



Fire That Talks

Timothy Lipp

Community Prosperity
Student Research Award Program 2015-2016

// May 2016



Institute for
Community Prosperity

Abstract

The 4.3 million deaths that occur annually because of smoke from open cooking fires has inspired a wide variety of cookstove initiatives. These projects often come from an external mindset that doesn't incorporate the local community's unique cultural, social and even spiritual context. Yet the communities in which these initiatives occur have robust language and identity systems that can provide valuable insights to how cookstoves could be adopted. Identity Based Community Development (IBCD) is an approach that provides helpful context to enable this possibility. It begins with self-reflection by both the community and development practitioner to understand their background and current position more clearly. This can lead to connections between language and identity that are helpful to the adoption of clean cookstoves. The model also underlines the tensions that surround including communities in the development process and being critical of development itself. This paper proposes that when a community's identity is correctly integrated into the cookstove introduction process, it can enable community-driven large scale adoption of the cookstove.

Introduction

Imagine having a campfire in your house, every day. Three billion people in the world don't have to imagine; they cook over open fires which cause 4.3 million deaths globally.¹ This has spurred many efforts to introduce better systems of cooking. Projects range from large organizations designing and selling high-tech stoves (such as www.envirofit.org) to smaller projects that individual donors begin and operate. Despite the high amount of resources devoted to this issue, the rate of transition to better cookstoves has been much lower than expected.² This is puzzling to many in the NGO sector because of the practical health and environmental benefits of cookstoves; the switch to improved cookstoves seems like an obvious choice. However, the majority of clean cookstoves are developed by foreign scientists rather than as a reflection of a community's cultural cooking norms. This can force a choice between preserving an aspect of local identity or adopting improved technology. Those who wish to introduce improved cookstoves to Indigenous communities must engage in reflection with those communities and understand the role of identity and language in cooking. This will enable a dialogue around some of the tensions in development (and cookstoves specifically) as well as introduce cookstoves as a product that help the community advance in its developmental journey.

Literature Review

The Convoluted History of Cookstoves

Historically, cookstove programs have been driven by external motives. To the casual North American mindset "development" is easily identified; cars, televisions and medical access. The possibility of someone cooking indoors and being exposed to smoke every day seems preposterous and has inspired action in the cookstove sector. The exact motive for justifying cookstove development has changed over time, from fear of deforestation in the 80s, to concern about health issues, to the latest iteration of concern for the greenhouse gasses cookstoves produce.³ These are all externally driven issues that while often important to a community, are not initially asked for by the community themselves. There is increasingly an awareness however of the need to understand the community's desires, "[Which] emphasizes the need to get a deeper understanding about the local people's perspectives regarding their adoption reasons, motivations and obstacles."⁴

The Spirit of Cooking

The potential for misunderstanding of the cookstove's role in an Indigenous society's cultural fabric is most apparent in the spiritual significance a cookstove can have. Many development efforts approach the world with a perspective that does not see a spiritual component to the physical world around us, leaving the physical realm as something to be manipulated.⁵ This in turn empowers science and technological development to adapt and repurpose components of the natural world for

any purpose they deem necessary, without fear of repercussions/interference from some underlying spiritual power. Cookstoves are a technology that does this by manipulating different materials and scientific principles into stoves that produce less smoke and use less wood. However, many Indigenous communities also describe the world around them in spiritual terms.⁶ The Blackfoot peoples located in North America see a tree as having a strong “energy,”⁷ and the Bunong in Cambodia see rice as having a spiritual connection.⁸ Cree communities (and many other Indigenous communities in North America) have a spiritual practice called “smudging” which is tied to the smoke emitted when different plants/medicines are burned.⁹ Trees, rice and smoke all are common natural occurrences, but these communities see a supernatural component to them. This creates a disparity between how a development practitioner, and a community member might describe components of life such as cooking. One would see the world as material components that can be manipulated by science, while the other perceives a spiritual component to everything around them.

In Nepal and India there are instances of the cooking process and of food itself being spiritual in nature. Yaqoot, Diwan & Kandpal (2016) cite a study from Nepal where improved cookstoves were not adopted because the people believed the traditional hearth to be a place of spiritual significance.¹⁰ In another instance a woman in India described starting a fire in the traditional fireplace and presenting an offering to the gods as a “holy process” that could not be done with a Liquid Petroleum Gas (LPG) stove.¹¹ This spiritual connection sometimes has a direct connection to the adoption of cookstove technologies. One study in India revealed that high-caste homes use cow

dung to anoint their walls (because of its spiritual value); this product is costless compared to what lower-caste homes use on their walls (often expensive wall paint). Traditional cookstoves produce a great deal of soot that quickly blackens walls, and because the high-caste homes have a free method of covering the soot they have less incentive to adopt new cookstoves.¹² Spiritual perspectives must be considered when seeking to understand cookstove implementation.

