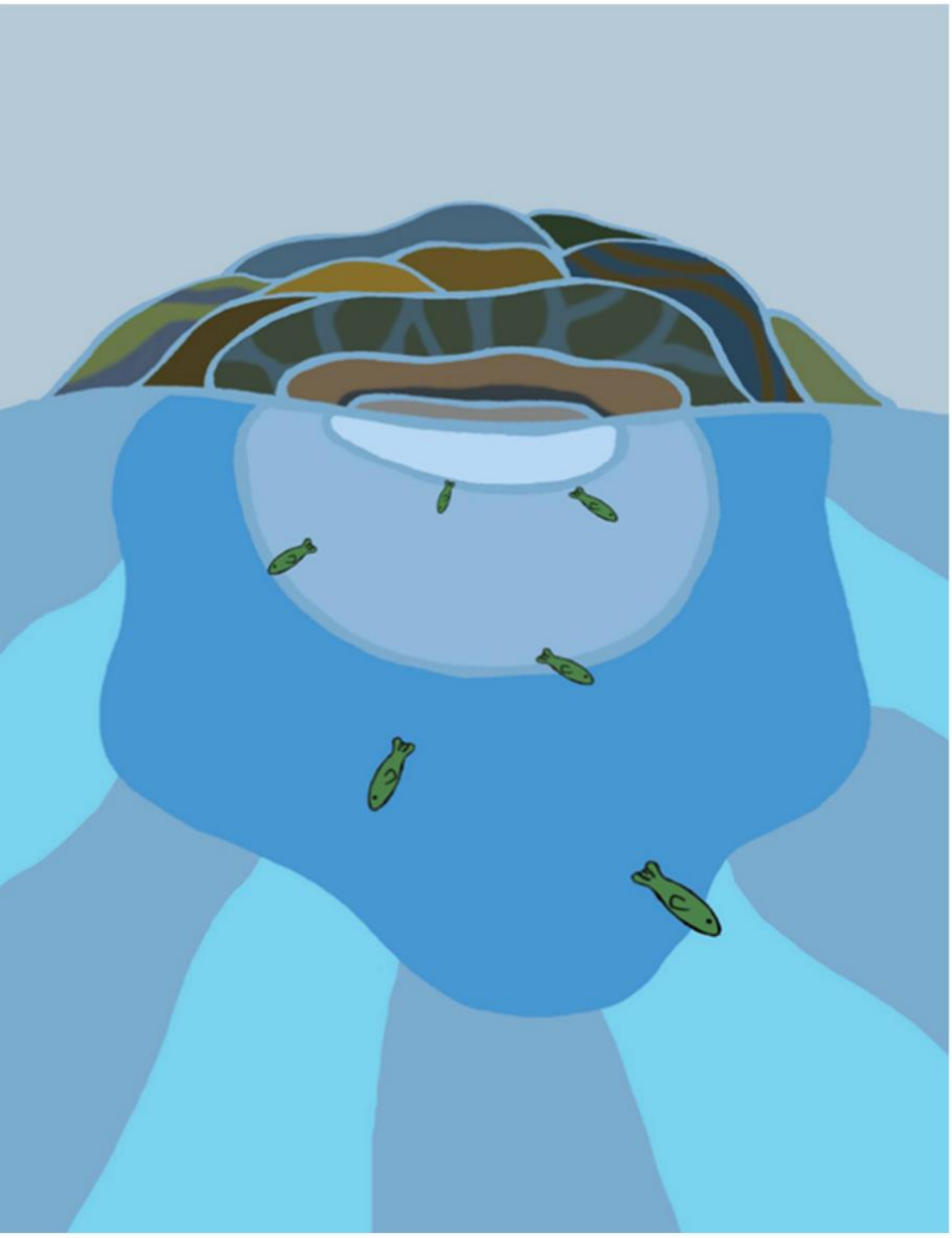
Women & Environments
international magazine

Artisanal and Small-Scale Gold Mining: Women and Health



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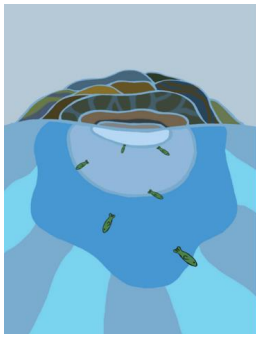

Women & Environments international magazine

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Mission Statement

Women & Environments International examines women's multiple relations to environments – natural, built and social – from intersectional feminist and anti-racist perspectives. It has provided a forum for academic research and theory, professional practice and community experience since 1976. It is published by a volunteer editorial board and contributes to feminist social change. The magazine is associated with the Faculty of Environmental Studies at York University, and has previously been associated with the Women and Gender Studies Institute at the University of Toronto.

Women & Environments International Magazine: ISSN 1499-1993, was founded as Women & Environments in 1976. From Fall 1997 to Summer 2001 it published under the title WE International. Women & Environments International is indexed in Alternative Press Index, Canadian Periodical Index, Social Sciences Index and Women's Studies Abstracts. Starting in 2017, issues are published online at: **www.weimagazine.com**

Canada

THANK YOU

Women & Environments International Magazine, its Editorial Board and Editorial Team for this issue acknowledge the institutional support of the Faculty of Environmental Studies at York University and the invaluable support of its volunteers, without whom this publication would not be possible.

ON THE COVER

Artist: Samay Arcentales **Title: "No More Mercury!"**

With the artist's permission and in support of the Grassy Narrows campaign, our cover reproduces the poster art for a recent event in Toronto about the decades-long efforts of the Grassy Narrows (Asubpeeschoseewagong) First Nation for mercury justice, and its links with other environmental justice struggles led by Indigenous women (see article in this issue).

In describing her work, Samay says, "I was thinking about Grassy Narrows and how it's been contaminated by mercury from paper mills and then the land itself was logged, which heightened the mercury problem. The people at Grassy Narrows have called for a cleanup of their waterways: what would that look like?"

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EDITORIAL:

Artisanal and Small-Scale Gold Mining: Women and Health

In September, 2017 the world celebrated the entry into force of the Minamata Convention on Mercury. This treaty is named after the Japanese mercury disaster caused by the Chisso Corporation's release of mercury-contaminated wastewaters into Minamata Bay for more than 30 years. This reprehensible industry behavior made tens of thousands of people sick, and many passed away from the mercury poisoning that is now known as Minamata disease. This fatal illness leaves people unable to walk, see, hear or swallow, as well as suffering from severe seizures and pain. Minamata disease does not show mercy on children who were born pre-polluted by mercury that penetrated into the fetus in the mother's womb. The recent studies conducted in Grassy Narrows, Canada clearly demonstrate that exposures to mercury during fetus development can increase the risks of adverse effects that can be carried across multiple generations.

New Partnership Between IPEN and the United Nations Environment Programme (UNEP) on Women and Chemicals

By Olga Speranskaya, IPEN Co-Chair

The third meeting of the United Nations Environment Assembly (UNEA), held in early December 2017 in Nairobi, Kenya, focused on ending pollution in all its forms. At the meeting, IPEN and UNEP announced a new partnership to enhance and mainstream issues related to women and chemicals throughout their work.

UNEP is the leading organization within the United Nations system in the field of environment. IPEN is a global network of civil society organizations committed to achieving a future where food, water, soil, and air are not contaminated with chemicals which cause cancer, disrupt endocrine systems and cause birth defects, so that children may be born free from hazardous chemicals that would otherwise harm their life and the life of generations to come.

IPEN and UNEP share common goals with regards to human health and the environment worldwide. Their decision to focus a collaborative partnership on women and chemicals was made to emphasize gender aspects of chemical safety. There are nearly 4 billion women and girls on the planet. Despite the fact that women make up roughly half of the population and chemical exposure is widespread, knowledge of exposure routes and the true impacts of chemical exposures on women and their children are difficult to determine because there is a lack of gender-disaggregated data.

Environmental assessments of activities on chemicals and wastes usually ignore gender aspects, and thus differences in gender susceptibility to chemical exposure are not considered which may reduce the effectiveness of projects and policies.

The new IPEN-UNEP partnership has three components:

First, a focus on the impacts of chemicals on women and children.

