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# When Packaged Food Pollutes our Body and Earth: Plastic Packaged Food Consumption and Waste Disposal Practices in the Himalayas

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**When Packaged Food Pollutes our Body and Earth:  
Plastic Packaged Food Consumption and Waste Disposal Practices in the  
Himalayas**

School for International Training

India: Agroecology and Food Security in the Himalaya

Summer 2018

Jared Marsh and Jessica Shalvey

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## **I. Acknowledgments**

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## II. Project Rationale

Coming into this program, we had some prior contextual knowledge about the health and environmental impacts of processed food consumption and waste disposal practices in America based on our own experiences and classes. Combining this with preliminary readings looking more at the Indian context, food and waste habits were of interest to us as we began our time in the homestays. Upon reaching Chalamthang, with direct observation of plastic disposal as well as conversations with villagers about their waste practices and diet preferences, we decided to research these ideas further with our field study.

Looking at the lifecycle of processed foods made in plastic packaging, purchased, consumed, and then disposed of, the products go through significant production and transit operations emitting toxic pollutants. This factory-to-table process has increasingly harmful effects as consumption of the products continues to grow. Specifically in India, the influx of packaged food products significantly increased following policy changes opening up the nation to the global market in 1991 (Baker and Friel, 2016). Multinational corporations found a new space for marketing within a shifting form of Indian consumerism, as many families began to prefer the hassle-free and convenient nature of pre-cooked and packaged food. In the *Global Health* journal, Baker and Friel analyze global dietary changes, citing the consistency with the theory of “nutrition transition,” which can be explained by “rising incomes, changing labor market structures and increasing urbanization – factors that generate demand for convenience foods over the course of economic development,” (2016). While local food has a short supply chain, the supply chain of packaged food is long, complex, and globalized, where efficiency and market gain are promoted over ecological and human health. In a voluntary community dialogue

session in Chalamthang village, youth responded that they preferred packaged processed food over organic local food, citing taste and convenience for the reasoning. In our survey, half of the participants stated they had suspicions of the packaged processed food having negative health impacts while the other half responded they had no knowledge of the food having negative health impacts. Adult participants shared past experiences of digestive and other health issues experienced when consuming packaged processed food.

Many remote villages, especially in the Himalayas, are struggling to safely and sanitarly handle the growing issue of waste. The introduction of packaged processed food and other plastics has created an unprecedented issue for these communities scrambling to deal with non-biodegradable waste. Even the term 'waste' is a new concept as many of these communities did not previously have a word in their local language for waste thanks to their sustainable lifestyles. A study in the district capital Roing, in a remote Himalayan valley, analyzed and categorized current waste produced within the capital and found that .28 kg of waste was produced per person per day. The Urban Development Department has set up plastic waste collection systems and dumpsite on the outskirts of the town that have helped to keep the community free of pollution and litter (Lenkiewicz, 2017). Unfortunately, many other towns in the Himalayas have not been able to efficiently handle waste and continue to struggle as the issue grows larger with the increase in market due to tourism and changing food preferences.

Burning trash through industrial waste incinerators is a practice found across the world, where the heat and tall smokestacks kill most of the harmful chemicals and release what remains into the atmosphere above where it will be directly breathed by humans. However, burning waste on a small scale in single household or in community settings is much more harmful to both

environmental and human health. According to a report by Zender Environmental, just 2-40 burn barrels in a small local setting emit many of the same harmful toxins into the atmosphere as an industrial incinerator that serves 20,000 homes burning 200 tons of waste a day. These toxins can cause a wide range of symptoms for humans, including damage to lungs, nervous system, kidneys, and liver, as well as long term effects such as the potential for chronic diseases like emphysema or bronchitis (Zender Environmental et al., 2005). According to an article in the Sikkim Express, Himalayan inhabitants are forced to dispose of their waste by either burning it or dumping it in waterways or down the side of the mountains (Sikkim Express, 2018). Many small communities, now exposed to globalization and non-biodegradable waste, still lack resources to properly dispose of the waste. Most cities of developing countries spend 20 to 50 percent of municipal revenues on municipal solid waste management costs, yet collection service levels for residents remain low (Wani and Ahmad, 2013). This was seen first hand in the villages of Chalamthang and Patuk and then confirmed during voluntary community discussions. 100 percent of participants stated that they burned all non-biodegradable waste at home and 50 percent said they would put trash on the ground if away from home and no waste bin was available. This is not a question of character but a question of available resources that are greatly needed so that waste can be properly disposed of.