Prestige Through Cookstoves

Societal pressures and norms can also influence the adoption of cookstoves. Research that Wang & Bailis (2015) conducted revealed ethnic background as a possible factor influencing cookstove adoption.¹³ Additional research by Sehjpai (2014) and others further highlights socio-cultural conditions that could influence cookstove choice:

General household decisions such as the food to be cooked...the time spent by women in non-domestic activities (household chores) are a function of the socio-cultural structure of society and not necessarily driven by economic needs, thus indicating the need to go beyond socio-economic analysis and move to metrics that can incorporate the impact of culture on household choices.¹⁴

Furthermore, in the community Wang & Bailis (2015) researched it seemed to be the “lower” caste groups that were quicker to transition fully to new cooking methods rather than the “higher” caste groups.¹⁵ As they state, “the traditionally marginalized might lead [in transitioning away from] of the old, fueled by their desire for cleanliness to remove social stigma.”¹⁶ This

research suggests that understanding traditional measures of cookstove adoption (such education and wealth) are insufficient; social and societal factors must also be considered.

Language and Identity

A community's language and identity must be integral components to any development program. 12 communities comprising of 59 individuals comprised this list of ethnolinguistic identifiers for their community. The numbers indicate how many of the 59 participants listed a certain aspect as what identifies them as members of their community.¹⁷ The specific connection between this diagram and the cookstove sector will be discussed later in the paper. A 2014 study on communities in Nigeria by Okafor and Noah revealed how pivotal it is for development projects to use the Indigenous language as the foundation for the development program.¹⁸ Abbot (2002) specifically indicates that development activities be carried out in the vernacular of the language community as a way to empower them.¹⁹ Cultural practices also have implications in clearly tangible areas of life. Evidence suggests that food systems and cultural practices of an Indigenous community are inextricably linked, and both are important for a community's long term sustainability.²⁰ These studies illustrate how important understanding a community's identity is for development, and lay the groundwork for its application to the dissemination of cookstove technology.

FIGURE 1: MARKERS OF IDENTITY

Ethnolinguistic identifiers' highlighted by participants included:

- Food/Ways of Eating/Traditional Food (32)
- Traditional Music/Arts/Dance/Folk tales (31)
- Language (28)
- Culture/Customs/Traditions/Special Festivals (27)
- Social Structure/Value Systems/Ways of thinking, communicating, and solving problems (24)
- Environment/Geography/Relationship with Land/Outdoors (16)
- Beliefs/Belief system/Religion (13)
- Traditional Clothes/Handicrafts/Dress (10)
- Multilingualism/Mixed heritage/Interacting with people from multi-backgrounds (7)
- Relationships/Family Relationships/Relations with others (7)
- Physical Appearance (7)

Integrating Cookstoves and Identity Based Community Development (IBCD)

In "Signposts to Community Development" Smith and Wisbey (2013) provide an in-depth discussion of community development that builds on Indigenous communities' identities. The majority of the work's content is based off of discussions that happened at several language, education and development community of practice events organized by SIL International, and especially from a forum involving 59 members from 12 different country contexts that put the perspectives of the Indigenous community members present at the centre of the discussion.²¹ The content of the manual does have some theoretical foundations, but it placed the perspectives of Indigenous communities at the forefront of its conclusions. One key focus for the guide is the value of development as a journey, more than its specific outcomes. Another key conclusion is that the individual community's sovereignty and ability to choose its own course of action must always be supported. This does

not mean that development practitioners have become superfluous; rather their value is one of “traveling with” a community on its development journey.²² The next few sections of this report discuss the principles outlined in “Signposts to Community Development” and their potential applications to the cookstove sector.

Starting with Reflection

Self-reflection by a community (perhaps encouraged by a development practitioner) enables the community to look at their strengths and challenges to determine if they need to improve their cooking methods. Reflection is a crucial in Identity Based Community Development (IBCD) because it guides the development in being applicable and relevant to the community.