Throughout their lives, men and women are exposed to numerous harmful chemicals. But chemicals in women's bodies can be transferred across the placenta during fetal development and breast-feeding. Exposures during fetal development can cause lifelong harm and increase the risks of irreversible effects. Adverse effects can also be transmitted across multiple generations.

Women and men both experience occupational exposures to chemicals, but these may differ based on the region, type of occupation, and access to information. Some types of occupations are dominated by women. Very often these are low-paid jobs that require long work hours and high exposure to toxic chemicals.

Women typically work at the lowest level in global production systems. We witness the feminization of poverty that makes women more vulnerable to toxic chemical exposure, putting their health at risk.

Second: a focus on equality in decision-making.

Women generally have more limited decision-making power. There are wide disparities between women and men in access to education, resources, social protection, financing, capacity-building and training, and technical knowledge and skills.

Third, a focus on raising awareness on women and chemicals issues in international chemicals and health policy processes.

Examples of such global policy processes include the Sustainable Development Goals and the Strategic Approach to International Chemicals Management Beyond 2020 Process.

By signing the Minamata Convention, governments committed to never repeating the tragedy that happened in Japan elsewhere in the world. Nevertheless, there is evidence of Minamata disease outbreaks in other countries, mainly those developing states with widespread artisanal and small scale gold mining or ASGM, the major source of mercury air emissions according to UN Environment. When the solid material called ore is extracted, it is mixed with mercury to concentrate the gold and create a mercury mixture or amalgam. To get gold, the miners evaporate mercury by heating the amalgam. This toxic process often happens in people's backyards or even inside their houses with children playing nearby. When mercury evaporates into the air, pure gold and mercury-contaminated air is left behind. Though the Minamata Convention restricts the use of mercury in a variety of products, governments that have ratified the Convention have not to date successfully addressed ASGM, the primary sources of the global mercury crisis.

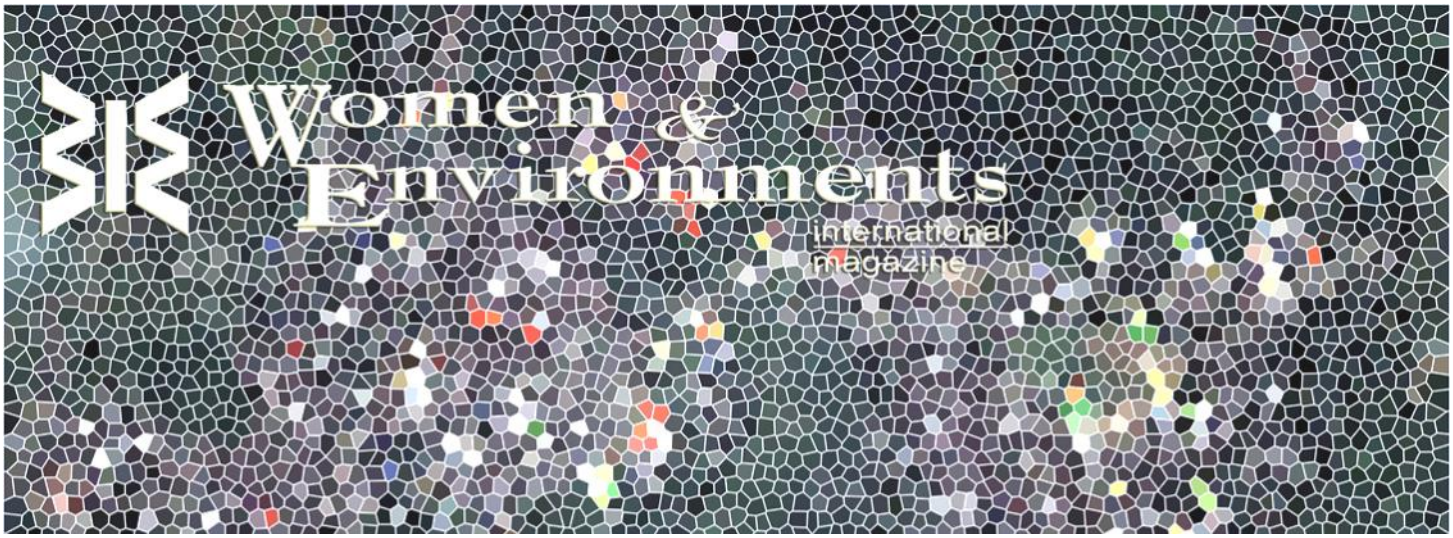
This issue of Women & Environments International tackles the topic of mercury use in ASGM. Many of the contributors are from countries that are seriously affected by gold and other primary metal mining. Their stories are emotional, caring and inspiring. Articles are accompanied by photos, many of which are hard to look at, as they reveal disturbing truths of what it means for people to live with mercury contaminating every day of their lives.

We thank all those who shared their stories, expertise and knowledge with us. Special thanks to Yuyun Ismawati Drwiega, PhD candidate and the winner of the prestigious Goldman Prize for environmental warriors, who provided us with photos from the ASGM field and inspired us with her powerful advocacy work on the ground. We are grateful to experts from the GEF Small Grants Programme, and to colleagues from Cameroon and Kenya for working tirelessly to mitigate mercury exposure in Africa.

For the first time in WEI history, we hear from Canadian teenagers who work hard to support kids in other countries suffering from mercury poisoning. Their activism, concern and dedication are inspiring and clearly show that everything is possible if you believe and care about the health of others.

This WEI issue highlights the role of women working to make governments and industry accountable for environmental damage that causes land degradation, pollution and suffering. The participation of women in reversing unsound political decisions and industrial pressure on communities and the environment, and our fight for a better and just future, show women's ability to influence policy changes in the field of mining in different countries. Women's leadership and activism across the world, and our battle for safe and sustainable livelihoods, strongly contribute to meeting the 5th Sustainable Development Goal aimed at achieving gender equality and empowering women and girls. According to Rio Principle 20, "Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development." There is a clear understanding that women's strong participation in addressing environmental and development challenges is the key to banning harmful practices, and WEI is pleased to share an important part of this with our readers.

Olga Speranskaya,
IPEN Co-Chair and WEI Board member



Welcome Note:
Women and Artisanal and Small-Scale Gold Mining - Mercury and More

By Sheila Logan

The Secretariat of the Minamata Convention on Mercury welcomes the special issue of Women and Environments International magazine on Artisanal and Small-Scale Gold Mining (ASGM): Women and Health. It is a great opportunity to highlight problems associated with mercury exposure and solutions to reduce and eventually eliminate the use of mercury in ASGM.

Artisanal and small-scale gold mining is more than an occupation in many areas of the world. In many communities, mining is a way of life, an activity which can involve the whole family. For some, it is a means of survival; in battling against starvation, mining is the activity that puts food on the table. In other communities, mining may be a means of betterment, a way to improve their quality of life, so their children have a brighter future.

However, when artisanal and small-scale gold mining involves the use of mercury, families may unwittingly be stifling their children's futures. Women involved in artisanal and small-scale gold mining, particularly in activities relating to the handling of mercury or the roasting of amalgam, may be exposed to mercury at levels which will lead to effects on the unborn and to very young children. These can include lifelong effects on their intelligence and their neurological development, and may result in permanent damage to their ability to learn and may stunt their full potential.

Under the Minamata Convention, the initial reduction and eventual elimination of the use of mercury, as well as emissions and releases of mercury to the environment, from artisanal and small-scale gold mining and processing, is a key obligation. Working within the structure of the Minamata Convention, and with assistance available through the financial mechanism of the Convention, countries are already taking steps towards eliminating the worst practices which result in the greatest exposures to the community and to the environment.

We at the Minamata Convention Secretariat facilitate assistance to countries to address the challenge of reducing and eliminating the use of mercury in ASGM through participation in education and training programs, provide support to governments to develop enabling policies, and introduce technical solutions that could eliminate the use and release of mercury in ASGM. These activities will provide increasing protection for the communities and work towards the elimination of long-term mercury associated effects.

Sheila Logan is a Programme Officer at Secretariat of the Minamata Convention on Mercury. She has worked on the mercury issue within the United Nations Environment Programme, including in the UNEP Global Mercury Partnership, as well as the secretariat of the negotiations for the Minamata Convention on Mercury as well as the interim secretariat for the Convention. Based in Geneva, she has a qualifications in veterinary science as well as a background in regulatory toxicology.

