Sophie O’Connor, Phillip Amsden, and Nora Holte all showed interest
- This became the tentative group for the project
- In the meanwhile we continued with our original activism projects
September 29th- 9:45 AM, Friends of the Boundary Waters confirm work (FOBW)
- FOBW send Pablo an email confirming and send us an outline of the report
- Review the outline and debate the project
October 4th- Delegating Work
- We decided that it would be the most beneficial to separate the project into four different metals. Jon Hammon: Nickel, Nora Holte: Copper, Sophie O-Connor: Platinum, Phillip Amsden: Palladium
- Initial Research Begins
- Decide That we will have weekly meeting and communicate through email
October 6th- Create Outline
- Google Doc is created that provides an outline that we each will follow
October 12th- 4:00 PM – 5:00 PM Weekly Meeting
- Discussed the research so far
- Shared Sources, provided help
- Set deadlines for ourselves
October 19th- 12:00 AM – 1:00 PM Weekly meeting
- Shared each other’s sections
- Shared sources
- Set a deadline for the following section of the report
October 28th- Receive dates for traveling to the Twin Cities
- Make plans for a trip to Minneapolis
- Discover Nora is unable to make the trip
October 30th- Finalize Dates
- Decide that December 5th-6th was the best timeframe
November 1st, Weekly meeting
- Met to discuss how to continue with the report and set a deadline of before thanksgiving
to have a rough draft of the report due.

November 9th, Weekly Meeting
- Shared Sources and continued discussing what the final report will look like
- Making sure the report would be cohesive

November 19th, Weekly Meeting
- Met for a short period of time just to touch base and to make sure no one was having any
issues

November 22nd,
- Met after class to delegate work for the rough drafts, conclusion, and the introduction
- Delegated work towards who was to compile work

November 26th,
- Everyone finished our rough drafts and compiled them together
- Added an executive summary, and introduction, and a conclusion

December 2nd, Finalize and send report
- Final Edits made and sent to the office of the boundary waters
- Executive summary reformed

December 2nd - Discuss the handout
- Decided on Brochure
- Started the handout

December 4th - Finished the handout
- Very Graphic and colorful

December 5th - Print Copies of the report and handout
- This was to ensure that when we arrived at the boundary waters they would have hard
copies of the report

December 5th - 5:00 PM, Leave for Minneapolis

December 6th - Arrive at Friends of the Boundary Waters Wilderness Area headquarters
- 9:40 AM – 11:45 AM, for two hours we present the report and consult with them on the
report that we prepared and concerning the mining projects in northern Minnesota.
- 11:45 - 1:45, Following the presentation we discussed what we had done and what we
have learned on the issue

December 8th - 4:00 PM – 4:45 PM, Met to discuss the presentation
- Delegated Work
- Designed Power Point Presentation

December 9th - 8:45-9:15, Final Presentation
- What we have done and learned

Emails
October 4th
- Hi guys,
I just wanted to check in about the project so we can figure out how to split up the work

- Hey,
  - I definitely agree. I think for this first part we can just split up the metals between us four and do the research individually. We can have a weekly check in and such to check base with each other and share sources. Do we want to meet to split up metals or do we want to do this online? Does anyone have preference? I will take copper or palladium.

October 5th
- Hey,
  - I was thinking about the assignment and how to split it up for each metal. I know it makes intuitive sense to split it up my metal but I think the research is going to be very similar for each bullet point, would it make more sense to split it up like that. I would also take copper.

- Hello,
  - Do you guys want to meet sometime this week to talk about that? I'm free Tuesday evening anytime, if that works

- To all,
  - I understand what you are saying about not being cohesive, although I feel that there will be more difficulties that will arise out of separating it this way. We should meet and talk about it.

October 25th
- Hey guys!
  - I was wondering if anyone had started to put together an outline for the paper, if you have could you post it to the google doc? Otherwise I should have something in a few days. Hope you had a good break!

October 28th
- just sent me this email, are you guys free for these dates?
  - I realize that I forgot to email the two potential dates of our visit to the Twin Cities to the Friends of the Boundary Waters. I was about to do that now but realized that your dates are not exact. The idea is to leave on Thursday evening so that we can be there on Friday morning for the presentation. So the two options would be. -A: leave Beloit on Thursday Nov. 21st after classes end, return on Friday after lunch. -B: leave on Thursday Dec. 5 after classes, return Friday after lunch. Could you confirm if those work for the group before I check with the Friends?

Thanks,

October 29th
- http://minerals.usgs.gov/minerals/pubs/commodity/copper/ , Hey guys, I don't know if you need any sources but the USGS website has a ton of information about minerals and metals. Check it out!

November 3rd
- Hey everyone this is a great source to use for the market of your metal, they have useful graphs that you can use/make that can visually present data that we are trying to describe. It helps with information on current markets, stockpiles, producers and consumers,
November 7th
  • Hi!
    o If you guys have started your papers I could use a little guidance. Are we keeping the section headers they provided? How long should each section be? What type of citations are we using, foot notes or in text, should figures and tables be included or appended, what citation style? When is the draft due by, when is the final due date? Thanks!
  • Hello
    o How about we meet to talk about it after class and cover what we are all wondering?
  • Everyone
    o That sounds like a great plan
November 15th
  • Hey,
    o If you guys have a draft of your paper done I would love to see it before I start to edit mine. If you can will you email me a draft? Here is what I have so far if you want to take a look. Thanks!
November 22nd,
  • Hi!
    o I'm about to make hotel reservations and wanted to check with you that these arrangements are fine. I was planning to reserve three rooms, one for Sophie, one for Phillip and Jon and one for me. Are you comfortable with that?
November 26th,
  • Hey guys,
    o The paper is due tomorrow so we should probably meet. I am free after 7 pm. I'm attaching my paper in case you want to get started before that. Shoot me an email about a meeting time and place, there is a computer lounge on the fourth floor of the science center with huge screens that is really nice if you want to meet there. I think we need a Intro/executive summary to deiced which section on stockpiles to include make sure section structure is the same change the headings Format figures and tables so that numbers are consistent put references together write a Conclusion
  • Hey,
    o These are the titles I have assigned to my sections in order. Introduction Distribution and Ownership of Nickel Resource From the Mine to the Consumer The World Market for Nickel Stockpiles Influence of China Conclusion Bibliography
  • Hey everyone,
    o Attached is my final section to the paper. If anyone has any questions or needs me to look over something or make edits I am more than happy to. I have a cover page to my section, I think it would be great if we all had our own cover page for the metal and then also a coverpage and table of contents for the entire document.
  • Hey,
Who wants to compile the document?

- Everyone
  - I can do it

December 1st

Hello

Attached is the final copy of our Boundary Waters report. If you see anything that should be edited or changed, let me know and we'll have a finished copy tomorrow. Thanks,

Attached is the final copy of our Boundary Waters report. If you see anything that should be edited or changed, let me know and we'll have a finished copy tomorrow. Thanks, Phillip

Thanks for sharing the report. All of you have done a great job (I am copying all of the members of the group). The report is impressive. It is very well written, very well researched, the ideas are well supported by graphic information to help our clients and the arguments are compelling. You should be very proud. I have a few suggestions, one major, the rest minor. I would like to be able to share the report with the Friends of the Boundary Waters as soon as possible. See if the group can make these changes by tomorrow or, at the latest, Tuesday. Other than the main suggestion on the ES, I know that the other suggestions are a pain in the...neck. They are not going to teach you anything, might change the pagination (make sure you don't have to do that) and might take a bit more time than you wish. I apologize for that. -The really important suggestion. Executive summary. You do not have an executive summary. The ES section should only provide a summary of the main arguments in each section. You should remove the info you added with the title, course, your names and contact info, etc. All of that should go on the cover page. An ES is only a summary of the main arguments of the report. It is normally presented as a succession of paragraphs, each one introduced by a bullet. The first paragraph of the ES summarizes the assignment you have received. The second paragraph provides a summary of the main conclusions for the whole report. The rest of the ES should be a paragraph for each section. You should think of each paragraph as an "abstract" of each section. -Maps, tables, graphs. The title should be provided at the top and the author should be provided right below the table, not in the footnotes. -You should always leave a blank space between sections, above or below maps/graphs/tables. -You should homogenize the information you provide on the cover page for each section. In some sections you say IR Dept., in others Env. Studies. I don't know if this refers to the department the course fits under or your major. Since this info goes after your names, it might be most useful to your client to provide your major or majors. Looking forward to the final report and to our visit to the FBW later this week.

December 3rd,

- Hi!
  - Sorry to pressure you but I'd love to email the report today if possible. Could you let me know if that is likely? They want to make sure they have time to read the report before our visit.

- hello
  - Could you finish the edits and send the report to him
Hey,

Here is the final report with edits

Hey,

Great! Thanks for the report. I just emailed it to the Friends of the Boundary Waters. They asked about the handout. Will you be able to have a print version ready before we leave on Thursday?