*Reflective communities have the ability to analyse and evaluate their own culture, foreign cultures, and their own cultural changes. This helps to ensure that changes in the community remain consistent with their cultural values and identity.*²³

One of the key roles that development practitioners can have is encouraging this process in the community in which they are working. As the community begins to formulate some goals the practitioner can help the decision making process be more informed by sharing the experiences that other Indigenous communities have gone through. If a community identifies cookstove technology as an area of interest a development practitioner can help guide the community through the many resources on clean cookstoves. For example, the Global Alliance for Clean Cookstoves has over 300 stoves in its “Clean

Cooking Catalog” which meet a wide variety of user preferences.²⁴ The presence of informative resources, which many development practitioners have access to, provides a community with initial stove prototypes to trial and choose if they deem appropriate.

Reflection must not only happen in the community, but first with the development practitioner herself/himself. Many of the primary actors in the stove industry are engineers and health practitioners, who by the nature of their technical background understand the issue as a quantitative one. A reductionist, scientific approach often becomes the primary frame of reference through which stove implementation programs are disseminated. Furthermore, because of a desire to produce a “scale-able” stove, there has been a focus only on stove solutions that have high commercial value. Yet this does not take into account the complex role that a cookstove can play; “Improved stoves blur the line between health-improving technology and household consumer goods. They are distinct from other health interventions because of their fundamental link to consumption and food culture.”²⁵ Smith & Wisbey (2013) extend this further by pointing out how practitioners can be perceived by a community as being complicit in the very system that is hindering the community’s development. A stove solution which is introduced as part of the non-indigenous economic system, may have strong quantitative merits, but could be perceived as a threat to the local system. It is crucial that the practitioner engages in thoughtful reflexivity to understand the impact of their own actions. Doing so will also help the community be more open to going through such reflection for themselves.²⁶ The first step for the development of effective

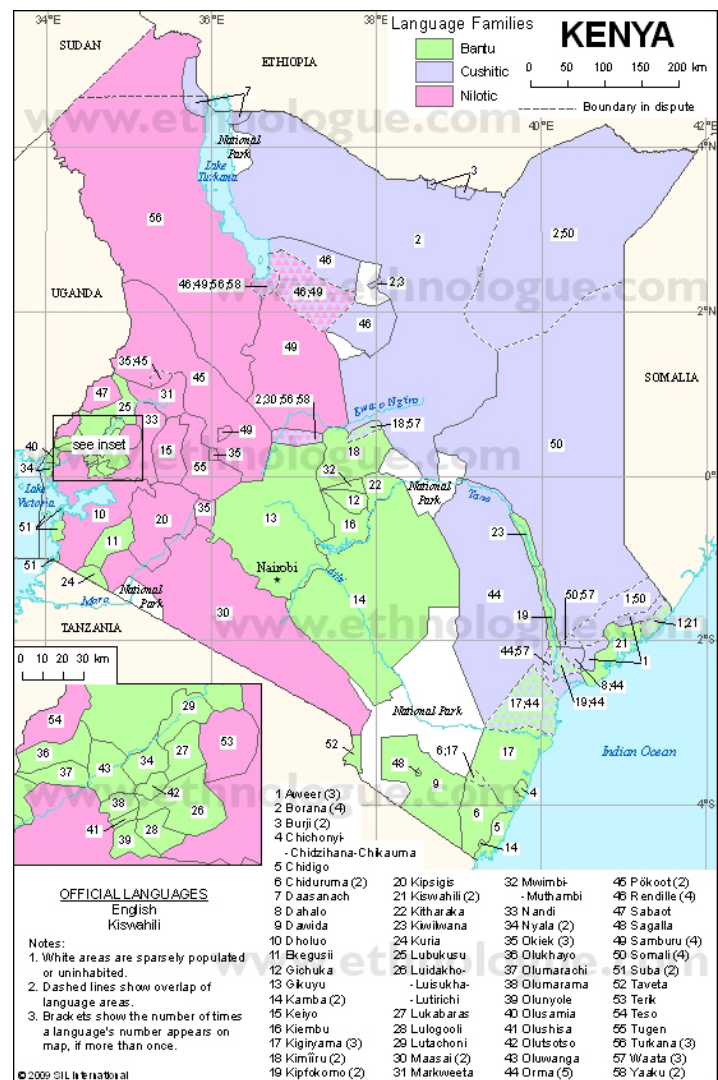
cookstove programs must be an awareness of the development practitioner's own bias and privilege, and then encouraging of self-reflection in the community.