On October 2, 2014 (the birthday of Mahatma Gandhi) Prime Minister Narendra Modi launched Swachh Bharat Mission or Clean India Mission. The initiative intends to motivate and empower citizens to take the cleanliness of India into their own hands (ANI, 2017). The significance of the announcement on Gandhi's birthday is not to be overlooked. Gandhi spoke of visions for a clean India and led, as he is famous for, by example. In the 1901 Congress Party

Convention, “Mahatma Gandhi told delegates it was a disgrace that manual scavengers were being used to clean the latrines. He asked delegates to clean their own latrines and when they did not, he publicly cleaned his own.” In the same spirit, Modi and his party hope the initiative will motivate and empower citizens to take the cleanliness of India into their own hands. Prime Minister Modi hopes to make this a reality through “swachhagrahis” (those who work for cleanliness) and dispel negative biases towards those who work with their hands, especially public sanitation workers (Pillalamarri, 2014). The message is evident in the Himalayan region with posters of Modi stating to keep Sikkim clean, and is needed as tourism in the area swells. Many initiatives like The Himalayan Cleanup have been created to promote eco-tourism while simultaneously keeping villages and environments clean. Though the intentions are good there is still much work that needs to be done in order for the Himalayan region to maintain its reputation as pristine, sacred and untouched.

### **III. Goals**

The purpose of our field study project is to examine current waste disposal practices and food preferences in rural Himalayan agricultural communities and to communicate the results, as well as our own outside research, to the villagers in Sikkim. We hope to promote safe disposal practices of packaged plastic, to offer responsible alternatives to packaged waste disposal, and to encourage the consumption of organic, homegrown food for all ages to benefit both human and environmental well-being.

## **IV. Process**

### ***Direct Observation and Informal Conversation:***

Our first step in our field study project was to informally observe waste practices and packaged food consumption in the homestay villages. We noticed the use of bamboo trash bins throughout the Chalamthang community, as well as the sustainable practice of biodegradable food waste being used in natural fertilizers or to feed animals in both villages. In conversation with Chalamthang community members, we discovered that though the bamboo bins existed and were utilized, there is currently no system in place for waste pick-up, forcing many families to keep their non-biodegradable waste stored in their home where it will be either burned or buried. Walking around the villages, we noticed some of these burn sites where ash and plastic remnants remained. For consumption and food preferences, we also better understood the food preferences of the younger generation through an organized community youth meeting and discussion about organic versus packaged foods.

### ***Shadowing Patuk Community Children***

In order to gain a holistic perspective of the Patuk village and its members consumption and waste practices, it was necessary to have interactions with not only the adults but children as well. The village children were invited to a central location where they voluntarily participated in a group discussion. The conversation, along with previous observations and discussions, led to the understanding that a significant portion of non-biodegradable waste is generated by the local village children due to the consumption of plastic packaged foods. Majority of children responded that they prefer local home cooked food over processed packaged food for meals but consume processed packaged food for snacking. Children are taught in school to reuse plastic

wrappers, and if they produce non-biodegradable waste and a waste bin is not around to put the waste in their pocket and take it home. However, through direct observation this was not always seen in practice. The village children were also aware of negative effects from purchasing and consuming plastic packaged food, citing knowledge that the food and packaging has chemicals in it and no vitamins are present in the food. Children were then asked, “if you are aware of packaged food having chemicals in it and that it is bad for you why do you eat it?” Many responded that they eat the processed packaged food because it has a good flavor and is a change in taste from home cooked meals. Also, many relatives when visiting will bring plastic packaged food snacks for the children. Lastly, the children were asked if they wanted to be farmers when they are older. Only one boy out of ten participants responded that he wanted to choose farming for his profession.