Putting This Issue Together

We would like to extend a big thank you to the editorial team for this volume. They worked hard and engaged a wide variety of contributors and ideas. We thank them for their commitment to completing this important volume. The editorial team for this issue consisted of: Olga Speranskaya, Patricia E. Perkins, Jennifer Spalton, Reena Shadaan, Helen Lynn, and Sonja Greckol.

WEI's longtime designer, Dinah Greenberg, died of cancer in 2016. Dinah contributed her fabulous talents as a graphic artist and designer to Women and Environments International magazine over the last 15 years of her life, working with many different editorial teams and our managing editor to design and lay out 44 issues of the magazine. Besides the beauty of her work, we all so appreciated Dinah's own personal support for the magazine's purpose of contributing towards a sustainable, globally equitable, eco-feminist future. Her memory will live on through the magazine; we are uploading all the back issues to be freely shared online.

Strong women have long called for "bread, and roses too"! Dinah's work epitomizes the powerful link between art and justice.

This issue, our first to be published entirely online, has a somewhat new look. Sayeh Dastgheib-Beheshti has graciously volunteered to share her talents as the magazine's designer, as we explore the flexible possibilities of online publishing reflected in our new design.

Battle For Life: Women Lead the Fight Against the Largest Mining Plant in Russia

Truth and justice are on our side

By Olga Speranskaya

This year the world celebrates the entry into force of the global convention that regulates and restricts the production, use, and disposal of the metal mercury, and mercury in products and waste. For the first time, the international community has crafted a chemical policy restricting one single toxic substance due to its extreme threat to human health, wildlife and ecosystems.

The convention, entitled the Minamata Convention on Mercury, carries the name of the world's most devastating mercury poisoning episode, in which industrial dumping of mercury into Minamata Bay in Japan killed and severely disabled tens of thousands of people. The preamble of the treaty is, in effect, an instruction to prevent future Minamatas:

"Recognizing the substantial lessons of Minamata Disease, in particular the serious health and environmental effects from mercury pollution, and the need to ensure proper management of mercury and the prevention of such events in the future..." [1]

The Minamata Convention is also the first global treaty on harmful substances that is identified as a health and environment policy. This is meaningful as it prioritizes health and environmental considerations over the interests of global businesses. It is not only associated with banning primary mercury extraction from global deposits, it also deals with tightening control over different industrial operations, particularly with extraction and processing of non-ferrous metal ores, that are accompanied by uncontrolled releases of many tons of mercury into the environment.

Mercury contamination stems from multiple sources. In Russia, it is non-ferrous metal ore production that is responsible for the lion's share of mercury contamination. This is confirmed by the findings of the Pilot Project for Development of Mercury Inventory in the Russian Federation implemented from 2013 to 2017 [2]. The project data suggests that primary metals production is the key source of mercury releases into the Russian environment.

Despite the Minamata Convention's clear restrictions on extraction and uncontrolled mercury releases, large corporations' intent on promoting their "dirty businesses" persists, often with government support, and they continue with mining projects that will undoubtedly result in greater environmental contamination.

An example of such a practice is related to the initiation of construction of one of the largest cop-

PHOTOGRAPH: YURI CHERKASOV

"STOP MPP!" Female activists are at the front line of the battle against incompetent authorities and greedy ore extracting industry in Cheliabinsk.

per mining and processing plants (MPP) in Russia, Tominsky MPP. This example is worth consideration not only because of the size and impact of the enterprise but because of the dedicated resistance spearheaded by a mostly female group of environmental scientists.

The Tominsky MPP plant, owned by Russian Copper Company, is planned for construction in the protected zone of Chelyabinsk city where no construction activity of any kind should take place. Cheliabinsk is located in the Southern Urals, and has more than 1 million residents. Russian Copper Company is currently destroying more than 3000 ha of protective forests to clear land to build the mine, removing fertile upper soil layers and starting excavation of pits with a preliminary depth of about 500 m. The company plans to extract 28 million tons of ores annually, which (according to the company's own estimates) would contain 840 tons of arsenic, 280 tons of cadmium, 3800 tons of chromium, 560 tons of lead and 1400 tons of antimony. The list reads like the periodic table of elements that would be discharged into one of the most problem-prone quarries in the world, the Korkinsky Coal Quarry. The Korkinsky Coal Quarry has been in use for more than 70 years and is the deepest quarry in Eurasia (~ 5.5 km long, ~ 3.5 km wide and 510 m deep) [3]. It is notorious for its fires that pollute air in Chelyabinsk and nearby. According to estimates from the National Mercury Inventory, extracted ores would also contain about 6 grams of mercury per ton of ore. Lead, cadmium, and mercury, first class hazardous substances would be disposed of in tailings and diffused into the air.

Public opposition to the project began long before the official launch of the construction in July 2017. A group of women community members and environmental scientists was formed in 2013 to stop the mining project before it was too late to prevent the inevitable toxic exposures. The civil campaign entitled “STOP MPP!” triggered a tide of public discontent which resulted in meetings, pickets, and petitions addressed to the regional and federal authorities requesting a stop to plans for MPP construction in the area.

“STOP MPP!” was supported by women scientists who conducted environmental and health impact research. Nadezda Vertiahovskaya, an industrial engineer and chemist based in Cheliabinsk and one of the leaders of the “STOP MPP!” movement, described in her environmental impact assessment that ground water pollution was inevitable from Tominsky MPP and that it would contaminate Shershnevsky water reservoir — the only source of drinking water supply for Cheliabinsk city and its district.

The activist scientists at the forefront of this movement describe a domino effect of environmental impacts that threaten to make the populated region uninhabitable. Vera Savchenko, a longtime member of “STOP MPP!” raises questions about the survival of Cheliabinsk city itself after an environmental and social catastrophe caused by Tominsky MMP, because ground water contamination with mining wastes that consist of highly toxic chemicals including mercury and tens tons of sulfuric acid will not only poison drinking water, it will make the soil infertile.

PHOTOGRAPH: YURI CHERKASOV

Women are regular demonstrators, taking part in all meetings against governmental plans to start mining operation at the Tominsky site.

"The fact that Russian Copper Company is now destroying the Cheliabinsk green belt by cutting down 3000 hectares of forests around the city will result in suffocation of the already highly industrialized city and the suburbs," says Savchenko, who believes that the company's persistent introduction of dangerous industrial operations is also responsible for serious social tension and protest in the Southern Urals of Russia.

Women's front line activism in the battle against incompetent authorities and greedy ore extracting industry in Cheliabinsk region has made a difference. According to the Russian Federal Service for Supervision of Consumer Rights, Protection and Human Welfare, "if it were not for the women, Tominsky MPP would have already been built.

In the words of Tsitser, "The future of our children is in jeopardy. Women will never be stopped or frightened if the health of their children is at risk. We will continue our fight to defend the uncontrolled crime in Cheliabinsk. Truth and justice are on our side".

The "STOP MPP!" movement had a "women's face" that helped to significantly delay the MPP construction process", notes Oxana Tsitser, a public activist and an expert to the Russian Ministry of Natural Resources and Environment. "Women are fighting for the health of their children, for clean air, clean water and healthy soil and food. Our children have the right to live in a healthy and protected environment. Tominsky MPP denies this right and predicts a future when our children will be infertile due to toxic chemical exposure caused by MPP pollution".

The "STOP MPP!" Campaign continues to grow. In the last two years, thousands of people have joined the "STOP MPP!" people's movement. An astonishing number of residents have joined to petition the government to step in and stop the construction of Tominsky MPP, with 163,000 signatures so far. Dozens of rallies and pickets take place in Chelyabinsk and the villages nearby. Women with children are regular demonstrators, taking part in all meetings and even individual pickets near the city administration, protesting against governmental plans to start mining operation at the Tominsky site.

Despite the dedicated resistance of the community, the Russian Copper Company still continues its health and environmental destruction. Lack of permits and huge public resistance have not stopped it from launching the construction at Tominsky MPP site. This project represents the determination of business to reap profits despite overwhelming evidence of health and environmental destruction.

In the words of Tsitser, "The future of our children is in jeopardy. Women will never be stopped or frightened if the health of their children is at risk. We will continue our fight to defend the uncontrolled crime in Cheliabinsk. Truth and justice are on our side".