Language and Identity Relating to Cookstoves

As an individual or even a community engages in reflection, an understanding of identity becomes crucial. This incorporates many different components such as food, language, and dress. It is worth noting the high significance food has as a marker of identity as shown in Figure 1. The preparation of that food can by extension also be a component of identity. Arguably not to the same extent as the food itself, but in order for a cookstove to reflect a community's identity it must at the very least be functional for what the community regularly eats.

Detailed language maps (such as those provided by SIL International) provide a way for practitioners to begin understanding what some of the boundaries might be around particular community identities (such as those in Figure 2 for Kenya). Based on these boundaries, the stove practitioner can begin to expect how far a certain Identity-Based Cookstove Program can reach. If a stove program is using a certain ethnic word for fuel that communicates a particular aspect of the stove, then a language map can identify approximately in what areas that word will be effective. Further conversations with the community will always be in order, but language mapping is a good framework on which to build initial expectations.

FIGURE 2: KENYA LANGUAGE MAP



Lewis, M. Paul (ed.), 2009. *Ethnologue: Languages of the World*, Sixteenth edition. Dallas, Texas: SIL International.

As a program begins to integrate a deeper component of the community's identity, specific lexical changes may also become necessary. For example, in the case of a stove that uses small pieces of wood it may be necessary to change the word traditionally used for fuel. For a simple English illustration, using the word "branches" rather than "logs" would carry a different meaning on the type of fuel used. Both are words for fuel, but "branches" denotes smaller fuel and provides more precise expectations. This is significant because some stoves require smaller wood than is normally used in cooking. As a

result, members of the community damage the stoves to increase the size of the fuel intake.²⁷ It is also foreseeable that some users would stop using a stove because it can't handle what they normally consider to be "fuel." This is a simple case of a lexical change, but there could be more profound implications based on the specific community. Training users on how to cook with a new stove will always be important, but the correct words to describe such a training are always important. A more precise level of linguistic description can be a powerful tool to encourage behaviour change, but it is predicated on an in-depth understanding of a local community's language and cultural context.

The Tension

When implementing any process (such as lexical adaptation) for the purpose of behaviour change it is crucial to involve the community and appreciate their critique of the development process. There are several positions that a community can be put into regarding development. Four key ones are outline in a matrix by Smith & Wisbey (2013):²⁸

FIGURE 3: COMMUNITY INVOLVEMENT

	Excluded in development processes	Included in development processes
Uncritical of development	a) Ethnolinguistic communities are "in the way of development"	c) 'Development as Tragedy', a rhetoric of exclusion
Critical of development	b) Intentional isolation	d) Dialogue, participatory development

a) The unique cultural factors influencing a community to avoid adopting improved cookstoves are viewed primarily as hindrances to their development. In this case, the traditional

methods used for cooking, cultural mindset and even identity of a community is perceived as a hindrance to the community's success.

b) In some respects, a new cookstove is a foreign product in a community, which could make some who have an idealistic perspective of traditional cooking methods hesitate to introduce it. While improved cookstoves definitely can be an imposition, to deem them inappropriate without engaging the community is fundamentally an exclusion in and of itself and doesn't reflect the adaptive nature of many minority communities.

c) This is perhaps the position that cookstove implementation programs are most prone to. Many stove programs drive for solutions that can scale, but often these solutions by their very nature do not incorporate individual community's perspectives. While the increased scale may mean a higher number of stoves sold at a lower cost, it sacrifices the opportunity of a local businesses to develop. This in turn can cause a deepening artisan class structure.²⁹

d) Effective Identity-Based Stove programs introduce stove technology as a possible solution by providing communities with information and encouraging reflection so they can make their own decision. It will sometimes result in a stove that is technologically inferior to one developed by cookstove "experts," but some examples of locally driven efforts such as the Obamastove (www.obamastove.com) show astounding rates of adoption with over 200,000 stoves sold.³⁰

An Artifact of Transition

A successful stove program that remains in quadrant d) is challenging because it requires a shift away from product-focused development, instead recognizing how a stove can become an “artifact of transition” for the community. From this perspective the greatest value in a stove program is not the stove itself, but how the stove becomes a vehicle for the community’s transition to a new technology. This can be difficult impact to quantify and as a result makes acquiring funding and support all the more difficult. It also takes an immense amount of time and relationship building with a community. This is time well spent. Due to the nature of technological progress it is possible that any current stove model will be outdated in a decade, or deemed unnecessary if electricity and other sources of energy become available. Yet if the initial stove functioned as a means for the community to develop their own process of technological adoption then its value is never truly lost, for that process can be used for new technology. The opposite risk is that if the stove program did not effectively engage the community the stoves will either become outdated or cease being used. It could even become a negative example to the community discouraging them altogether from engaging in the development process. It is a tension to balance inclusion and critique of development, especially when the practitioner’s livelihood is connected to the existence of development projects, but it is a balance that must be sought after.