December 5th,

Hey,

Sorry that first message had nothing, attached is a Brochure that I made that we can hand out to the people we speak with if you guys would like. If someone could check over this for final edits and then print them out it would be great. I know I said that I could print them in color but I do not think I am going to come to campus tomorrow so if someone else could it would be spectacular. You can print color in the library it just costs a little per sheet. If someone has the funds to pay for the copies I am more than willing to pay you back. Otherwise black and white would be okay just to show a template although I would not be completely comfortable presenting something like that in black and white. If someone could print out 20 copies of the brochure (Microsoft Publisher 2013, also on computers in library) and print out around 7 copies of our actual report so people have a hard copy that they can look at if they have not held or seen one prior to this point.

Thanks Guys

Hey

Pablo, I apologize for the late notice, but I was wondering if we could leave Beloit at 4PM instead of 3PM today. I have a work shift from 3-4PM that I completely forgot about. If you think that this will be too late, then I can try to find someone else to cover it, but let me know. Thanks,

Hey

OK. We’ll leave at 4:00. Could you please contact Sophie and Jon to let them know that we are moving everything back an hour just in case they don’t get this email? Thanks,

December 7th,

Guys

Wow! Read PD’s email below.

Hey

It was very good to finally meet you and to hear personally from Jon, Sophie and Phillip about their report. We were very impressed. Betsy, a critical eye mind you, enthusiastically told me how particularly impressed she was with the knowledge they showed on the subject and their quality of presentation. I feel we learned a few things too, On first glance for a January project, a report similar to this one along with a Powerpoint (or even another personal visit!) on Antofagasta’s history/culture, economic, social and environmental record (which you described as abysmal) and why we could expect that here, would be extremely helpful. We have very little information on their particular details. I would say plan on creating that and we can set a date and time to generate a more specific outline like we did before. One idea we had to promote this collaboration was to have your students present at a member event of ours or have them do a simple, brief
web video that we can use in educating our members or take to presentations that we do (we presented in person to over 1,800 people so far this year) and put into powerpoints, place on the web etc. Think about it as an option. Maybe someone with an iPhone and some iMovie skills could arrange that around specific thematic topics. OK thank you so much again for making the trip and I look forward to following up again this month.

- PD

December 8th,

- Here is the power point presentation. Let me know if you have any recommendations, I will continue to work on this
Friends of the Boundary Waters
Mineral Report

Phillip Amsden, Jon Hammon, Nora Holte, and Sophie O’Connor
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- **Bibliography**
Executive Summary: Economics and Politics of Mining:

Sulfide mining for precious metals has been proposed by two companies, PolyMet and Twin Metals in the area around the Boundary Waters Canoe Area Wilderness Area in northeastern Minnesota. Sulfide mining in this area includes the extraction of the precious metals copper, nickel, palladium and platinum. Traditionally the area around Ely Minnesota has been home to iron ore mining, sulfide mining has more environmental hazards associated with the process and tailings. Historically environmental reports put together by mining companies underestimate the impact of sulfide mining on water quality and the cost associated with remediation. This report has been prepared to give specific information about the economics and politics of mining for copper, nickel, palladium, and platinum to give a better understanding about the incentives for companies to invest in sulfide mining in Minnesota. Six aspects of the market of mining were investigated further.

- Copper is an essential resource to the global economy, the metal is used in almost all electronics, for infrastructure, and in manufacturing. With a decreased capacity at mines, labor disputes, and environmental concerns production of copper is decreasing. As raw production decreases the production of processed copper is increasing, the deficit made up for by recycled copper and lowering stockpiles. Two stockpiles are currently operated, companies and countries have been allowing the level of copper stock to fall indicating an expectation of steady supply and a dip in prices. Chile, Peru, China, and the US are the largest producers of copper ore in the world, in 2000 China stopped exporting raw copper and began importing. The country has developed as a huge consumer of raw resources. The decrease in copper exports has caused the rest of the world to reopen copper exploration and created a push to open new mines.

- Nickel is used in a variety of products, however the most common use of nickel is the as an input in the production process of stainless steel. The nickel resources around the world are controlled by a few companies such as Norilsk in Russia and Vale in Brazil. The nickel resource is consumed primarily by China, their large consumption has aided in the development of nickel pig iron, an alternative to pure nickel. With the addition of Nickel Pig Iron and the already large stock of nickel in the world, the market is facing a continual decrease in price. Taking this and the fact that the current marginal profit of producers is almost nonexistent the future of the nickel market is unsure.

- Palladium is a precious, Platinum Group Metal (PGM) and it shares similar properties with other PGMs. Like platinum, the vast majority of demand, for palladium (67%) comes from the production of autocatalysts, while jewelry, dental and industrial uses make up most of the rest. South Africa and Russia are the predominant palladium producers in the world, making up around 80% of the world’s primary source supply between the two of them. The United States has one firm that produces palladium: Stillwater Mining: Recently purchased by Russian firm Norilsk Nickel.

- Platinum, the rarest of the precious metals, has increased in demand over the last decade heavily. What used to be an autocatalyst dominated industry from Europe and Japan is not heavily influenced by China’s rising platinum jewelry demand. Though production is essentially based in South Africa and Russia, further production is demanded, which calls for firms starting production in Zimbabwe, Canada, and the United States to accommodate the growing demand.
Friends of the Boundary Waters

Precious Metal Report:

Nickel
I. Introduction to Nickel

Nickel is the fifth most abundant element that is on our planet, but because of the properties of pure nickel it is rarely found on the surface of earth, therefore it requires extraction for use. This extraction process is where the environmental concerns are raised with the mining of nickel, which the Friends of the Boundary Waters are fully aware. Nickel is used in a variety of products, primarily in combination with iron to produce stainless steel, however it has many other applications. Nickel is extremely stable metal, it is resistant to corrosion, and is relatively malleable. These properties of nickel allow for it to be a useful earth metal. Nickel has the capability to be shaped for a variety of uses such as wires, rods, tubes, and sheets and because of this nickel is the most widely used metal on the planet, with a high level of applicability. Nickel literally has hundreds of thousands of applications, but to reiterate, the most common use for nickel is as an input in the production process in the creation of stainless steel.

The worlds nickel deposits are divided up into two main categories of sulphide and laterite deposits, which make up around 40 and 60 percent of the resource, respectively. Sulphide ores are generally found hundreds of meters below surface, and generally require underground mining infrastructure. Laterites are traditional to the surface, about 15 to 20m deep, and occur where nickel sulphides have been converted to oxide ores. Being closer to the surface, laterites can be mined via open-cut methods. These deposits are farther divided up into strata-bound, basal, and ultramafic rock deposits; 50, 30 and 18 percent respectively. These dichotomies simply refer to where the nickel is located in the ground, and what extraction process would be needed to employ the nickel resource. If you consider the deposits that have been located within sea beds, it would double the current global levels and would provide a possible resource if nickel deposits are exhausted elsewhere.

However, depletion of land bound nickel reserves is not likely to be a future that the world is facing, in reality it is the exact opposite of this. Within the context of this analysis of the nickel market you will begin to see the shape of the current market, and you will begin to see why there should be no concern about depletion of the nickel resources. Nickel is indeed facing a future that is unknown and instable, but not because of lack of the resources, but because there is a massive oversupply of nickel, on the world market and with the introduction of a new Chinese alternative to pure nickel, the world prices are plummeting with no end in sight.

II. Distribution and Ownership of Nickel Resources

Location of Mines

---

Below is a physical map of all of the nickel deposits in the world excluding the deposits that are located within the ocean. The larger the dot the larger the deposit. The red circles represent sulfide deposits, the yellow triangles represent laterite deposits.