With the Minamata convention, the global community has made a commitment to end mercury harms and to prevent future Minamatas. Russia signed the convention in 2014. Statements from within the Russian government, statements from the corporation itself, and research from citizens and scientists all concur that the Tominsky MPP will create mercury and other dangerous emissions as a result of the mining activities. Now is the time for global action to prevent a pollution disaster that is here on the horizon.

Olga Speranskaya, PhD (Physics) is a Co-Chair of IPEN, a network of non-governmental organizations working in more than 100 countries to reduce and eliminate the harm to human health and the environment from toxic chemicals. She is focuses on the design and implementation of IPEN's global strategy to address pollution sources, domestic and international chemical safety policies and processes. In 2011 she received UNEP's Champions of the Earth Award and in 2009, she was awarded the Goldman Environmental Prize for grassroots environmental activism.

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[1] http://www.mercuryconvention.org/Convention/tabid/3426/language/en-US/Default.aspx

[2] https://www.thegef.org/project/pilot-project-development-mercury-inventory-russian-federation-rf

[3] https://www.youtube.com/watch?v=V9dKeXoGWPA&vl=en

[4] www.ipen.org

Women and Mercury in ASGM:

the Beauty and the Beast

By Yuyun Ismawati Drwiega

Marni poured a 20 kg sack of ore into a ball-mill and then added 2 gallons of water. Her husband told her to place 2 bars of steel inside the ball-mill to crush the ore further. Before she closed the top opening of the ball-mill, as reminded by her husband, she poured in 500 grams of mercury from a Red Bull bottle stored in the kitchen. She mixed the magic silver liquid with her bare hands to ensure the quicksilver potion mixed well with the ore and the water. After that, she closed the ball-mill's opening tightly and repeated the steps on the other 3 ball-mills in the backyard of her house. The four ball-mills were her dowry, a present from her groom for their marriage 5 years ago.

Her husband, Nurman, like other men in their Indonesian village, was a miner. He had his own group or kongsi and a mining area in a hill about a 2 hour drive from their village. Her husband would work in the mining shaft or *lubang* for a couple of weeks, and then after the *pecah kongsi* or the division of the yield, he would bring 10-20 sacks of ore to their house. He taught her how to process the ore with mercury until it was ready to be filtered to form a nugget.

Marni enjoyed her role in this kind of family business, felt empowered and smarter compared to other women in her neighbourhood. She was very skillful when she crushed the ore with a simple hammer in their front yard and easily handled the mixing of the ore with water and 2 kilograms of mercury every 5 hours in the ball-mills. Her husband would take over the discharge of the ball-mills content and filter it in a thin cloth, and then squeeze it to take the air out and form a nugget. One day they were lucky, the nugget was as big as a glass marble, about 10 to 15 grams, but more often they only got a small nugget, like half of a peanut or about 2 to 5 grams.

Her husband would burn the nugget inside a used tin can on top of a simple table near their kitchen. Marni and her children were always eager to watch him burning the nugget and wonder how much gold they would get that day. Even though the smoke smelled bitter, tasted like a cold metal in their mouth, and made them dizzy, most of the time they would just stay there watching him burning the amalgam until a shiny, tiny amount of gold came out.

Their luck would be tested again at the gold kiosk where her husband would take them. The gold kiosk owner would conduct some tests to determine the concentration of gold in their nuggets. They'd confirm whether their nugget was 9 carats, 14, 18 or 22 carats and then the gold kiosk owner would check the gold price that day and calculate how much they would receive in cash.

There are many Marnis and Nurmans in Indonesia and in 77 other countries, trying their luck from this informal business. Seccatore et al. estimate that there are about 17 million miners all over the world who depend for their subsistence on the artisanal and small-scale gold mining or ASGM sector, which contributes about 20% of global gold production (Seccatore, Veiga et al., 2014). The United Nations Environment Programme (UNEP) has also identified that ASGM is the major mercury emitter from intentional use and contributes about 37% of global mercury emissions (UNEP, 2013). Key anthropogenic sources of mercury air emissions include ASGM, coal combustion, production of non-ferrous metals, cement manufacturing, large scale gold mining, consumer product waste, contaminated sites, and chlor-alkali plants.

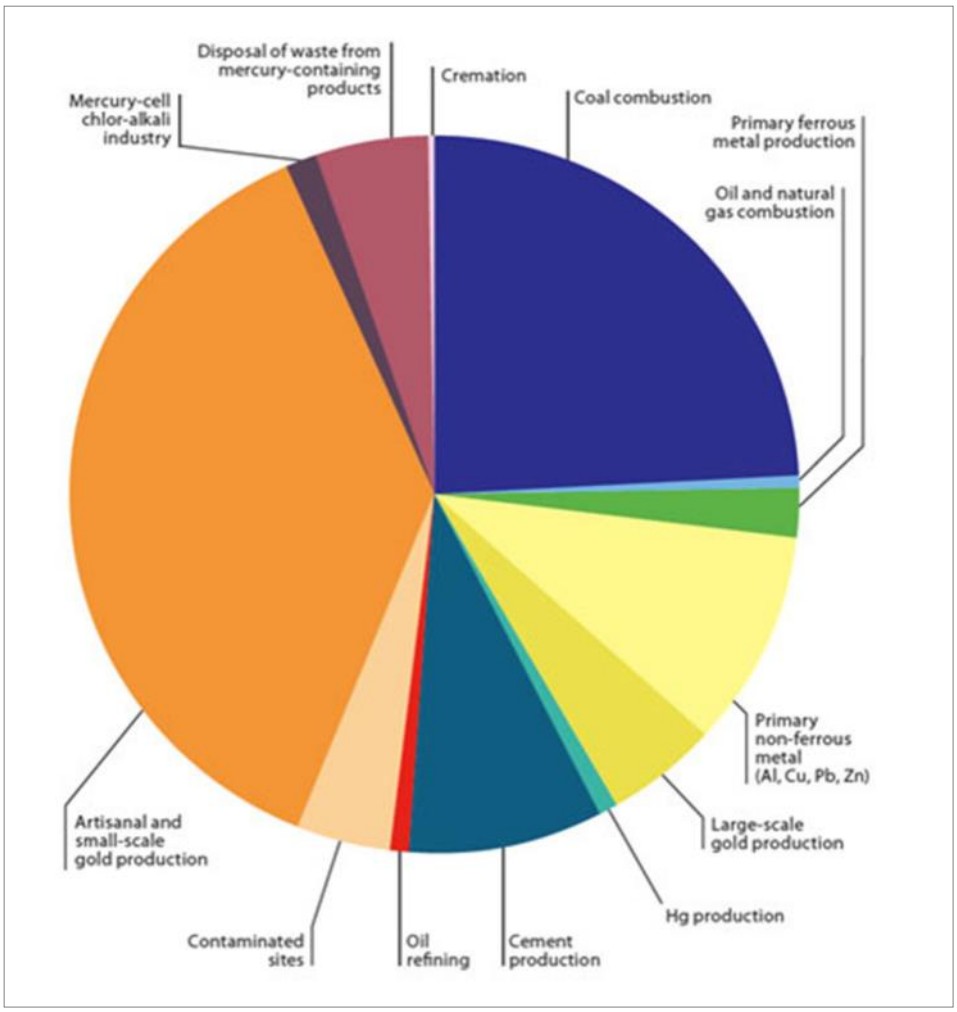
In the last 40 years, mercury has been used to extract gold in many ASGM practices in Africa, Latin America and Asia. Rising gold prices (up 417% between 2003 to 2011 due to economic turmoil in some countries) have doubled the number of ASGM miners. During this period, about 380 to 450 tonnes of gold were produced annually by approximately 17 million miners.

UNEP and Chatham House recently released a report on mercury trade, supply and demand. The reports revealed the amount of mercury traded between 2012 and 2015 decreased 20% (UN Environment, 2017).

In 2012, during the heyday of mercury trade, transactions were valued at approximately $ 232 million (USD) and in 2015, the transactions were down to $ 45 million (USD). The decreased trade was largely due to a new treaty on mercury that was adopted in October 2013 by 92 countries. The Mina-

Relative source distribution of mercury emissions by sector, 2010

SOURCE: UNEP, 2013



mata Convention on Mercury entered into force worldwide in August 2017. It means all countries must do their best to protect human health and the environment from mercury pollution and prevent a repeated Minamata tragedy in their respective countries. After the EU and the US enacted a mercury export ban in 2012 and 2013 respectively, transactions decreased. However, a couple of developing countries tried to get an economic benefit by boosting mercury transactions before the toxic chemical was totally banned.