The transition to improved cookstoves can be a profound article of a community’s journey of development because of a stove’s unique cultural, environmental and technical characteristics.

As demonstrated earlier cooking and food have strong cultural connections. A cookstove that accurately reflects cultural nuances, while at the same time providing improved health benefits to the user, could be a significant tool in the community’s transition to integrate new technology into its identity. This is similar to the positive social uplift that low-caste users of LPG stoves in India discovered. New stoves became a way for them to form,

...new identities amidst a fast changing and overlapping political-economic landscape. By rejecting what they perceive as polluting practices and adopting what they see as modern, the lower castes are paving a hybrid pathway for social repositioning, and the kitchen becomes a venue of manifestation.³¹

This makes understanding the deep values and aspirations of the community one of the most crucial approaches to marketing technology in developing contexts. Price considerations are important, but if a product enables individuals to move up the social ladder, it will become all the more desirable. In one case a technological innovation (a treadle pump that enables greater crop irrigation) was communicated as a product that would help upward social process (by means of film placement and other culturally-adept marketing) and gained wide acceptance.³² Technology such as cookstoves achieves its greatest value when it not only has technical benefits to a community, but also enables them to develop stronger skills of transition and selection in adapting to new opportunities.

Sustainability, Applicability and Scale

The concept of “scale” is one of the cardinal values in the cookstove sector, and while it often promises a level of sustainability, it can ignore other integral components of development. The ability to scale brings with it the notion that a stove venture will be sustainable, that it has enough veracity to impact more than one community and doesn’t need to depend on a continuous stream of external funding. Yet as a study by Bailis, Cowan, Berrueta and Masera (2013) shows, this is not always the case. Sometimes the pressure towards commercialization has actually hindered rather than helped the dissemination of cookstoves.³³ Perhaps an even greater criticism of “scalability” is that it can miss on nuanced differences in the cooking needs for diverse communities. Having one standard stove for all communities challenges the value of their unique cooking practices and to some extent their individual cultures. In so doing it can destroy culture which is a key component of sustainability as described by Irina Bokova, the Director General of the Hangzhou Declaration, “Culture is precisely what enables sustainability – as a source of strength, of values and social cohesion, self-esteem and participation. Culture is our most powerful force for creativity and renewal.”³⁴ This is further described by Smith and Wisbey (2013) who reference research by Henkel and Stirrat (2001),

“If people are simply being empowered to take part in a commercial society, as consumers and capital producing labour for global markets, then “empowerment” is tantamount to... subjection.”³⁵

While scale is valuable in its ability to assist the long-term success of a specific stove program, given its potential to hinder the identity based community development of a community it must be approached cautiously.

Example: Environmental Engagement and Cookstoves

The environmental benefit of clean cookstoves provides a strong opportunity to bridge the technological benefit of cookstoves and cultural values; this is especially true with Indigenous communities. For centuries these communities have interacted with their environment in a symbiotic relationship that often has deep spiritual connections.³⁶ Thus preserving the land has a high value for the community. After a presentation about improved cookstoves, one Masai leader in Kenya went so far as to ask for improved cookstoves to be brought to all Masai communities in the district because of the environmental benefit that it would bring to the communities.³⁷ Improved cookstoves could become a means for the community to take better care of the land around them.

When a community can perceive the environmental benefits of the cookstoves it can inspire successful stove programs such as the Obamastove. The Obamastove was designed by an Ethiopian refugee who was passionate about the widespread deforestation around his community.³⁸ He was also interested in benefiting his community by economic means. But rather than sending back remittances—a norm for diaspora communities around the world—he helped his community start building and selling the Obamastove. There have now been over 200,000 stoves sold. These stoves are also built

locally, providing local employment for hundreds in the community.³⁹ The Obamastove does not meet the level of technical commercialization that many foreign-led stove initiatives have, but its widespread use means that there are very few stove programs that have achieved its level of impact. This impact reaches beyond health and environmental benefits into the very empowerment of a community to innovate and create a new form of technology to address the environmental degradation of the land it inhabits.