### ***Survey Conduction and Analysis:***

Upon having a greater holistic understanding based on observation and informal conversations within the villages, we next created a survey to formally collect data and information from community members regarding their personal practices with waste disposal and their food consumption preferences. We conducted the survey among adults within Patuk village to discover both the personal and communal habits of the community. The survey questionnaire can be found in Appendix A. With the results of the survey, we then analyzed the data to discover how to move forward with research. We decided to focus on studying the negative impacts of burning non-biodegradable waste and potential alternatives/safety precautions, alongside the promotion of organic homegrown foods to reduce the overall plastic use in the Himalayan communities.

***Construction of Poster and Handout:***

To convey the information that we gathered from both the survey and our own outside research, the next step of the process was to construct our physical deliverables for our presentation. The poster was designed to depict the life cycle of packaged goods, from factory to transportation to consumption to disposal, in order to encourage consumption of homegrown organic foods. The handout was designed to depict the health and environmental impacts associated with the burning of non-biodegradable waste, as well as (1) ways to mitigate those risks and (2) ways to reuse plastic packaging in creative ways to avoid having to burn at all.

***Workshop Planning and Material Collection:***

To demonstrate the creative ways that plastic can be recycled rather than burned, we designed a workshop for both children and adults to attend from the Patuk community. To begin planning the event, we took our research from the poster handout for creative alternative uses of plastics and created examples out of recyclable materials, which we could use to show community members during the workshop. We designed a small tote bag made out of snack wrappers, as well as pots for plants made out of plastic bottles. The plastic wrappers and bottles used in the making of the examples and in the workshop had been littered alongside the village road, and collected from a community walk. Each piece was washed for sanitation purposes.

**V. Deliverables*****Survey Results***

Participants were asked a series of questions relating to diet, consumption and waste disposal practices. 100 percent of participants responded to the question, “What are your current

personal waste disposal practices for biodegradable waste?” that a portion of biodegradable waste goes to cattle feed and the rest is composted. On the contrary, 100 percent of participants responded to the question, “What are your current personal waste disposal practices for non-biodegradable waste (ex: plastics)?” that all plastics are burned. Half said that glass bottles are saved and then collected by a recycler who pays for the bottles, while the remainder said that the glass bottles are put in a pit. Participants were also asked if there are any negative consequences to the environment or to their health from burning biodegradable and non-biodegradable waste. 75 percent of participants responded that there might be negative consequences but they had no knowledge or education of the topic and only suspicions. When asked, “Are there any negative consequences to your health from eating processed packaged food?” two-thirds of participants said yes and one-third responded to having no knowledge.

### ***Creative Recycling Workshop***

After visiting both Chalamthang and Patuk and seeing the amount of litter and waste burned, we recognized the need for an alternative to plastic disposal. We first promoted reducing the amount of plastic bought. However, with remaining plastic waste, we offered a few creative ideas during the workshop to reuse the plastic and reduce burning, by helping community members to construct a handbag made out of littered plastic wrappers.

### ***Poster, Presentation, Handout***

The culmination of the field project resulted in a poster and handout presentation presented to the community members of Patuk village. The poster titled Life Cycle of Packaged Food can be found in Appendix B. It outlines and describes the four steps associated with packaged food: (1) Factory, (2) Transportation, (3) Consumption and (4) Disposal. The handout

can be found in Appendix C. The handout first describes the negative effects from burning waste to both the environment and human health, and second offers effective and attainable steps that can be taken to mitigate the described negative effects from burning waste. For example, moving burning area 17 meters from houses and covering mouth with a wet cloth when starting the fire are two safety precautions that can be taken by individuals. Also, the handout offers ideas with instructions to reuse plastics that had been practiced in the workshop, in order to eliminate the need for disposal.

## **VI. Conclusion**

With globalization and the influx of packaged foods into international markets, non-biodegradable waste management and the decrease in nutritional value associated with the processed foods have become increasingly global problems. Looking specifically in the mountain context of rural Sikkim, where consumption has traditionally been sustainable and biodegradable waste has been reused within the home and field, plastic disposal poses an unfamiliar challenge. With villagers turning to burning, which has negative health and environmental impacts, the most important first step that we found within this field project is education, and then empowering villagers to make a change. While the future goal would be an organized government waste collection program for rural Himalayan communities, educating about the risks, providing alternatives and prevention measures, and encouraging the consumption of local and organic foods allows for a more positive situation within current consumption and waste management practices.