Mexico, Indonesia and China are the major countries producing and exporting mercury to other countries for purposes allowed under the treaty. Unfortunately, as has happened before, some transactions, especially from Indonesia, were made illegally. It is unclear who benefitted from the trade.

Mercury's Impact on the Population

Globally, there is an increased number of studies revealing the impact of mercury on the populations, especially in countries with ASGM. Böse-O'Reilly et al. highlighted the potential hazards of mercury for children's health in ASGM sites, as well as for breastfeeding women and women of child-bearing age (Böse-O'Reilly, Lettmeier et al., 2008a), (Böse-O'Reilly et al., Lettmeier et al., 2008b). Studies have also reported that the most common health effects reported among workers engaged in ASGM are neurological effects (Gibb and O'Leary, 2014; Ha, Basu et al., 2016). These include tremor, ataxia, memory problems, and vision disorders, and were found to occur not just among those engaged in mining activities but also among children and fish consumers living downstream from mining activities (Philippe Grandjean, 1999; Bose-O'Reilly, Bernaudat et al., 2017). Gibb et al. concluded that current studies indicate that populations in the ASGM hotspot areas experience neurological effects, kidney effects, and possibly immunotoxic effects or autoimmune effects from mercury exposure (2014).

A recent study by Trasande et al. (2016) rexamined hair samples from 236 participants from 15 sites in 15 countries, with approximately 11.3 million people at risk. The average total mercury levels were between 0.48 ppm and 4.60 ppm, and 61% of all participants had hair mercury concentrations greater than 1 ppm, the level that approximately corresponds to the United States Environmental Protection Agency reference dose (Trasande, DiGangi et al., 2016). Additionally, 1310 cases of intellectual disability attributable to mercury exposure were identified annually, resulting in 16,501 lost DALYs (Disability-Adjusted Life Years). This study estimated a total of $77.4 million lost in the form of annual economic productivity.

Based on human biomonitoring data from 62 countries, Steckling, et al. (2016) reported that between 25% and 33% of these miners - 3.3-6.5 million miners globally - suffer from moderate Chronic Metallic Mercury Vapour Intoxication (CMMVI) (Steckling, Boese-O'Reilly et al., 2011). However,

many studies did not include other nearby residents and family members of ASGM miners who live in mining areas that might be affected by the exposure to mercury. Thus, the current quantification of the burden of disease underestimates the burden from mercury pollution at ASGM sites.

In Indonesia, ore amalgamation commonly takes place inside the village and settlement areas. Large quantities of mercury vapour are released into the air in crowded neighbourhoods, exposing people of all ages, especially children. Mercury is particularly toxic to brain development in children; a child's brain has only one chance at development (Grandjean and Herz, 2011).

Mercury vapour from the amalgam burning unit in some houses is spread out all over the village. There is a daily fluctuation of mercury vapour concentration, ranging from 60 nanogram/m3 up to 51,000 nanogram/m3. Only a few countries have established a reference parameter for mercury vapour following the WHO and US Department of Health and Human Services' safe level is 0.1 milligram per cubic meter of air (WHO, 2003). Moreover, most developing countries do not have adequate laboratory capacity to analyse mercury vapour.

Although several studies have shown an elevated level of mercury in hair and urine in some populations in ASGM hotspot areas, laboratory analysis is still lacking, which causes a delayed response to health problems related to mercury poisoning. There is a need to introduce additional indicators and parameters that can be observed by local health workers as a proxy for mercury poisoning. For example, hypertension, severe headache, nerve-related diseases, respiratory-related diseases, and gastro-related diseases are common complaints found in ASGM hotspot areas, but these symptoms can fail to be associated or interpreted as chronic mercury poisoning by the health workers.

Another recent study conducted by IPEN and BRI in 25 countries, analysing total mercury in 1044 women of child-bearing age, showed that more than 42% of participants have concentration levels above the safe level of 1 part per million (ppm) and the average level is 4 ppm (Bell, 2017). Study participants from Indonesia's ASGM hotspots have the highest average of 6 ppm and the highest mercury in hair (90 ppm), in Sekotong. The potential routes of mercury exposures in ASGM are through fish and rice consumption and mercury vapour inhalation (Krisnayanti, Anderson et al., 2012; Ismawati, Zaki et al., 2015).

SOURCE: BALIFOKUS, 2015

Mercury vapour distribution in one of ASGM villages in Indonesia.

In four ASGM hotspots in Indonesia where I conducted 132 interviews from 2014 to 2016, more than 60% of those interviewed suffered severe headache, arm or leg muscle aches (55%), hypertension (40%), and appetite loss (45%). About 30% had children under 12 with various severe health problems which included frequent seizures (12), cleft lips and palates (5), hydrocephalus (2), microcephaly (2), born without anus (2), born without complete fingers, toes, and limbs (5), clubfoot (1), cerebral palsy (6), and leukemia (2).

Beauty and the Beast

Women as helpers or supporting labour in this informal gold production setting, and their children, are affected to different degrees by the health implications mentioned earlier. Are their cute and pretty children being cursed by the gold or monkey spirits as the witch doctors say? No. Mercury is the culprit for their suffering. Mercury is the beast that cannot be easily transformed into a nice prince.

Once mercury has been released into the environment, it is not easy to capture it or return it into inorganic mercury or its compounds. Once the shiny silver liquid gets into your body, it will not be easy to get rid of it (Liu, Cai et al., 2012). Women have a very peculiar way to clean their body of mercury (and other heavy metals): detoxification through their babies in the womb. Sad and controversial indeed but that's how it works. Many cases of fetal mercury poisoning have already happened in different parts of the world, including in the Minamata Bay area over 60 years ago (Harada, 1995; Harada, 2005; Harada, 2011).

According to the global consensus, Parties to the new Mercury Convention are mandated to develop measures and implementation plans to curb mercury pollution from various sources. These range from ending the production of mercury from cinnabar mining, phasing out mercury use in products and processes by 2020, eliminating mercury in ASGM practices, storing mercury waste in long-term storage, to health interventions.

SOURCE: BALIFOKUS

Some cases of children born with birth defects in ASGM hotspots in Indonesia.

Early this year, Marni and Nurman lost their youngest child, Imran, who was only two and a half years old. He suffered severe anemia, was malnourished, and had frequent seizures. The *dukun* or witchdoctor told them that their son was cursed by the monkey and octopus gods and told them to change his name to Ipan so he could be healed and healthy again. Unfortunately, changing their son's name did not change anything at all because 6 months later, Imran died. They were mourning for a couple of months. Nurman sold his ball-mills and tried to get any job he could in his village.

Last month they had a new worry. Marni had just received the result of her hair test and her result was quite high, 40 times higher than the safe level. Now Marni and Nurman are worried and do not know what to do because they just learned that Marni is 2 months pregnant. They can only hope that their third child will be born healthy

Yuyun Ismawati Drwiega is a PhD candidate in Medical Research - International Health, at Ludwig Maximilian University of Munich and IPEN Lead on ASGM/Mining. In 2009 she was awarded a Goldman Environmental Prize for her work in Indonesia.