Summary and Conclusion

Cookstoves have had a diverse history of implementation and technological approaches, combined with varied motivations and disappointing adoption rates. The challenges to their adoption have partially come from the significant value that cooking norms can have in a society's cultural and spiritual view. The cultural component of cookstoves can also have a positive impact on adoption when the cookstove provides the user with a way to increase their social capital. A holistic perspective will need to be gained that appreciates the spiritual and cultural significance that the cooking sphere has in many Indigenous communities.

Identity based community development is a model of development that seeks to ground a community's development in its own unique ethnolinguistic identity. Here are four suggestions from the author on how cookstove development practitioners can infuse their projects with identity based community development:

1. Reflect deeply on the practitioners' perspectives of development, and invite the community to reflect on their history and societal change
2. Understand the significance and value of a community's unique identity
3. Dialogue with the community on the tension between being critical/uncritical of development and make concerted efforts to include them in the decision making process while informing them of different possibilities
4. Appreciate the potential that cookstoves have to be artifacts of a community's continuous growth in adapting to its environment

The best development breakthroughs will not just make life easier for a community, they will also make the community stronger. When communities themselves are the change makers, it drives empowerment and reverses significant trends of marginalization and dependence. Processes such as the community leadership model can further increase the level of local ownership.⁴⁰ Increasing local ownership also helps decrease some of the risk of a development practitioner being ineffective, since the choice to develop or adopt a cookstove is one that the community itself makes. Even if a community does not adopt the stove, the process of choosing to do so or not will make the community stronger and more aware of what other innovations will benefit them. The community has gained at the very least, insight on choosing an appropriate cooking technology (likely transferable to other technologies) that meets their unique needs and situation. As development practitioners learn and journey with Indigenous communities, they can

develop innovative and appropriate cookstove solutions. These cookstoves will not only prepare food, but communicate the community's ability to integrate technological advancement; the fire will talk.

Endnotes

- ¹ “WHO | Household Air Pollution and Health,” World Health Organization, February 2016, <http://www.who.int/mediacentre/factsheets/fs292/en/>.
- ² Ahmed Mushfiq Mobarak et al., “Low Demand for Nontraditional Cookstove Technologies,” *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 27 (July 3, 2012): 10815–20, doi:10.1073/pnas.1115571109.
- ³ Yiting Wang and Robert Bailis, “The Revolution from the Kitchen: Social Processes of the Removal of Traditional Cookstoves in Himachal Pradesh, India,” *Energy for Sustainable Development* 27 (August 2015): 127, doi:10.1016/j.esd.2015.05.001.
- ⁴ Karin Troncoso et al., “Social Perceptions about a Technological Innovation for Fuelwood Cooking: Case Study in Rural Mexico,” *Energy Policy* 35, no. 5 (May 2007): 2808, doi:10.1016/j.enpol.2006.12.011.
- ⁵ Thomas J. Hoffman, “Moving beyond Dualism: A Dialogue with Western European and American Indian Views of Spirituality, Nature, and Science,” *The Social Science Journal* 34, no. 4 (January 1997): 447–60, doi:10.1016/S0362-3319(97)90004-5.
- ⁶ Phil Smith and Matt Wisbey, *Signposts to Identity-Based Community Development (IBCD)* (SIL International, 2013), 25, <http://www.leadimpact.org/identity/>.
- ⁷ Kent Ayoungman, “Blackfoot Worldviews” (INST 2730 Class, Mount Royal University, March 2, 2016).
- ⁸ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 25.
- ⁹ Simon Dion, “Introduction to Smudging” (INST 2730, Mount Royal University, January 20, 2016).
- ¹⁰ “Review of Barriers to the Dissemination of Decentralized Renewable Energy Systems,” *Renewable and Sustainable Energy Reviews* 58 (May 2016): 485, doi:10.1016/j.rser.2015.12.224.
- ¹¹ Wang and Bailis, “The Revolution from the Kitchen,” 135.
- ¹² *Ibid.*, 134.
- ¹³ Wang and Bailis, “The Revolution from the Kitchen.”
- ¹⁴ “Going beyond Incomes: Dimensions of Cooking Energy Transitions in Rural India,” *Energy* 68 (April 2014): 475, doi:10.1016/j.energy.2014.01.071.
- ¹⁵ Part of the reason for this is the spiritual beliefs of the higher castes as described earlier.
- ¹⁶ Wang and Bailis, “The Revolution from the Kitchen.”
- ¹⁷ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 22.
- ¹⁸ Monica Okafor and Dr. Paulinus Noah, “The Role of Local Languages in Sustainable Community Development Projects in Ebonyi State, Nigeria,” *European Scientific Journal* 10, no. 35 (2014).
- ¹⁹ Gerry Abbott, “The Importance of Activating Indigenous Languages in the Drive for Development,” *Information Development* 18, no. 4 (December 1, 2002): 227–30, doi:10.1177/026666602321036605.
- ²⁰ Ellen Woodley et al., “Cultural Indicators of Indigenous Peoples’ Food and Agro-Ecological Systems” (SARD Initiative, 2009), http://www.un.org/esa/socdev/unpfii/documents/E_%20C_19_2009_CRP3_en.pdf.
- ²¹ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 1.
- ²² *Ibid.*, 87.
- ²³ *Ibid.*, 32.