**Figure 1: Location of World Nickel Reserves**


<table>
<thead>
<tr>
<th>Country/region</th>
<th>Resource (Mt)</th>
<th>% of world total</th>
<th>Resource (Mt)</th>
<th>% of world total</th>
<th>Total Na resources</th>
<th>% of world total</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Caledonia</td>
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<td></td>
</tr>
<tr>
<td>Russia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central &amp; South America</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caribbean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia &amp; Europe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Australasia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>101</td>
<td>100.0</td>
<td>101</td>
<td>100.0</td>
<td>202</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Figure 2: Distribution of Nickel Reserves**


The graph and table above show that the nickel resources are distributed all around the world with the largest deposits in Southeast Asia, Russia, Africa, and Canada. This shows how

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23 Fig.1: Image taken from; The British Geological Survey, "Nickel: Definition, Mineralogy and Deposits." 2008.
distributed this resource is geographically. Although the resources is widely distributed, a select few companies control a majority of the world’s nickel resources. Four main companies own the majority of the nickel resources in the world; Norilsk Nickel, Vale, BHP Billiton, and PT Antam are these companies and together they produced almost 50% of the world nickel.²⁴

**Figure 3: Nickel Ore Production**²⁵

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Norilsk Nickel</td>
<td>Russia</td>
<td>272</td>
<td>16.7%</td>
<td>1</td>
<td>17.7%</td>
<td>1</td>
</tr>
<tr>
<td>Vale</td>
<td>Brazil</td>
<td>234</td>
<td>14.4%</td>
<td>2</td>
<td>15.4%</td>
<td>2</td>
</tr>
<tr>
<td>BHP Billiton</td>
<td>UK / Australia</td>
<td>139</td>
<td>8.6%</td>
<td>3</td>
<td>8.1%</td>
<td>4</td>
</tr>
<tr>
<td>PT Antam</td>
<td>Indonesia</td>
<td>123</td>
<td>7.6%</td>
<td>4</td>
<td>8.6%</td>
<td>3</td>
</tr>
<tr>
<td>Xstrata</td>
<td>Switzerland</td>
<td>79</td>
<td>4.9%</td>
<td>5</td>
<td>5.5%</td>
<td>6</td>
</tr>
<tr>
<td>Eramet</td>
<td>France</td>
<td>78</td>
<td>4.6%</td>
<td>6</td>
<td>6.0%</td>
<td>5</td>
</tr>
<tr>
<td>Jinchuan</td>
<td>China</td>
<td>60</td>
<td>3.7%</td>
<td>7</td>
<td>4.2%</td>
<td>7</td>
</tr>
<tr>
<td>Anglo American</td>
<td>United Kingdom</td>
<td>54</td>
<td>3.3%</td>
<td>8</td>
<td>3.2%</td>
<td>8</td>
</tr>
<tr>
<td>Nickel Asia</td>
<td>Philippines</td>
<td>48</td>
<td>3.0%</td>
<td>9</td>
<td>2.0%</td>
<td>11</td>
</tr>
<tr>
<td>Votorantim</td>
<td>Brazil</td>
<td>41</td>
<td>2.5%</td>
<td>10</td>
<td>1.8%</td>
<td>12</td>
</tr>
<tr>
<td>Sumitomo</td>
<td>Japan</td>
<td>39</td>
<td>2.3%</td>
<td>11</td>
<td>1.5%</td>
<td>14</td>
</tr>
<tr>
<td>Sherritt</td>
<td>Canada</td>
<td>34</td>
<td>2.1%</td>
<td>12</td>
<td>2.1%</td>
<td>10</td>
</tr>
<tr>
<td>Cubaniquel</td>
<td>Cuba</td>
<td>30</td>
<td>1.8%</td>
<td>13</td>
<td>2.8%</td>
<td>9</td>
</tr>
<tr>
<td>Minera (Glencore)</td>
<td>Switzerland</td>
<td>28</td>
<td>1.7%</td>
<td>14</td>
<td>1.8%</td>
<td>13</td>
</tr>
<tr>
<td>Larco</td>
<td>Greece</td>
<td>22</td>
<td>1.4%</td>
<td>15</td>
<td>1.0%</td>
<td>16</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>345</td>
<td>21.2%</td>
<td></td>
<td>18.4%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1625</td>
<td>100.0%</td>
<td></td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>


When looking at the producers of nickel it is important to make the distinction between the producers of nickel and the producers of the finished nickel product. The earlier are the companies that own the extracted nickel, the latter are the producers of stainless steel and other nickel products. Norilsk Nickel and Vale are still the largest two producers of the finished product, the third and fourth spot are taken now by Jinchuan in China and Xstrata in Switzerland.²⁶ These four companies produce almost 50 percent of the worlds finished nickel resource. The increase in Chinese influence in this sector will be explained later in this document.

²⁵ Fig.3: mage taken from; Dewison, Paul. "Nickel: The Companies and Their Markets." InterriaRMG (UK), 2012.
III. From the Mine to the Consumer

The production of the nickel resource is largely dominated by a few main companies, the consumption of nickel is dominated by one main country; China. In 2011 they consumed 680 metric tons of nickel, almost half of the nickel mined that year. The nickel consumed by China is stratified between pure nickel, but primarily is consumed in stainless steel through Nickel Pig Iron. Below is a table that lays out consumption in metric tons for the main consumers in the world.

Figure 5: Distribution of Nickel Consumption

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>680</td>
</tr>
<tr>
<td>Japan</td>
<td>152.2</td>
</tr>
<tr>
<td>U.S.</td>
<td>122.5</td>
</tr>
<tr>
<td>Germany</td>
<td>92.5</td>
</tr>
<tr>
<td>South Korea</td>
<td>74.1</td>
</tr>
<tr>
<td>Italy</td>
<td>54.5</td>
</tr>
<tr>
<td>Taiwan</td>
<td>46.6</td>
</tr>
<tr>
<td>India</td>
<td>35.8</td>
</tr>
<tr>
<td>Spain</td>
<td>32.7</td>
</tr>
</tbody>
</table>

27 Fig.4: Image taken from; Dewison, Paul. "Nickel: The Companies and Their Markets." InterriaRMG (UK), 2012.
28 Fig.5: Data Gathered From: "World's 10 Biggest Nickel-Consuming Countries in 2011." Bloomberg, May 28, 2012. Troszkiewicz, Agnieszka
The individual consumer, uses and purchases nickel in a variety of ways. Nickel is used in everything from kitchen utensils and appliances, surgical equipment, and vehicles. The average person interacts and comes in contact with something that uses nickel in the production every day. For the sake of following the product we will be looking at the stainless steel used in cars.

For 75 percent of the nickel that is mined in the world, it is used in the production of stainless steel. Because of this before steel reaches the hands of the consumer, it has to go through a process of smelting the nickel and iron together to make the stainless steel. This happens in a variety of locations around the world. The remainder of the nickel is consumed in the raw form, in a variety of products as well, just not as diverse as the usage of stainless steel. The stainless steel in our car likely comes from Norilsk Nickel or Vale. The majority of the steel that is produced is consumed in China, primarily in stainless steel that is made with Nickel Pig Iron which is not used in the inputs of cars.

Prior to the smelting process, or the usage of pure nickel, the nickel must go through a refining process. This process takes the impurities out of the metal and makes it more stable and more readily able to be smelted with complimentary metals. Nickel does not have to be refined before it is used in the production of stainless steel. Before the nickel is refined or is used in the consumption of Nickel Pig Iron, the nickel has to be mined from the ground itself.

There multiple nickel mines around the world, although a majority of nickel comes from a few select locations. Once the explorers for nickel mines have found a location that is able to be mined, the major contractors come in and begin the excavation process. Nickel is excavated though surface or deep mining projects and this leads to a myriad of environmental issues. The ownership of this raw nickel resource is also likely in the hands of Norilsk Nickel or Vale the largest two owners of the resource. In actuality the entire process of mining nickel, refining it, and then smelting it for forming create environmental issues. The mining process may be more destructive to the physical landscape, however the air and water pollution from industry is no less bad the environment.

IV. The World Market for Nickel

Not only nickel, but a majority of the world’s precious metals travel through one of three main markets located around the world. The first and largest is the London Metal Exchange (LME), it is the world’s leading center for industrial metal trading and price-risk management. More than 80% of the global non-ferrous business is conducted here and the prices discovered on their trading platforms are used as the global benchmark. A non-ferrous metal is any metal, including

alloys, which do not contain iron in appreciable amounts. The New York Mercantile Exchange, and the Shanghai metal exchange make up the rest of the market, although it is clearly dominated by the LME. These three markets that are located around the world allow for traders to have 24 hour access to make future contracts on non-ferrous metals.

Although the London Metal Exchange sets the prices and collects information concerning non-ferrous metals, the market of nickel is complicated, which will be explained through this document. To begin this explanation of nickel as a commodity in a market, below is a chart that is representing the LME’s nickel prices on the market for the past year.

**Figure 6: Price of Nickel; November 2012 - October of 2013**

![Image taken from; InfoMine. “Nickel Investing - Nickel Stocks, Mining Companies, Prices and News.” Vancouver; 2013.]

Throughout 2012, the price of nickel has not deviated far from the mean value for the year. The maximum price level was 8.44 dollars a pound with a minimum at 5.97 dollars per pound. The price of nickel is exhibiting a general decreasing trend since January of 2013. There are month to month fluctuations in the data, but as an annual trend is decreasing. Provided below is a snapshot of the previous three months of Nickel price data to allow you a greater insight into the market.