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Bringing Joy to Kids Affected by ASGM Poisoning: Inspiring Young People

By Veronika Podobed

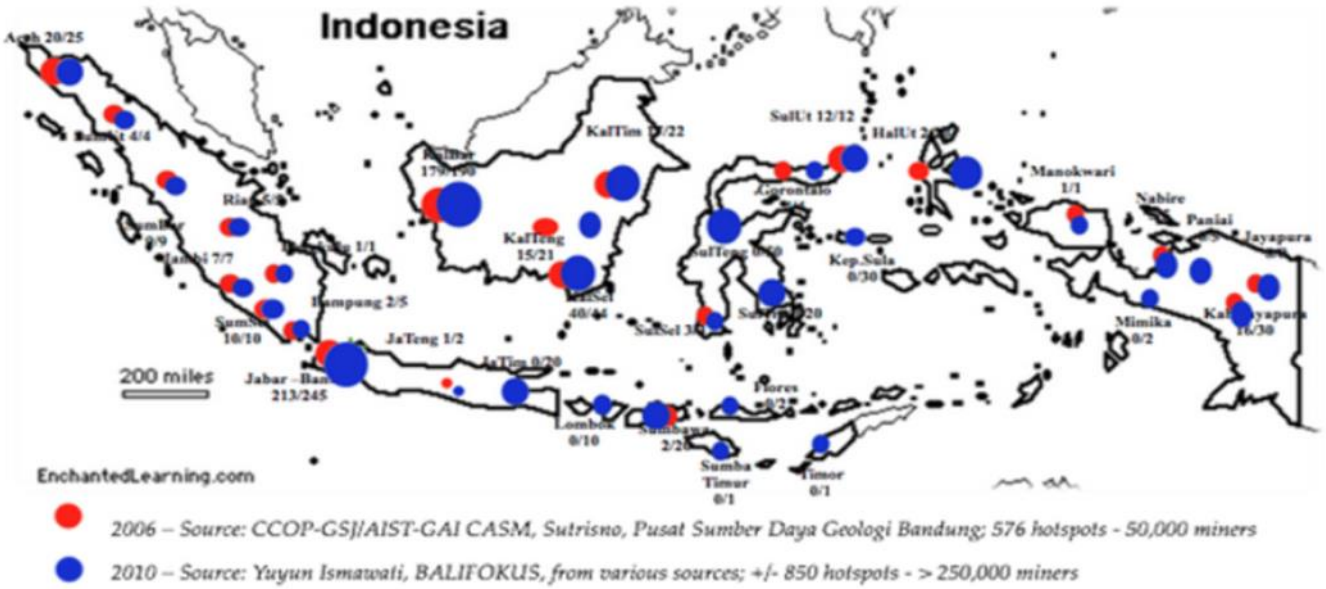
In November 2016, I was fortunate to be invited to attend the meeting of the International Persistent Organic Pollutants Elimination Network in San Francisco California. In collaboration with the Goldman Environmental Foundation, the Network drew together non-governmental organizations from different countries and regions working towards a toxic-free future. I was thrilled to listen and learn about amazing work organizations had been doing locally and nationally, about their fight for the rights of people to live in a pollution-free world.

At this meeting, I met Yuyun Ismawati Drwiega, the Senior Advisor to BaliFokus Foundation, an inspirational non-profit organization located in Bali, Indonesia which unites and leads people working on environmental health problems. One of its priorities is to prevent, reduce, and eliminate risks from mercury exposure in artisanal and small-scale gold mining (ASGM). Yuyun's presentation about children in ASGM communities affected by mercury poisoning made me frustrated and excited at the same time.

According to BaliFokus, ASGM activities can be found in more than 800 hotspots in Indonesia (see Image 1). People living in these places use mercury to extract gold from ore. BaliFokus witnessed mercury being evaporated from amalgam in private backyards and in the kitchens around children, babies and pregnant women. Mercury is poisoning the food, the air, and the water, leaving people with life threatening diseases. Everyone in these hotspots is affected by mercury poisoning; children are the most vulnerable. BaliFokus works to mitigate their suffering.

I made myself a commitment to help poor kids in Indonesia by telling their stories to my classmates and the members of the International Integrity club at my school, Greenbank Middle School in Ottawa, Ontario, and seeking their advice and ideas. To become involved, International Integrity set up a school-wide bake sale and café in December, 2016 to raise funds for toys. The students and teachers at Greenbank Middle School paid cash or toys in exchange for delicious baked treats. Our first event was a huge success! We raised $236.65 and 12 toys. The International Integrity club took a trip to IKEA to buy more toys with the money we raised. In total, we bought over 100 toys.

One obstacle remained –



CREDIT: YID/BALIFOKUS

Artisanal and Small-scale Gold Mining hotspots in Indonesia

PHOTOGRAPH: VERONIKA PODOBED

Veronika (right top) with International Integrity members

transporting these toys and the money to BaliFokus, in Indonesia. The club decided to write a letter to the Embassy of the Republic of Indonesia in Ottawa to request help. On January 8th, 2017, the letter was sent and in less than a week Ms. Rumondang Sumartiani, Minister Counsellor for Information and Socio-Cultural Affairs, replied that the Embassy would gladly aid the club. Overjoyed, International Integrity began planning the date and time of the toy presentation to the Embassy.

On February 2, 2017, International Integrity hosted a huge school assembly to hear about children's lives in Bali and to present the toys to Embassy representatives. Children were emotional; some cried while watching kids living in poverty and suffering from the effects of mercury exposure. At the end, the school was left with everybody inspired to make the world a better place. The Embassy representatives started the toys on their journey to remote villages in West Java and Lombok Island in Indonesia.

The BaliFokus team sent us great photos of children playing with the toys that we collected. Photos of sick kids happily playing with new toys inspired International Integrity with confidence that we could contribute to making the world a better place. We finally understood that all their work paid off and that somewhere over the ocean, kids of our own age with severe disabilities are a little bit happier.

International Integrity
Better can happen

International Integrity continues to work on local and international projects that include filling "Backpacks for Hope" with school supplies for children in foster care in Ottawa and raising funds to purchase deworming drugs for 400 children in Kenya. We are still accepting donations for BaliFocus.

Canada is a unique and special place where children of various ages get the opportunity to make their voices heard. They can express their beliefs and thoughts about anything they feel strongly connected to. Because of

PHOTOGRAPH: YID / BALIFOKUS

M. Ridho, 5, in red shirt, was born with double genitals and without an anus (atresia ani). He was happy to play with the cars and T-Rex and share them with his friend.

PHOTOGRAPH: YID / BALIFOKUS

Left: Fikri, 9, who has cerebral palsy, never had his own toys before. He was so happy that he was able to put the right cube in the right hole. Below: Zaskia (centre), 5, who has a club foot and has no fingers, with Niza, 11, and Zubaidah, their mother.

PHOTOGRAPH: YID / BALIFOKUS

these involvements, kids are starting to understand the need to fight poverty, bring hope to the sick, and never doubt their own capabilities.

The International Integrity club would not have succeeded without the help of Yuyun Ismawati Drwiega, BaliFocus Senior Advisor, Ms. Rumondang Sumartiani, Indonesia Minister Counsellor for Information and Socio-Cultural Affairs, and the Greenbank Middle School community: Roland Kuehn, teacher, Denis Pare, Principal, Christina Gillander, Vice-Principal, Sue Farrell, Secretary; students and their parents.

Veronika Podobed is a grade 8 student at Greenbank Middle School, Ottawa, Ontario, Canada, and a co-founder of International Integrity. She is passionate about working on environment and sustainable development issues, helping children and communities in need, and building a strong and participatory environment at her school.

Below: Tika, 2.5, who is malnourished and has leukimia, with Icha, her mother.

PHOTOGRAPH: YID / BALIFOKUS

Mercury in Women of Child-bearing Age:
An Emerging Global Health Crisis

By Laura Vyda

Women have an inherent, stand-alone, human right to health and safeguards from toxic exposures. For the many women of the world who can bear children, the right to self-determine if and when they will have children and the right to a healthy pregnancy are inherent in their human rights. Pre-pollution, when children are born already bearing a toxic load from environmental exposures of mothers, is an issue of environmental justice, reproductive justice and human rights.

Some hazardous chemicals in a woman's body, like mercury (a toxic metal with profound health impacts) can pass through the placenta and transfer to her fetus during pregnancy, exposing the developing fetus to the brain damaging neurotoxin. At very low levels mercury can cause neurological damage, and kidney and other organ damage. While adults who are exposed to mercury can experience a range of impacts from cognitive and motor impairment to seizures and organ damage, the impacts of mercury contamination are most severe on developing fetuses. Regions of the world with small scale gold mining have some of the highest levels of mercury exposure in the world.

Across small scale gold mining villages, it is all too common for adults to experience severe headaches, muscle tremors, and difficulty with speech and limbs, and for children to be born with life threatening and often fatal neurological disabilities. The common cause linking these devastating health impacts is mercury, which is used in small scale gold mining to create an amalgam with gold particles. When miners, most often the women in the community, burn the amalgam, the mercury burns off as vapor leaving the gold, and contaminating not only those who breath it directly, but the mercury also impacts local fish, rice and waterways as it is deposited, leaving a legacy of contamination. It is in areas such as villages in Indonesia where women between the ages of 18-44 carry some of the highest mercury body burdens in the world.