- ²⁴ Global Alliance for Clean Cookstoves, "Clean Cooking Catalog," Clean Cooking Catalog, accessed April 6, 2016, <http://catalog.cleancookstoves.org/>.
- ²⁵ Rob Bailis et al., "Arresting the Killer in the Kitchen: The Promises and Pitfalls of Commercializing Improved Cookstoves," *World Development* 37, no. 10 (2009): 1694–1705, doi:10.1016/j.worlddev.2009.03.004.
- ²⁶ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 33.
- ²⁷ Troncoso et al., "Social Perceptions about a Technological Innovation for Fuelwood Cooking," 2805.
- ²⁸ *Ibid.*, 17.
- ²⁹ Gregory L. Simon, "Geographies of Mediation: Market Development and the Rural Broker in Maharashtra, India," *Political Geography* 28, no. 3 (March 2009): 202, doi:10.1016/j.polgeo.2009.05.002.
- ³⁰ "Obamastove," Obamastove, accessed April 5, 2016, <http://www.obamastove.com/>.
- ³¹ Wang and Bailis, "The Revolution from the Kitchen," 4.
- ³² Paul Polak and Mal Warwick, *The Business Solution to Poverty: Designing Products and Services for Three Billion New Customers*, 2013.
- ³³ Bailis et al., "Arresting the Killer in the Kitchen," 1702.
- ³⁴ "The Hangzhou Declaration: Heralding the next Era of Human Development," United Nations Educational, Scientific and Cultural Organization (UNESCO), May 17, 2015, <http://www.unesco.org/new/en/unesco/resources/the-hangzhou-declaration-heralding-the-next-era-of-human-development/>.
- ³⁵ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 18; H. Henkel and R. Stirrat, "Participation as Spiritual Duty; Empowerment as Secular Subjection.," in *Participation: The New Tyranny?*, ed. B. Cooke and U. Kothari, 2001, 182.
- ³⁶ Smith and Wisbey, *Signposts to Identity-Based Community Development (IBCD)*, 78.
- ³⁷ Project Stoke, "Enactus Mount Royal: Regionals Presentation.," March 4, 2016, <https://drive.google.com/file/d/0B9SZDjzOJjYfLVpDdEZOSE1lY0E/view>.
- ³⁸ FledgeLLC, Obamastove - Fledge5 Demo Day, 2014, https://www.youtube.com/watch?time_continue=4&v=a8ja3VVrv8A.
- ³⁹ "Obamastove."
- ⁴⁰ Philip D. Osei, "The Community Leadership Model and Country Ownership of Local Development in Jamaica," *Social and Economic Studies* 59, no. 4 (December 2010): 117, doi:<http://sesjournaluwi.blogspot.com/>.