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## Appendix A

# Patuk Community Survey

Color Palette

Processed Packaged Food and Waste Disposal

Name \*

Short answer text

Age \*

Short answer text

What are your current personal waste disposal practices for biodegradable waste? \*

Short answer text

What are your current personal waste disposal practices for non-biodegradable waste (ex: plastics)? \*

Long answer text

Are your current personal waste disposal practices for non-biodegradable waste good or bad?

Short answer text

What methods of waste disposal does your community practice for both biodegradable and non-biodegradable waste?

Short answer text

Are there any negative consequences to the environment or to your health from burning biodegradable and non-biodegradable waste?

- Yes
- No
- Maybe, but not positive
- Other...

If yes, what are some examples?

Long answer text

---

If a waste bin is not available when you are away from home, what do you do with your plastic waste?

- take it home
- set it on the ground

What items are packaged in plastic that you purchase from the market? \*

Short answer text

---

How frequently do you purchase these items? \*

Short answer text

---

What's your favorite packaged food item? \*

Short answer text

---

Do you prefer processed packaged food over organic local or homegrown food? \*

- Yes
- No
- Other

Are there any negative consequences to your health from eating processed packaged food?

- Yes
- No
- Maybe, but not positive
- Other...

If so, what are some examples?

Short answer text

---

How do you think we can encourage people to eat local foods over processed packaged items? \*

Long answer text

---

How do you think we can better manage non-biodegradable waste? \*

Long answer text

---

Do you have any other methods for reusing plastics in the household or in the field, rather than disposing it? \*