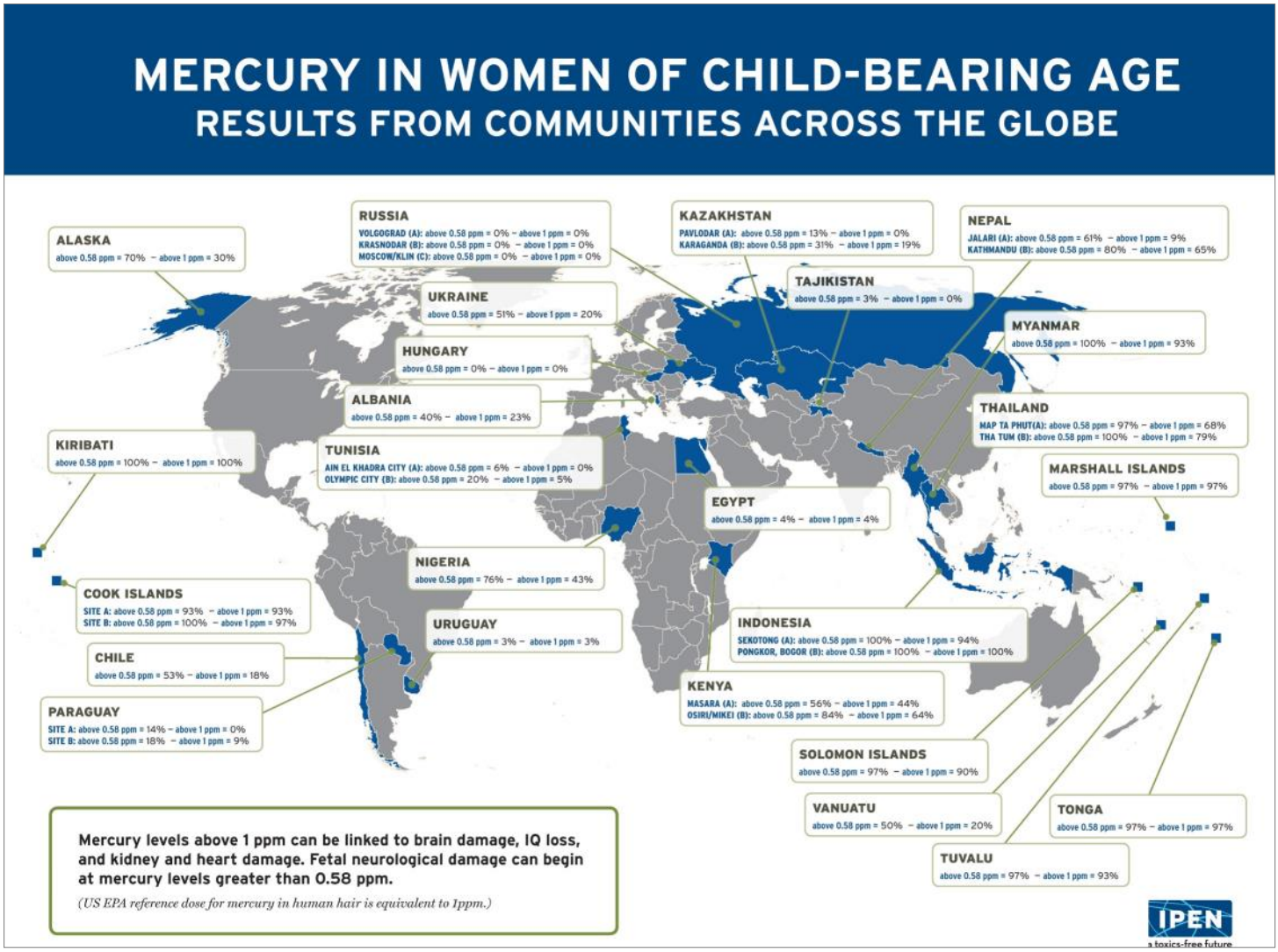
The standard measure of mercury risk above which symptoms can occur is 1 ppm, that is 1 part per million. However, a compelling body of recent research shows that neurological damage in developing fetuses can begin with exposures as low at .58 ppm. When women of child-bearing age are exposed, there is a double burden- the effect on the health of the woman herself, but also the risk to potential children born to that woman.

The global network of environmental scientists and advocates at IPEN conducted an extensive global analysis to assess the mercury body burden in women of childbearing age in order to better understand and describe the impact of mercury on communities, on women themselves, and on their potential future children. Authored by Lee Bell et al., Mercury in Women of Child-bearing Age in 25 Countries, demonstrates the alarming scope of the global mercury public health crisis.

Partnering with health and environment NGOs in a global network, participants followed full informed consent protocols to collect hair samples from 1044 women in 37 locations across 25 countries in 6 continents. This research constitutes the largest study of its kind. The results were analyzed by the accredited lab Biodiversity Research Institute (BRI). Analysis, conducted by BRI, found that 42% of women sampled had average mercury levels over the US EPA health advisory level of 1ppm, above which brain damage, IQ loss, and kidney and cardiovascular damage may occur.

The global mercury monitoring research exposes not only worrisome global levels of mercury exposure in women, but levels that have implications for the next generation as well. 55% of the global sample of women measured more than 0.58 ppm of mercury, a level associated with the onset of fetal neurological damage.

Where is mercury coming from and why is it so pervasive? Small-scale gold-mining, coal fired power plants and industrial contamination are the toxic trio of top sources of mercury contamination. Small scale mining is a major source of air pollution from mercury, accounting for approximately 37% (727 tonnes) of all global emissions. According to a report by Wilson et al., Integrated Assessment of Arti-



CREDIT: IPEN

sanal and Small-Scale Gold Mining in Ghana, "mercury is generally used in small-scale gold mining without any type of capture system to reduce chemical releases into the environment".

In the global analysis, over half of the women sampled in Indonesia, Kenya and Myanmar measured over 1 ppm where communities subsist from small-scale gold mining, with women in two Indonesian locations measuring between **three and nine times above** the US EPA threshold for mercury.

The need for global action to curb mercury could not be clearer.

And the world is acting. 128 countries have signed onto a binding global mercury treaty, the Minamata Convention, and 84 became Parties to the Convention that aims to restrict and eliminate mercury contamination. However, continued pressure is needed if we are to see actions that effectively address the core causes of mercury contamination.

The global commitment to end mercury's health and environmental threat is a very positive step. But there is more to be done. Because of the influence of the gold industry, the treaty has left a gaping loophole for small scale gold mining by allowing the continued global trade of mercury for gold mining. In effect, this allows for continued profits for the gold industry at the expense of the health, lives and future of low income people in local communities. The international mercury trade keeps the spigot of mercury flowing into economically challenged communities for gold extraction.

Environmental and health scientists and advocates present at the first meeting of the Parties of the Minamata Convention in September 2017 in Geneva had hoped to see progress on coordinated guidelines for identifying and cleaning up toxic sites, and for ending the mercury trade. No such action was taken towards these ends. There was however an announcement of a global development fund investment to reduce mercury in small scale gold mining.