References

- Abbott, Gerry. "The Importance of Activating Indigenous Languages in the Drive for Development." *Information Development* 18, no. 4 (December 1, 2002): 227–30. doi:10.1177/026666602321036605.
- Ayoungman, Kent. "Blackfoot Worldviews." presented at the INST 2730 Class, Mount Royal University, March 2, 2016.
- Bailis, Rob, Amanda Cowan, Victor Berrueta, and Omar Masera. "Arresting the Killer in the Kitchen: The Promises and Pitfalls of Commercializing Improved Cookstoves." *World Development* 37, no. 10 (2009): 1694–1705. doi:10.1016/j.worlddev.2009.03.004.
- Dion, Simon. "Introduction to Smudging." presented at the INST 2730, Mount Royal University, January 20, 2016.
- FledgeLLC. Obamastove - Fledge5 Demo Day, 2014. https://www.youtube.com/watch?time_continue=4&v=a8ja3VVrv8A.
- Global Alliance for Clean Cookstoves. "Clean Cooking Catalog." *Clean Cooking Catalog*. Accessed April 6, 2016. <http://catalog.cleancookstoves.org/>.
- Henkel, H., and R. Stirrat. "Participation as Spiritual Duty; Empowerment as Secular Subjection." In *Participation: The New Tyranny?*, edited by B. Cooke and U. Kothari, 168–84, 2001.
- Hoffman, Thomas J. "Moving beyond Dualism: A Dialogue with Western European and American Indian Views of Spirituality, Nature, and Science." *The Social Science Journal* 34, no. 4 (January 1997): 447–60. doi:10.1016/S0362-3319(97)90004-5.
- Mobarak, Ahmed Mushfiq, Puneet Dwivedi, Robert Bailis, Lynn Hildemann, and Grant Miller. "Low Demand for Nontraditional Cookstove Technologies." *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 27 (July 3, 2012): 10815–20. doi:10.1073/pnas.1115571109.
- "Obamastove." Obamastove. Accessed April 5, 2016. <http://www.obamastove.com/>.
- Okafor, Monica, and Dr. Paulinus Noah. "The Role of Local Languages in Sustainable Community Development Projects in Ebonyi State, Nigeria." *European Scientific Journal* 10, no. 35 (2014).

- Osei, Philip D. "The Community Leadership Model and Country Ownership of Local Development in Jamaica." *Social and Economic Studies* 59, no. 4 (December 2010): 97–126. doi:<http://sesjournaluwi.blogspot.com/>.
- Polak, Paul, and Mal Warwick. *The Business Solution to Poverty: Designing Products and Services for Three Billion New Customers*, 2013.
- Project Stoke. "Enactus Mount Royal: Regionals Presentation." presented at the TD Entrepreneurship Challenge, March 4, 2016. <https://drive.google.com/file/d/0B9SZDjzOJjYfLVpDdEZOSE1lYOE/view>.
- Sehgal, Ritika, Aditya Ramji, Anmol Soni, and Atul Kumar. "Going beyond Incomes: Dimensions of Cooking Energy Transitions in Rural India." *Energy* 68 (April 2014): 470–77. doi:10.1016/j.energy.2014.01.071.
- Simon, Gregory L. "Geographies of Mediation: Market Development and the Rural Broker in Maharashtra, India." *Political Geography* 28, no. 3 (March 2009): 197–207. doi:10.1016/j.polgeo.2009.05.002.
- Smith, Phil, and Matt Wisbey. *Signposts to Identity-Based Community Development (IBCD)*. SIL International, 2013. <http://www.leadimpact.org/identity/>.
- "The Hangzhou Declaration: Heralding the next Era of Human Development." United Nations Educational, Scientific and Cultural Organization (UNESCO), May 17, 2015. <http://www.unesco.org/new/en/unesco/resources/the-hangzhou-declaration-heralding-the-next-era-of-human-development/>.
- Troncoso, Karin, Alicia Castillo, Omar Masera, and Leticia Merino. "Social Perceptions about a Technological Innovation for Fuelwood Cooking: Case Study in Rural Mexico." *Energy Policy* 35, no. 5 (May 2007): 2799–2810. doi:10.1016/j.enpol.2006.12.011.
- Wang, Yiting, and Robert Bailis. "The Revolution from the Kitchen: Social Processes of the Removal of Traditional Cookstoves in Himachal Pradesh, India." *Energy for Sustainable Development* 27 (August 2015): 127–36. doi:10.1016/j.esd.2015.05.001.
- "WHO | Household Air Pollution and Health." World Healthy Organization, February 2016. <http://www.who.int/mediacentre/factsheets/fs292/en/>.

Woodley, Ellen, Eve Crowley, Jennie Dey de Pryck, and Andrea Carmen. "Cultural Indicators of Indigenous Peoples' Food and Agro-Ecological Systems." SARD Initiative, 2009. http://www.un.org/esa/socdev/unpfii/documents/E_%20C_19_2009_CRP3_en.pdf.

Yaqoot, Mohammed, Parag Diwan, and Tara C. Kandpal. "Review of Barriers to the Dissemination of Decentralized Renewable Energy Systems." *Renewable and Sustainable Energy Reviews* 58 (May 2016): 477–90. doi:10.1016/j.rser.2015.12.224.