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32Fig.6: Image taken from; *InfoMine*. "Nickel Investing - Nickel Stocks, Mining Companies, Prices and News." Vancouver; 2013.
Figure 7: Price of Nickel; August 2013-November 2013

The chart above tells a slightly different story that is hidden in the yearly graph. During the month of August, the price of nickel exponentially rose and dropped within the same time period. This is likely due to speculation on the international market regarding the availability of resources. Since the low that was reached in the beginning of September the price of nickel has been raising. The rise is not expected to continue much above the mean value because of a relatively low marginal producer surplus. The marginal producer surplus refers to the profit that is gained to the producer after they realize the costs of producing the nickel. “Much of the nickel that is produced today, is currently being produced without a profit,” quoted Norilisk Nickel Representative. Unlike other precious metals nickel does not have a high marginal rate of return, which does not make it as attractive to investors such as metals like platinum and palladium. What this essentially means is that the amount of work to produce the resource compared to the profit gained is relatively low.

This must be taken into consideration when looking at why the price of nickel is declining. Also when looking at the market of a resource you must look at the availability of the resource, and you must look at the amount of stockpiles that are within the market. Nickel currently is in a surplus in the world market, which is getting progressively larger because of the increased production of Nickel Pig Iron. This is causing the price of nickel to be driven down, while simultaneously causing nickel stockpiles to raise in an effort of producers to raise the price of the metal on the market by restricting supply. The amount of stockpiles of nickel in the 2012-2013 financial year has almost doubled.

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33 Fig.7: Image taken from; InfoMine. "Nickel Charts and Data." Vancouver, 2013.
34 Acosta, Luis, and Peter Murphy. Reuters, "Protests close world No. 2 ferronickel mine in Colombia." Last modified October 9, 2013.
The above graph is representing the price of Nickel over the past ten years. Demand for Nickel in the beginning of the twenty-first century was relatively stable. As 2005 approaches, nickel prices in the world begin to decline, facing the influence of other substitutes on the market. In 2006, with a growing demand for nickel, China brought the price of nickel to the highest level that it has reached in the outlook of this study. Although China was the primary cause of this rise in the price of nickel in 2007, in an effort to reduce their costs, China began to produce Nickel Pig iron which has drastically driven down the worldwide price of nickel and will cause them to continually decline.

V. Stockpiles

The definition of a stockpile is: a large supply of some resource that is gathered and held in reserve for use during a shortage or during a period of higher prices. A global stockpile in the content of this report will refer a stockpiles of a precious metal that are stored by a producer of the metal. Although the definition of a stockpile implies that it is meant to be used for an economic good, on the inverse stockpiles are an effective way to artificially raise the prices of the good, or in the case of nickel to try and combat the effects of an oversupply. Companies are using basic introductory economics theories of supply and demand. If demand for a good is high but the supply is low then the price of the good will rise.

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35 Fig.8: Image taken from; InfoMine. "Nickel Charts and Data." Vancouver, 2013.
36 Commodity Online, "MCX Nickel bullish, Lead sideways to positive, Crude Oil down." Last modified October 30, 2013.
A stockpile depending on the size allows for a company to have some sort of insurance on what the price of the metal is going to be over a period of time. If the company is able to successfully restrict the resource they will maintain a steady stockpile and a steady international price. Stockpiles also allow a company to make profits off of a resource whose prices are artificially inflated. When the price of a resource is already high, and the producers restrict supply, demand will stay the same, but because there are less resources available people will be willing to pay a higher price. Below are graphs representing monthly and yearly LME recordings on LME nickel stockpiles.

**Figure 9: LME Stockpiles; September 2013 - November 2013**

![60 Day LME Nickel Warehouse Stocks Level](www.kitco.com)

Fig.9: Image taken from; *InfoMine*; "Nickel LME Warehouse Levels." Vancouver: 2013.

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38 Fig.9: Image taken from; *InfoMine*; "Nickel LME Warehouse Levels." Vancouver: 2013.
There has been an increase in the global stockpiles of nickel that is directly proportional to the dropping price of nickel. As shown in the section above the price of nickel has been decreasing in the past year, however because the producers of nickel want to keep the price of nickel up they have been increasing the amount in their stockpiles. The graphs above combined with current available information would show that this trend is going to continue, particularly because of the increased presence of Nickel Pig Iron. The producers of nickel are growing increasingly concerned because of this cheaper substitute to pure nickel ore. Depending what the nickel is needed for, nickel pig iron which is significantly cheaper, is a perfect substitute for pure nickel. A substitute refers to a resource that can act as an alternative as an input without changing the production process. Even with their attempts to combat the effects of an oversupply the price is continually falling.

VI. China’s Role in the Nickel Industry

China is the world’s largest consumer of nickel and accounts for almost 50% of the world’s consumption of nickel, both ferrous and non-ferrous. This fact combined with China being the world’s leading producer in Nickel Pig Iron allows it to be a major player in the international nickel market.

A majority of the nickel that is consumed by China is nickel that is not pure and is used as an input to make nickel pig iron. Nickel Pig Iron (NPI) is a low grade ferronickel that was invented in

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39 Fig.10: Image taken from; *InfoMine*: “Nickel LME Warehouse Levels.” Vancouver: 2013.
China as a cheaper alternative to pure nickel in the production of stainless steel. The process of refining a nickel laterite ore is very energy intensive and is increasingly becoming less cost effective. Ferronickel simply refers to the fact that the nickel is not pure and may contain other minerals. The production process utilizes nickel ores rather than pure nickel. This allows the metal to skip the refining process which makes the metal cheaper at the cost of being a lower quality and grade. This nickel pig iron is used in the process of making stainless steel, and allows for a cheaper production process. The lower price of production does have the tradeoff of creating a product of lower quality. However, depending on the usage of the stainless steel this does not prove to be a structural or fundamental problem.

This source of low grade nickel has an influence on the price on nickel on the world market by increasing supply which in turn lowers the demand. Companies are continuing to transfer to using NPI which is providing a benefit to those producers of NPI in China. The current and future status of nickel pig iron is currently unsure. One of the world’s top producing mines is located within Indonesia and supply China with a large percentage of the raw nickel that is used in their production process. However Indonesia is in current debates as to whether they are going to continue the production of nickel ore for the usage of nickel pig iron. The decision will be made in late December and early January of this year which will change the market either way.

If Indonesia stops producing nickel ore than the price of nickel on the world market will raise slightly, depending on the current balances of nickel supply. If they decided to continue this contract with China than it is very probable that the market nickel of price will continue to decrease regardless of supply of pure nickel. With Nickel Pig Iron and the large supply of nickel in the environment it is likely that this commodity will continue to devalue which will severely affect the market in this possible reality.

**VII. Conclusion**

What is to be said for the current and future prospects of the nickel market? With Nickel being one of the most abundant mineral resources, there will be no shortages in the near or distant future. Current nickel levels will continue to rise, and with the increasing presence of new substitutes and production methods in the creation of stainless steel will compound this raise in supply. China currently is playing the largest role in the world’s nickel market. Yes, China is the world's largest consumer, and is increasingly demanding more nickel resource, as a response the use of nickel pig iron is rising. Not only is China consumption levels requiring larger amounts of nickel reserves extracted each year, but they have been combating their increased demand by raising production of Nickel Pig Iron. Because Nickel Pig Iron is an almost perfect substitute for

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42 CNMC, China Nonferrous Metal Mining (Group) Co., Ltd, "About CNMC."
45 Freya, Berry. Reuters, "Nickel outlook lifts as Indonesian export ban looms over China." Last modified October 17, 2013.
pure nickel in the production process of stainless steel, world nickel prices are continuing to decrease while output is increasing.

In an effort to raise prices, the main stakeholders of the nickel commodity have been increasing the amount of nickel reserves in stockpiles in an effort to raise/keep nickel prices constant or to prevent them from falling any farther. Currently nickel producers are facing a market in which they are simply covering their costs of labor in the production process, only the largest companies in the market are the ones who are able to meek out a small profit. With an oversupply of nickel currently in the market, and a general oversupply in world nickel reserves, companies should not expect to make a profit off of the mining and production of nickel.

Nickel is a primary component in the production of stainless steel, so as a result of the decreasing price of nickel worldwide the price of stainless steel is decreasing in conjuncture. Stainless steel is used in the production of a myriad of commodities, everything from the production of kitchen appliances to the construction of cars and buildings. For the average consumer this transfers to a reduction in the price of goods that use nickel as an input. As some companies switch to employing nickel pig iron instead of pure nickel, the products that you consume may be of a lesser quality. The future of the nickel market is not bright. As the global price of nickel continues to fall, the marginal profit from nickel production will continue to reduce to a point where companies are no longer making any profit. The future of the nickel market beyond this point is unsure, and the effects of a market where nickel has no value is uncertain, something only time will tell.
Friends of the Boundary Waters: Precious Metal Report

Platinum

Prepared By: Sophie O'Connor
Beloit College, Major: Political Science
Global Political Ecology, Fall 2013
I. Introduction:

Platinum is the most precious of the precious metals, and therefore its world market is limited, but very dense. Due to the scarce quantity of platinum in the world, the long and complicated extraction process, the fact that platinum has more industrial uses than silver or gold, and that South Africa and the CIS are the only two places in the world with deposits of industrial quantities\(^47\), as is evident in figure 6, Platinum continues to be a very rare metal that people pay a lot for, more than even gold or palladium, as seen in representation of the current market for PGMS in figure 1. On it’s own, platinum, when processed, can function for jewelry, investments, chemical facilities, industrial purposes, and as a catalytic converter (autocatalyst), for some examples\(^48\). But among those the most popular use in the United States is as a catalytic converter, and then secondly for jewelry. When mining, Platinum tends to belong to a group of metals called PGMs (Platinum Group Metals) that are often mined in deposits together. These include Palladium, Rhodium, Iridium, Ruthenium, and Osmium, and are often mined in conjunction with Copper and Nickel\(^49\).