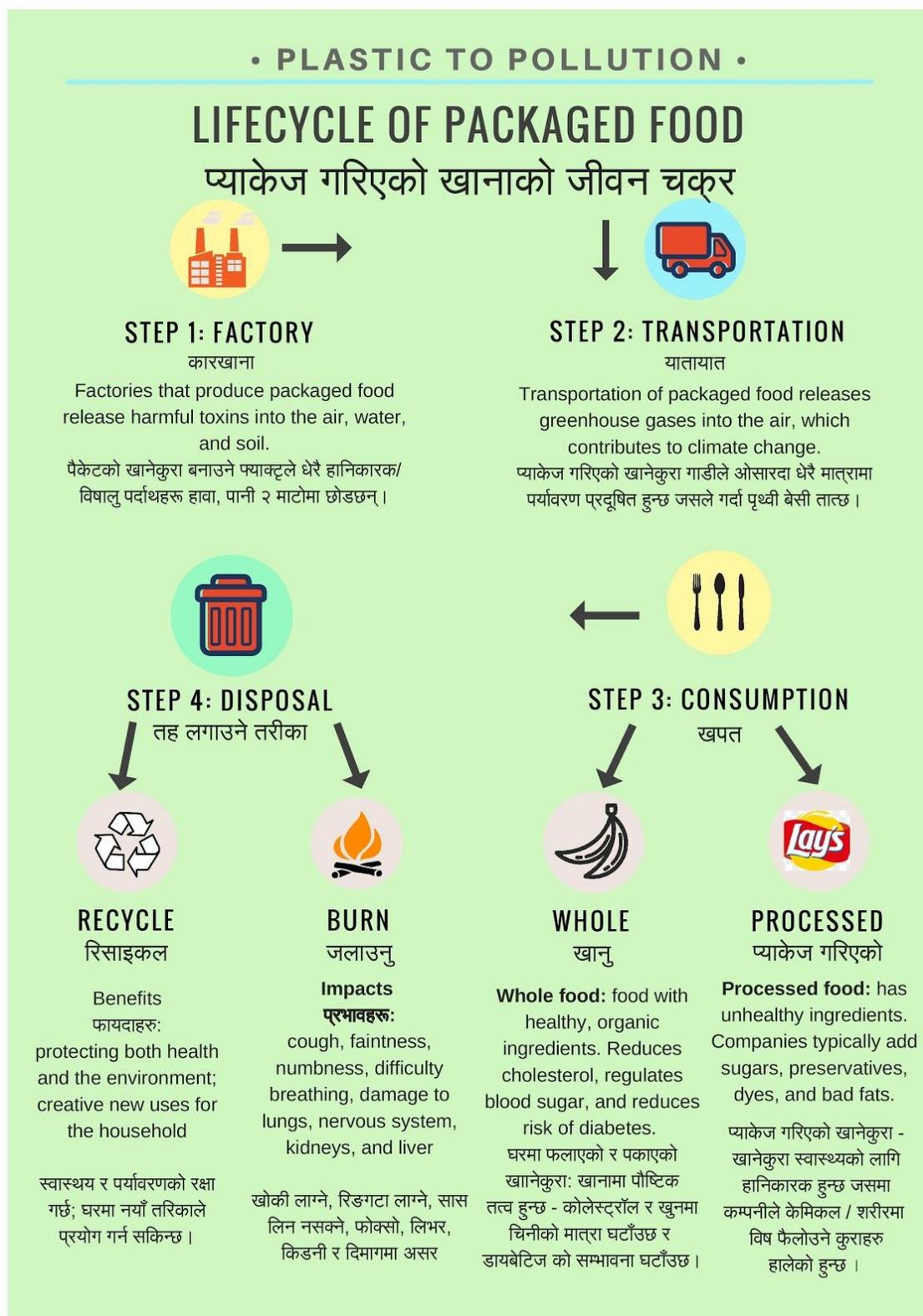
Long answer text

---

Any other comments or concerns?

Long answer text

---



## Appendix C

THE NEGATIVE EFFECTS FROM BURNING WASTE	HOW TO LIMIT NEGATIVE EFFECTS FROM BURNING WASTE
प्लास्टिक / मैला जलाउनको नकारात्मक असर	प्लास्टिक / मैला जलाउनको नकारात्मक असरलाई कम्ती गर्ने उपायहरु
<p>Acids and other chemicals are released when you burn plastics</p>	<p>1. Move burning area 17 meters (or more) from houses and keep people away from the burning area</p> <p>१ प्लास्टिक जलाउने ठाँउ घरदेखि कमसेकम १७ मीटर टाढो हुनुपर्छ र जलाउने ठाँउ देखि मान्छेहरु टाढा उभिनुपर्छ ।</p>
<p>These toxins released into the air contribute to climate change, acid rain and damage human and soil health</p>	<p>2. Burn less waste at once and make sure fire is as hot as possible. Hotter fires burn quicker reducing the impact area of pollution</p> <p>२ पहिला कम्ती मात्रामा प्लास्टिक जलाउनुपर्छ । आगो खरो भएर बलेपछि मात्र अरु धेरै प्लास्टिक जलाउनु पर्छ । खरो बलेको आगोमा प्लास्टिक छिटो बल्छ र प्रदूषण कम्ती हुँदछ ।</p>
<p>Effects to humans can include damage to your lungs, nervous system, kidneys and liver</p>	<p>3. Avoid the use of plastic. Burn as little plastic as possible to reduce toxins polluting the air</p> <p>३ भरसक प्लास्टिक नचलाउनु होस् । भरसक कम्ती जलायो भने हावामा प्रदूषण कम्ती हुँदछ ।</p>
<p>Effects to humans can include damage to your lungs, nervous system, kidneys and liver</p>	<p>4. When starting fires cover mouth and nose with a WET cloth. Only breathe through nose until at a safe distance away.</p> <p>४ प्लास्टिक जलाउनु भन्दा अघाडी नाक र मुख एउटा चिसो कपडाले छोपनु पर्छ । आगो सल्काएर सुरक्षित ठाँउमा गएर सास फेर्नुपर्छ ।</p>
	<p>5. Reduce, Reuse, Recycle!</p> <p>५ प्लास्टिक कम्ती चलाँउ, फेरि चलाँउ, र रिसाइकल गरौं ।</p>

## CREATIVE ALTERNATIVES TO PLASTIC DISPOSAL

### Shoulder Bag

Step 1 पहिलो चरण



Step 2 दोस्रो चरण



Step 3 तेस्रो चरण



Step 4 चौथो चरण



Step 5 पाँचौ चरण



Step 6 छैठौ चरण



### Flower Pot

Step 1 पहिलो चरण



Step 2 दोस्रो चरण



Step 3 तेस्रो चरण



### Flower Art

Step 1 पहिलो चरण



Step 2 दोस्रो चरण



Step 3 तेस्रो चरण



Step 4 चौथो चरण



Step 5 पाँचौ चरण



Step 6 छैठौ चरण