Figure 11:

<table>
<thead>
<tr>
<th></th>
<th>Palladium</th>
<th>Platinum</th>
<th>Rhodium</th>
<th>Gold</th>
<th>Silver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>757.00</td>
<td>1,441.00</td>
<td>985.00</td>
<td>1,287.00</td>
<td>21.41</td>
</tr>
<tr>
<td>Bid</td>
<td>754.00</td>
<td>1,438.00</td>
<td>935.00</td>
<td>1,286.75</td>
<td>21.35</td>
</tr>
<tr>
<td>High</td>
<td>758.50</td>
<td>1,446.00</td>
<td>985.00</td>
<td>1,288.30</td>
<td>21.42</td>
</tr>
<tr>
<td>Close</td>
<td>755.00</td>
<td>1,436.00</td>
<td>935.00</td>
<td>1,287.15</td>
<td>21.49</td>
</tr>
</tbody>
</table>

II. The World Market for Platinum:

As an incredibly scare metal, there are very few deposits, with fewer then ten significant mining companies worldwide, however those in South Africa and Russia, especially South Africa, continue to be the largest. South Africa accounts for around 78% of annual world platinum production and 63% of world platinum reserves, where as Russia accounts for 13% of the world’s production. Though there are is some mining in North and South America, among a few other places, this production is less significant compared to the major producers, as is evident in figure 1.

The global demand for platinum has been on the rise for quite some time, through the autocatalyst, jewelry, and industrial applications. Initially, this rise was credited the strong autocatalyst demand, the largest application of platinum metals. Autocatalysts are a device, typically a cylinder of circular cross section made from either ceramic or metal formed into a honeycomb and coated with chemicals and platinum group metals, then installed in the exhaust line of automobiles. These autocatalysts convert 90% of the harmful elements in the exhaust into less harmful carbon dioxide, nitrogen, and water. Because of the growing need to halt emissions, including toxic car emissions, there is a certain future in autocatalysts as a mechanism to do so, and therefore this will and has already lead to greater use of the catalyst metals such as platinum.

Europe leads the demand of platinum for autocatalysts, at 1,345 tons in 2012, because of their use in diesel vehicles that dominate the European market, followed by Japan, at 600 tons in 2012, both which have been relatively stable in their demand since 2004, however since 1999 platinum demand for autocatalysts globally has doubled, and the environmental importance of it continues to grow. It is important to mention that automobile production dipped in 2009, due to a global recession resulting in less cars demanded, but demand for automobiles has since increased and is still on the rise, as is evident in figure 2.

The second largest application of platinum metals, which is growing every year, is through jewelry. The United States, China, and Japan make up 85% of the platinum jewelry demand. The fact that platinum is in such high demand for jewelry is in part because of it’s rarity, but also because of it’s strength and resistance to tarnish, and ability to be heated and cooled without real effects. Additionally, more contemporary demand for platinum jewelry has grown out of the “pure,” “prestigious,” “modest,” and “modern” qualities that it is said to portray. As a consumer of platinum jewelry, China leads with 60.7 tons in 2012, followed by Japan at 9.6 tons in 2012, and then other countries. Further, the demand for platinum jewelry is globally on the rise, as is evident through the amount demanded in 2004 being 67.2 tons, while it is presently at 86.5 tons.
The final largest application of platinum metals is through industrial purposes, specifically the production of nitric acid, silicones, hard disks, electronic components, dental restorations, crucibles, glass, medical treatments, petroleum, and sensors. Therefore, the production of platinum is extremely relevant and effects many facets of society.

III. Platinum Producers:

Production of platinum is very limited because of its rarity, and therefore there are not many large platinum mining firms. The largest, however, is Anglo American Platinum Limited, accounting for around 40% of the world’s production of platinum, and making it the number one producer in the world of platinum. Anglo American Platinum Limited is based in South Africa, and mines from the world’s richest preserve of PGM’s, the Bushveld Complex. Anglo American has nine different wholly owned mining operations in South Africa, and also has three smelters and two refineries. Anglo American has a leading global position in mining, but especially in terms of platinum mining, and is catering directly to demand growth in growing economies, such as Brazil, China, and India, which has been shown successful as demand from these countries continuously increase.

Implata Platinum Holdings Limited also proves to be another large global mining firm, making up around 25% of global production. Based in South Africa Again, Implata has four main units in South Africa, and two units in Zimbabwe. Similarly to Anglo American, Implata also mines from the preserve of the Bushveld Complex in its South African units, and mines from the Great

Dyke preserve in its units within Zimbabwe. Indeed, though it does not produce as much annually as Anglo American Platinum Limited does, it still has total attributable resources of 230 million ounces of platinum, and in the 2013 financial year, produced 1.58 million ounces of platinum.

**IV. From Mine to Consumer:**

![Figure 14: Royal Bafokeng Platinum](image)


In order to mine for platinum, there are seven common steps: exploration digging, mine development and construction, opencast and underground mining, ore transportation, crushing and milling, flotation and digging, and smelting and refining, all visible in figure 4. The first step, exploration digging, calls for an exploratory dig of the land aimed to evaluate the site for sufficient mineral deposits to justify commercial mining. After this step is approved and sufficient mineral deposits are known to be available, the mine is developed and constructed to prepare the mine for ore extraction and mining. The next step is the actual mining, which is predominately underground but occasionally also open cast, and in this step, "miners bore holes with hand-held pneumatic devices and then blast with explosives to obtain the ore". Then, the ore is transported to the surface of the mine for processing, before being crushed and milled into smaller particles of rock, in order to fully expose the PGM mineral.

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69 “Mining and Processing of PGMs,” 2013.
70 “Mining and Processing of PGMs,” 2013.
Next, these pieces are added to water and other reagents, substances added to a system in order to bring out a chemical reaction. Air is then passed through this mixture, allowing for the PGM minerals to float to the top, where they are then retrieved, yet still covered in froth. In order to get rid of this froth and extract the most PGMs, the concentrate goes through a similar process again, and is then dried. Finally, this dried concentrate is smelted in a very hot furnace where the metal is extracted from the waste, and then these metals go through a refining process of separating out PGMs from other metals through solvent extraction, distillation, and ion exchange methods of extracting\textsuperscript{71}.

V. Stockpiles:

There are not many large platinum stockpiles, because platinum is so incredibly rare that there is only around 200 million ounces of platinum above ground, compared to gold’s 5 billion ounces aboveground\textsuperscript{72}. However, there has been an accumulation of a 4.5 million oz. platinum stockpile in the global market\textsuperscript{73} accumulated over the past 5 years. This large stockpile is said to be due to the fact that the cost of electricity and labor costs, but also could have an effect on the global demand and price of platinum. Another large stockpile in the global market is through the U.S. Department of Defense Logistics Agency (DLA), however this stockpile is continuously decreasing. In 1995, the stockpile was 13,700 kg of platinum, but in 2002 it had decreased to 649 kg of platinum\textsuperscript{74}. Additionally, the Russian government maintains two platinum stockpiles: “a reserve maintained by the Russian Ministry of Finance and a Central Bank stockpile supplied by transfers from the Ministry of Finance reserve to sell on the world market for cash to offset Government obligations and to reduce budget deficits,”\textsuperscript{75} however the amount remains secret. Additionally, there are some smaller stockpiles through different companies and firms just to maintain internal production needs.

\textsuperscript{71} “Mining and Processing of PGMs,” 2013.
\textsuperscript{75} USGS, 2004.
VI. China’s Role in the Platinum Industry:

In the past decade or so, there has been a great rise in demand for platinum for the jewelry market in China, as is evident in figure 3. This market used to just be half of the platinum market for autocatalysts, but now the jewelry platinum market This demand comes from a variety of external factors, such as the growth in the Chinese economy, expanding a positive mindset from domestic consumers; the price volatility of platinum; the encouragement from the state; and the demand for platinum jewelry, especially for Chinese engagement or wedding rings. It is important to note that this demand is often larger than the production capacity, especially now in China, which leads the demand for further platinum mining to increase to satisfy consumer purchasing. Similarly to the rest of the world, the demand for platinum in terms of jewelry is continuously increasing, whereas the world demand for platinum for other purposes seems to be decreasing.

Another reason why a demand for platinum is rising in China is because of the concerted effort from the Chinese government to bring precious metals to the forefront in 2009. After classifying precious metals as an investment in 2004, the Chinese government classified precious metals as an investment in 2009, promoting the ownership of precious metals through China’s Central Television’s advertisements. Platinum therefore became very relevant, and a desirable asset in the jewelry industry. As the largest market for platinum jewelry, sales will continue to rise, especially because China per capita incomes are on the rise, South Africa supply seems stable, and platinum prices are on the decline. However, as stated by Kenneth Rapoza in Forbes magazine, “central to this will be China’s ongoing economic progress and the accumulation of personal wealth.”

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76 Rapoza, 2013.
78 Rapoza, 2013.
79 Rapoza, 2013.
In China and such places where platinum jewelry is becoming increasingly more popular, more and more small platinum stockpiles are required for display cases in department stores in order to keep up appearances. However, the changing amount of money platinum costs definitely also changes the size of stockpiles, which shrink when platinum prices soar, but grow exponentially when they fall, even just a little. Additionally, many platinum mining companies even require a significant stockpile of platinum before they start mining, for security.

VII. Conclusion:

As the most rare precious metal, platinum has much global value and price. Its use has surpassed exclusively autocatalysts for cars, as it has been used for decades, to accommodate a growing jewelry industry in particular. Additionally, platinum is used in industry, chemical facilities, and investments. As China expands its global economy, buyers are becoming increasingly more interested in platinum for jewelry production, creating an extremely large demand. Though there was a decreasing trend in uses of platinum for autocatalysts, the industry is picking back up and demand is once again on the rise. Therefore, global platinum companies are now accommodating the exponentially growing global platinum demand, which also means locating more and more reserves. Though this production was previously based in South Africa and Russia, production is gaining momentum as firms begin to realize potential in other areas, such as Zimbabwe, Europe, and the United States.

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80 Rapoza, 2013.
Friends of the Boundary Waters

Precious Mineral Report

Palladium

Prepared By: Phillip Amsden
Beloit College, Major: International Relations
Global Political Ecology
Palladium

I. Introduction

Compared to the nickel and copper markets, palladium makes up a small part of the absolute demand for minerals in the world market. However, due the recent boom in automobile sales in China, palladium there is growing demand for palladium. Palladium is quickly replacing platinum as the metal of choice for producing autocatalysts in diesel engines. The first section below outlines this growing demand, as well as other statistics regarding the world palladium market. The following sections details the primary producers of palladium, both states and firms. Following that, the ore is traced from the mine to the consumer, which includes the largest purchasers of palladium. Finally, the role of stockpiles and the specific role of China are explored in sections V and VI. Section VII outlines the general conclusions that can be drawn from this data.

II. World Market for Palladium

Palladium is a precious, platinum-group metal (PGM). Like platinum, the vast majority of the demand for palladium comes from the production of automobile catalysts, which help filter harmful hydrocarbons, carbon monoxide and nitrogen oxides into CO2 nitrogen and water vapor. Of the 9,745,000 oz. of palladium demanded in 2012, 6,525,000 oz. were for the purpose of autocatalyst production, or 67% of the total market. The second largest source of demand came from the industrial sector, which purchased 2,485,000 oz. in 2012. Within the industrial sector, palladium is used in the refinement of petroleum and industrial chemicals. Palladium is also used in both dental and electronic equipment, as well as playing a key role as a catalyst in the production of polyester. 450,000 oz. of palladium was demanded for jewelry production, while another 285,000 was purchased for investment purposes.

The current price for palladium is $758.50/oz, meaning that approximately $7.4 billion worth of palladium was sold in 2012. Prices for palladium, much like other PGMs, can be very volatile, as shown by the graph on the right. Prices rose from just over $100/oz. in 1997 to over $1000/oz. in 2001, then dropped back under $200/oz. by 2003. As of November 10th, 2013, the 52-week low price for palladium was $607.25/oz., while the 52-week high was $782.80/oz.

III. Palladium Producers

In gross, 8,780,000 oz. of palladium produced in 2012; 6,540,000 oz. were produced through primary source mining, while 2,240,000 oz. were recycled back into the market. South Africa and Russia accounted for 5,230,000 oz., or just under 80% of the total market. Russia slightly out produced their African counterparts, producing 2,850,000 oz. to South Africa’s 2,380,000 oz. North America was responsible for 890,000 ounces, or about 14% of the market. 420,000 oz. was produced elsewhere. These states share of world production is outlined in Figure 2 on the next page.

87 Image from www.infomine.com
South African firms dominate the palladium production industry. 5 different firms produce more than 95,000 oz. annually. Of these, the largest, both nationally and globally, is Anglo American Mining. They produce over 3.5 million ounces of PGMs per year, including over 1 million oz. of palladium. They conduct operations not only from their headquarters north of Johannesburg, but also in Canada, Brazil, Russia and China, employing just under 50,000 people globally. Impala Platinum is the second-largest producer, producing over 3 million oz. of PGMs per year. Lonmin Platinum, Aquarius Platinum and Northam Platinum all also produce over 95,000 oz. of platinum and are based in South Africa.\(^{93}\)

Norilsk Nickel is the dominant Russian firm in terms of PGM production, producing about 800,000 oz. of palladium per year. They also recently purchased a controlling interest in Stillwater Mining Company, the only U.S.-based producer of PGMs. Stillwater Mining Company produces about 450,000 oz. of palladium yearly. The only other PGM-producing firm in North America is the Canadian outfit North American Palladium, which produces about 177,000 oz. of palladium per year.\(^{94}\)

**IV. From Mine to Consumer**

As mentioned earlier, autocatalyst production accounts for 67% of the overall market for palladium, so the majority of palladium would take the following path from the mine to the final-purpose user.

- Palladium ore is mined, likely in either Russia or South Africa, and then stored until sold or added to a firms stockpile.

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• The Palladium is sold to a catalyst producer. Process catalysts are a $13 billion-
a-year industry, with most firms based in either U.S. or western Europe. Some of the
largest autocatalyst producers include petrochemical/refining companies such as:
  o Haldor Topsoe (Denmark)
  o UOP (USA)
  o Axens (France)
  o Johnson Matthey (United Kingdom)
  o Süd-Chemie (Germany)

• Autocatalyst is sold to a car manufacturer, such as General Motors or BMW, where it is installed into an exhaust system.
• The car is purchased by a consumer.

![Figure 18. Palladium Demand as Percent of Total](https://example.com/figure18.png)


A similar path is taken by palladium in jewelry or electronics production, though obviously not through the same firms that produce autocatalysts.
In the industrial sector, palladium is often used as a catalyst or in the refinement of petroleum or chemicals. Palladium plays a key role in the refinement of nitric acid as well as in the production of synthetic rubber, polyester and nylon products. These industrial uses make up about 5-7% of the demand for palladium annually. Additionally, 6-9% of yearly demand comes from the dentistry sector, where it is used to make dental crowns and bridges.

V. Stockpiles

<http://www.stillwaterpalladium.com/uses.html>
Palladium firms use their stockpiles to control the overall global price. Firms like Anglo American Mining, who have total PGM stockpiles of 220 million oz., try to find the whatever price will maximize profits without pushing buyers to find alternatives and then either store or release enough ore to reach the desired price. In 2011, for example, global production of palladium was 9,705,000 oz., almost 1 million oz. greater than it was in 2012. Global demand, on the other hand, was 8,450,000 oz., almost 1.3 million oz. lower than 2012 levels. As a result, 1,255,000 oz. of the palladium produced was added to global stockpiles to keep prices from dropping too low. In 2012, however, demand was up to 9,745,000 oz. will production fell to 8,780,000 oz., meaning that 965,000 oz. of palladium were released from the stockpile to keep prices from rising.

VI. China’s Role in the Palladium Industry

As with many minerals and industrial products, China’s massive, rapidly expanding economy has a noticeable influence on the palladium market. Expanding infrastructure and growth in personal wealth have led to a rapid increase in automobile purchases. The growing car culture in China, as shown by the graph on the previous page, has led to an ever-increasing demand for autocatalysts. Demand for autocatalysts in China increased 8% between 2011 and 2012. Additionally, there will be likely increased demand for palladium for industrial uses. Industry and manufacturing make up 48% of the Chinese economy, which has grown by at least 7.8% per year since 2000. China’s demand for palladium will likely continue to increase, driving up already rising prices.

![Figure 19. Car Purchasing in China 2000-2015(Estimated)](image)

VII. Conclusions

The palladium market is growing, demand rose 15% in 2012 due to palladium gradually replacing platinum as the metal of choice for autocatalysts in diesel engines. Demand for

palladium by the process catalyst industry rose 7% in 2012. This is due, in a large part to the rising demand for automobiles and autocatalysts in China, as well as increasing industrial output. In short, palladium prices will likely continue to rise over the next few years.

PolyMet and Twin Metals would represent the only PGM producers in the United States except for Stillwater Mining, which was recently purchased by Russian company Norilsk Nickel. As long as there continues to be increasing demand for automobiles, it is likely that we will see an expansion of the palladium market, as well as the market for other PGMs. The boom in the personal automobile purchasing in China will be one of the driving factors in coming years. PolyMet and Twin Metals will certainly be looking to capitalize on this growing market for PGMs and any proposal for a PGM mine will include references to the Chinese automobile sector. The growth in PGM mining will have to be addressed and the social and environmental costs of creating of the mine will have to be shown to outweigh the benefits of this expanding industry.
Friends of the Boundary Waters

Precious Mineral Report

Copper

Prepared By: Nora Holte
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Global Political Ecology, Fall 2013
I. Introduction

The market for copper makes up a large share of the world’s demand for raw minerals. Though copper production has been increasing over the past decade the demand for refined copper is outpacing production. Copper is used extensively in electronics, wiring, and construction, growing economies such as China’s are using more copper than ever before causing mining companies to search for new copper deposits. The first sections of this report will discuss the world market for copper including its price, uses, and producers. Following this copper ore is traced from the mine to the consumer. Sections V and VI discusses international copper stockpiles, and prominent countries in the copper market. Section VII investigates the significant role China plays in the global copper market.

II. World Market for Copper

The world’s output of mined raw copper was estimated to be 16.1 Mt in 2011. According to the USGS Outlook Report this figure is expected to increase to 18 Mt by 2013, 19 Mt by 2015 and 21 Mt by 2017. Global production of refined copper has outpaced the production of raw copper at 19 Mt in 2010. Refined copper output is also expected to increase to 22 Mt in 2013 and 23 Mt by 2017. Proven global reserves are 950 million metric tonnes while preliminary assessments of total unproven global copper reserves are approximately 3 billion tonnes of land-based resources. Unconventional copper resources such as deep sea and massive sulfides are not included in this calculation as extraction is not currently economically feasible.

The copper industry, like all rare earth elements is highly regulated in developed countries. The US uses import tariffs on lead content at 1.7 cents/kg, refined alloys at 1.0% value added, and copper wiring at 3.0% value added. Depletion allowances are also maintained at 15% domestic and 14% foreign. Most countries with copper resources do not maintain a government stockpile, though China has a stockpile cared for by the Shanghai Future Exchange (SHFE) and the London Metal Exchange (LEM) controls a global stockpile.

The demand for refined copper is increasing at a greater rate than the global production of copper. Though production is increasing mine capacity has peaked and is in decline. The demand for copper is greater than the global production, the world has been running a copper deficit since 2009. This deficit has been made up for by recycled copper and the reduction of global stockpiles. Capacity is thought to have decreased for several reasons; prices bottomed out in 2008 forcing companies to delay projects, lower ore-grades are being extracted from existing mines. Labor disputes and strikes slowed work in Indonesia and Chile, though the decrease in production from

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101 Menzie et al. 2013
102 Menzie et al. 2013
103 Edelstein 2013
104 Edelstein 2013
105 Edelstein 2013
106 Richter 2013
107 Menzie et al. 2013
108 Menzie et al. 2013
Indonesia and Chile was made up for by increased production in Australia, China, Congo, and Mexico.\textsuperscript{109}

The price of copper has been volatile in the past year. In 2013 the highest price was $8,242.50 per tonne in February, the lowest was $6,637.50 in June.\textsuperscript{110} Overall prices have been decreasing from 2012 (Figure 1).

Figure 20: Historical copper prices (dollars per pound) from January 2008 to January 2013.\textsuperscript{111}

Copper stocks held in metal exchanges such as LME, Commodity Exchange Division of the New York Mercantile Exchange (COMEX), and SHFE increased at the end of 2012 but have decreased from levels in August of 2013.\textsuperscript{112} Copper is in high demand because of its special properties, a unique elemental makeup makes it the most effective and efficient material for many uses. Copper has a high thermal and electrical conductivity, it is the best non-precious metal conductor of electricity making it very effective as wiring.\textsuperscript{113} Copper is strong, highly thermally and electrically conductive, ductile, resistant to creep, corrosion, and is an anti-organic.\textsuperscript{114} These characteristics make it the safest and most preferred conductor for wiring.

Copper is a component of almost everything that contains electrical wiring or circuitry as well as an important piece in creating energy efficient products. The renewable energy sector is reliant on copper because its high conductivity is needed to make products efficient enough to compete with fossil fuels.\textsuperscript{115} It can be substituted for by aluminum in wiring installed by professionals and some other applications though a high level of skill is required for safe aluminum

\textsuperscript{109} Menzie et al. 2013  
\textsuperscript{110} ICSG July 2013  
\textsuperscript{111} Annual Data 2013  
\textsuperscript{112} ICSG July 2013  
\textsuperscript{113} World Copper Factbook 2013  
\textsuperscript{114} World Copper Factbook 2013  
\textsuperscript{115} World Copper Factbook 2013
installation. Copper is used for the transmission of high-speed data such as internet and telephones as well as a component of computers and cell phones. Copper’s high thermal conductivity makes it ideal for use as a heat sink in computers and transistors as well as perfect to withstand extreme heat and pressure conditions. Copper is also used in wiring, transformers, switches and connectors. Copper and copper alloys such as brass and bronze are used extensively in plumbing as they do not leach toxins and protect water systems from bacteria, it is also used as an attractive architectural material. Alloys of copper are used on boats to reduce biofouling, the attachment of marine flora and fauna, and to resist corrosion by salt water. Transportation is dependent on copper, cars and trucks use copper in motors, wiring, radiators, connectors, brakes, and bearings. Most mid-sized cars contain about 22.5 kg of copper, luxury and hybrid vehicles contain higher levels. Portions of currency such as US pennies and Euro coins are made using copper. Copper is also used in agriculture as an addition to crop feed in areas with copper deficient soil.

III. Copper Producers

Global production of raw copper is led by Chile, which produces 34% of the world’s copper. Chile produced 5.37 million metric tons of copper in 2012, a 100 thousand metric ton increase from 2011. Chile’s production is followed by China, Peru, and the US, which respectively produced 1.5, 1.24, and 1.15 million metric tons in 2012. Other countries such as Australia, Canada, Congo, Indonesia, Kazakhstan, Mexico, Poland, Russia, and Zambia have significant levels of raw copper production and reserves (Figure 2). All other copper producing countries were responsible for approximately 2.1 million metric tons of copper in 2012.

Figure 21: Global copper production by country for 2010.
There are hundreds of companies that participate in the production of copper. Ten of the largest copper producing companies in the world are (Figure 3); **Codelco**, the world’s largest copper producer, is a state-owned Chilean group which controls 20 percent of total global reserves. **Freeport-McMoRan** is an American company based out of Arizona. It produced 1.44 million metric tons of copper in 2010. It has had trouble with strikes at its Grasberg mine in Indonesia, which holds the largest recoverable reserves of copper in the world. **BHP Billiton** is an Australian group which produces over 1 million metric tons of copper a year. Over the next five years it expects to invest $80 billion of capital in mining. BHP also has a 57.5 percent stake in Chile’s Escondida mine the highest producing copper mine in the world. **Xstrata**, the Swiss-British diversified mining group produced about 907,000 metric tons of copper in 2010. In 2011 they completed a $111 million extension to its Kidd mine in Northern Ontario. **Rio Tinto** is a London-based company that produces about 700,000 metric tons of copper a year. It supplies about 18 percent of the US’s refined copper requirements from the Bingham Canyon mine in Utah. It also has a share in Indonesia’s Grasberg mine. **Anglo American** is a London based mining group that produced about 645,000 metric tons of copper in 2010. The company has six copper operations in Chile as well as interests several other projects, including a 50 percent stake in Alaska’s Pebble project. They have a project in Chile expected to produce over 900,000 metric tons of copper. **Grupo Mexico** is a group based in Mexico with interests in transportation and infrastructure as well as the mining industry. Grupo Mexico produced about 598,000 metric tons of copper in 2010. Its mining division represents the majority of the company’s sales through corporations in Mexico, Peru, and the US. **Glencore International** a Swiss company produced about 542,000 metric tons of copper in 2010. The company produces copper in Canada, Australia, and South America. The copper is processed in Western Europe, China, Southeast Asia, Japan, and the United States. **Southern Copper Corp** is 80 percent owned by Grupo Mexico it produced about 487,000 metric tons of copper in 2010. Its operations focus on southern Peru and its Cananea mine in Mexico. **KGHM**
Polska Miedz the Polish group produced about 426,000 metric tons of copper in 2010. The firm has bought another Canadian company in an effort to increase production and lower costs.\textsuperscript{124}

Figure 22: Copper production by the ten leading companies for 2011/2012. Data in tonnes.\textsuperscript{125}

Shihoko 2012

\textbf{IV. From the Mine to the Consumer}

Once copper ore is mined it must be purified and processed. Depending on the type of source rock containing the copper different purifying processes are needed. Smelting and electrowinning are the most common types of purification but both of these are only an initial step in the refinement of ores.\textsuperscript{126} Ore can be refined to create concentrates, blister and anode, or cathode and ingots, all of various purities.\textsuperscript{127} Often refinement occurs far from the source of the copper ore. China, Chile, US, India, and Japan have some of the largest copper refineries.\textsuperscript{128} These refineries import copper ore turning it in to a purified product. Once purified the copper joins scrap metal in total global refined production. This copper is then added to stockpiles, made into copper alloys, exported as refined copper, or used in manufacturing.\textsuperscript{129} Chile and Bulgaria are two of the largest

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{124} Shihoko 2012
\item \textsuperscript{125} Shihoko 2012
\item \textsuperscript{126} Annual Data 2013
\item \textsuperscript{127} Annual Data 2013
\item \textsuperscript{128} Annual Data 2013
\item \textsuperscript{129} Annual Data 2013
\end{itemize}
\end{footnotesize}
exporters of copper blister and anode, both forms of refined copper. Copper used in manufacturing generates copper scrap, which can be reused at the source and input back into the production process or shipped to a recycling plant and join the supply of scrap.

V. Stockpiles

Copper is exchanged as a commodity on the open market in three facilities, The LEM, the COMEX/NYMEX, and the SHFE. Copper prices set in this market reflect the relationship between supply, demand, and the perception of coppers value. These exchanges allow for the trading of future production between companies at set prices with individual contracts for each deal. This practice injects money into the copper market and allows provides companies with liquid capital for production expansion and other projects.

Global metal stockpiles are large quantities of processed metal held by exchange companies in warehouses. Stockpiling works to dissuade countries and companies from acting as cartels to set prices or affect the supply chain. They decrease the effect of disruptions to the import chain, and act to stabilize the copper market. National stockpiles are sometimes collected to conserve domestic resources in times of low global supply or high prices. Stockpiles act to buffer surpluses and shortages and keep prices steady to maintain economic security.

Global stockpiles of copper are held by the LEM while SHFE oversees a stockpile for China. In 2013 global stockpiles of copper fell to their lowest levels since early 2012 in both the SHFE and LEM. The decline of copper stockpiles is an indicator of high future demand the increase of production in China. A decrease in stockpiles provides support to copper prices but may indicate that the price of copper is expected to stay steady or fall in the near future. If prices were expected to increase stockpiles would be increasing as SHFE and the LEM attempted to amass copper at low prices.

VI. International Copper Market

Copper is traded in several different forms at various levels of purity and refinement. Copper concentrates, blister and anode, cathode and ingots, scrap and semis are all imported as raw materials for further production. The top ten importers of copper ores and concentrates in the global market are China, Japan, India, Korean Rep, the EU, Brazil, Bulgaria, Finland, Philippines, and Sweden. The top importers of copper blister and anode are China, Belgium, Australia, Korea, Austria, Germany, India, Netherlands, Canada and Sweden (Figure 4).

130 World Copper Factbook 2013
131 Goonan 2013
132 Manolo 2013
133 World Copper Factbook 2013
134 Princeton
135 Manolo 2013
136 Princeton
137 World Copper Factbook 2013
China, Germany, US, Italy, Taiwan, Turkey, Korea, Brazil, Thailand, and France import refined copper. Once the imported copper is further refined it is used to produce goods such as automobiles and electronics, the products are then exported or bought nationally from the importing country.

The market for processed copper is greatest in the developed world and countries that produce goods for export. Studies of global copper usage by the International Copper Study Group estimate that global copper usage is 30% equipment, 30% building construction, 15% infrastructure, 13% transportation, and 12% industrial (Figure 5).
Growing economies such as China have a higher demand for copper as they invest in infrastructure and the demand for automobiles increases. The globalized economy makes it difficult to track the actual usage of copper within a country, however Germany, Russia, Taiwan, Korea, Japan, Belgium, Poland, Chile, and Spain are overall exporters of copper products while the US, China, Italy, the UK, India, and Thailand are net importers.\textsuperscript{142}

\textsuperscript{142} World Copper Factbook 2013
VII. China’s Role

China is a major player in the global market for raw rare earth elements. Its growing population, economy’s dependence on manufacturing, and large reserves of natural resources make the country an integral part of global copper supply and demand. China has an abundant 50% of the earth’s rare-earth resources, the country accounts for over 90% of the world output of rare earth elements.\textsuperscript{144} China is ranked second after Chile for the mining production of copper in 2011 and 2012. Only six countries have greater copper reserves than China (Chile, Australia, US, Mexico, Peru, and Australia), Russian reserves are approximately equal.\textsuperscript{145}

\textsuperscript{143} Annual Data 2013
\textsuperscript{144} Menzie et al. 2013
\textsuperscript{145} Menzie et al. 2013
### Figure 27: World Mine Production and Reserves

<table>
<thead>
<tr>
<th>Year</th>
<th>Mine Production</th>
<th>Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>2012</td>
</tr>
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<td>Poland</td>
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<td>Other countries</td>
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<tr>
<td>World total (rounded)</td>
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<td>17,000</td>
</tr>
</tbody>
</table>

Menzie et al. 2013

From the 1990's to 2000 Chinas production of rare-earth elements outpaced national demand.\(^{146}\) The developed world depended on its ability to import Chinas raw and manufactured copper. In 2000 the domestic demand outpaced the production of rare earth elements, by 2010 China was no longer a net exporter of rare-earth elements.\(^{147}\) This decrease in supply caused the US and other countries to develop new sources of minerals, they did this by opening several new mines and resuming mineral exploration.

The supply of copper and other rare earth elements decreased due to the impressive growth of the Chinese economy. China's economy has grown at an average rate of approximately 9.5% for the last ten years.\(^{148}\) This growth has traditionally been based on the manufacturing and production of goods for export. As of 2011 China was the largest producer of raw and processed minerals.\(^{149}\) Much of this production was exported to the US, European Union, and the rest of the world. As China develops the demand for goods and services is increasing within the country. Increased consumption by China's population and a new commitment to improving infrastructure has increased the share of raw and processed minerals used in China. The development of China's economy has caused a decrease in the copper exports due to increasing demand from industry.

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\(^{146}\) Edelstein 2013  
\(^{147}\) Brininstool et al. 2013  
\(^{148}\) Nuno 2013  
\(^{149}\) Menzie et al. 2013
inside the country.\textsuperscript{150} The rapid growth in demand for copper from the Chinese economy has raised the price of copper worldwide increasing the feasibility of extracting metal from previously uneconomic reserves such as that in northern Minnesota.

In the first half of 2012 China’s net imports of copper increased by 80\% (year on year).\textsuperscript{151} this is far greater than the industrial demand of copper, it is thought that China purchased copper through SHFE to increase reserves because of an expected increase in the price of copper. This investment in copper increased demand driving up world prices at the end of 2011.\textsuperscript{152} It is expected that China’s economic growth will slow as the country turns toward growth generated by internal consumers rather than the export lead growth that has lead the country for the last decade. This should slow the worldwide consumption rate of copper, unless, another developing country such as India significantly increases demand.\textsuperscript{153}

\textbf{VIII. Conclusions}

The market for copper is increasing, while production cannot keep pace, increased demand form developing countries and decreasing output from current mines are two major causes of this. To keep up with global demand firms are looking into new copper mines. Decreasing stockpiles indicates that the price of copper is expected to steady as increases in demand are met by the many new producers expected within the next decade.

Sulfide mining for Copper in northeastern Minnesota would be the first copper mine in Minnesota. PolyMet and Twin Metals are looking to capitalize on the increasing demand and decreased available production caused by China’s decrease in raw mineral exports. While copper production is necessary to the world’s economy the environmental impacts of sulfide mining in a pristine wilderness area must be weighed against the potential profit.

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\textsuperscript{150} Menzie et al. 2013  \\
\textsuperscript{151} Brininstool et al. 2013  \\
\textsuperscript{152} Menzie et al. 2013  \\
\textsuperscript{153} Brininstool et al. 2013
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Bibliography


Commodity Online, "MCX Nickel bullish, Lead sideways to positive, Crude Oil down." Last modified October 30, 2013.