CREDIT: IPEN

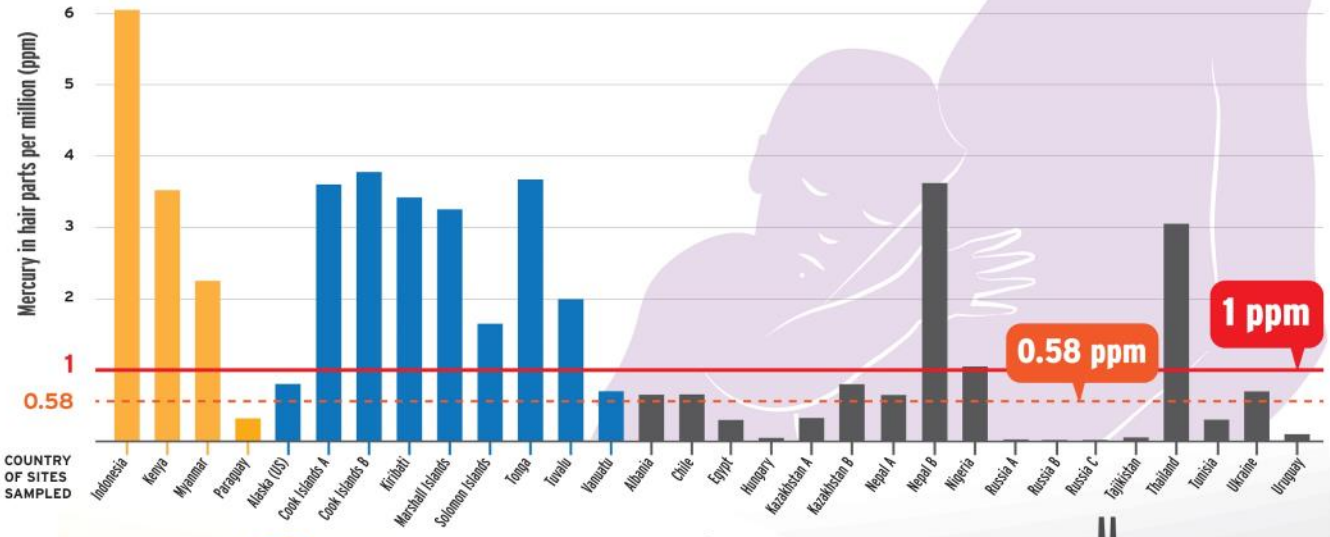
HIGH MERCURY LEVELS IN WOMEN

GLOBAL STUDY SHOWS PUBLIC HEALTH THREAT TO WOMEN & CHILDREN

MERCURY'S HARMFUL EFFECTS

Mercury levels above 1 ppm can be linked to brain damage, IQ loss, and kidney and heart damage. Fetal neurological damage can begin at mercury levels greater than 0.58 ppm.

(US EPA reference dose for mercury in human hair is equivalent to 1ppm.)



MERCURY POLLUTION SOURCES

Small-scale Gold Mining (ASGM) Women and children in communities where mercury is used for gold mining are exposed to high levels of mercury pollution. Mercury releases into their local environments pollute fish, rice and local waterways, and contaminate local land and communities.

Global Pollution Mercury releases from numerous human-made sources in the air, water and soil are deposited in the oceans and contaminate fish and other food sources. Coal-fired power plants are one of the top global mercury pollution sources.

Mixed Industrial Many small- and large-scale industrial processes (e.g. chlor-alkali, cement kiln, waste incineration, pulp and paper plants) release mercury into the local environment, pollute waterways, contaminate food, sicken local populations, and create contaminated sites.

SOLUTIONS

ELIMINATE THE MERCURY TRADE

PHASE OUT COAL-FIRED POWER PLANTS

IDENTIFY AND CLEAN UP CONTAMINATED SITES

DOWNLOAD THE REPORT
http://ipen.org/mercury-and-women

bri Biodiversity Research Institute innovative wildlife science

IPEN a toxics-free future

We must be clear that even if the gold industry were able to eliminate mercury, it would not make gold mining a sustainable activity. While gold mining might evoke an image of a pathway out of poverty, the reality is anything but romantic or sustainable. In Kenya, Myanmar or Indonesia, as in every other gold mining community, past or present, it is almost cliché, but true, that it is those who sell the shovels, not the impoverished miners, who reap the economic benefits while miners can end up in "poverty traps". The land, waterways and rice fields around these communities contain legacy contamination causing ongoing harm. Additional devastating SGM-related consequences for ecosystems include deforestation, biodiversity loss, and land degradation. The call for more sustainable mining, that would reduce mercury use, and deliver "green gold", is a dangerous fallacy.

Mining is inherently unsustainable since it demolishes natural resources. Not only is slavery, indentured servitude and exploitation hard-baked into the mining supply chain, but as with coal or other types of mining, gold mining decimates environments, leaving destruction, degradation, and contaminated land in its wake.

We must insist that claims of sustainable development are evaluated through the lens of environmental and reproductive justice, and carefully assess whether any policy that is floated as sustainable will address poverty while upholding health and human rights of the communities it claims to help.

Laura Vyda is a long time social and reproductive justice advocate who serves as the IPEN Communications Director. IPEN is a network of non-governmental organizations working in more than 100 countries to reduce and eliminate the harm to human health and the environment from toxic chemicals www.ipen.org

Acknowledgements:
IPEN would like to acknowledge the participation of 1044 women in 37 communities across 25 countries who contributed hair samples for this study. In addition, we would like to recognize the contributions IPEN Participating Organizations that conducted research and prepared reports characterizing the participating community locations, collected samples for mercury analysis and communicated the results of this study to the participants, their governments, media, and other public health & civil society groups. Graphics in the article were published originally in the Mercury in Women Global Report and Executive Summary.

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Non-Communicable Diseases:
Chemicals are a Key Factor

By Alexandra Caterbow

Non-communicable diseases (NCDs) are on the rise. Most probably you have a friend or family member suffering from cancer, diabetes or respiratory diseases. So, in a way NCDs have become a sad part of the human experience that we share globally. Yet, the question is: do we have to accept that they are here to stay?

A few facts of NCDs: They are the leading cause of death worldwide, causing an estimated 36 million deaths annually, with 80 per cent of them in developing countries. NCDs cause 60 per cent of all deaths worldwide and 18 out of 35 million annual deaths related to NCDs are of women (WHO, 2005). NCDs are the biggest threat to women's health globally. The World Health Organization (WHO) estimates that around 1.7 million women will be diagnosed with breast cancer in 2020, which is a 26 per cent increase from current levels. In 2010, 143 million women were diagnosed with diabetes, and by 2030 this number is expected to rise to 222 million (NCD Alliance, 2011).

In the public debate and among health experts, lifestyle, tobacco smoke and nutrition are already in focus as causes of NCD's. In relation, environmental determinants like air and water pollution, exposure to hazardous chemicals and pesticides are by far not addressed sufficiently. This is surprising, as many hazardous chemicals are ubiquitous and linked to many NCDs. They are in products we use, in food we eat and in the air we breathe. Some of them are bio-cumulative or have negative effects even at low levels.

A World Health Organization (WHO) meeting in Asturias, Spain in 2010 agreed for the first time to put environmental and occupational factors in the primary prevention of cancer on the agenda. The WHO Asturias Declaration (2011) states "Prevention of the environmental and occupational exposures that cause cancer must be an integral component of cancer control worldwide". However, the new 2017 WHO NCD progress monitor report does not include progress monitoring indicators related to chemicals (WHO, 2017). This is a missed opportunity, since much more needs to be done to tackle NCDs at the level of primary prevention. Exposure to hazardous chemicals and pesticides has to be reduced by phasing them out, implementing safe alternatives and raising the awareness of the public, health professionals and policy makers.

The Case of ASGM and Mercury

Take the example of Artisanal Small-Scale Gold Mining (ASGM), where mercury is being used. In many ASGM areas not only miners, who are mainly men, are exposed to mercury. Women are highly affected too, because often they perform the most toxic jobs, since these jobs do not require as much strength. Instead, these jobs include pouring the mercury into the ball-mills or mixing the mercury in panning, and burning the amalgam, often with their children or babies nearby. Women are also highly susceptible to harmful chemicals' effects and can pass on the toxic chemicals to their babies before birth and in breast milk. Mercury vapor released during amalgam decomposition poses a serious hazard to women and others in close proximity to gold shops and amalgam decomposition. Women working with tailings may simultaneously be exposed to multiple pollutants such as cyanide, mercury, lead, cadmium and arsenic. In most cases, miners and women working in ASGM are not aware of the health risks related to the use of mercury.

Mercury is very harmful, as it is toxic for the nervous system, the cardiovascular system, the liver and the kidneys. It can cause mental impairments and learning disabilities, developmental disorders, birth defects, and eye and hearing damage in babies as a result of their mother's exposure during pregnancy. Mercury exposure for pregnant women can also lead to spontaneous abortions and low birth weight babies. During early childhood, mercury exposure can cause severe neurologic and systemic damage in children. Human biomonitoring results from several ASGM countries have shown alarming concentrations of mercury in hair, urine and blood of children, women and men (Krisnayanti et al., 2012).

The health aspects of mercury exposure in ASGM communities should not be looked at with-

out taking social determinants into account. Women living in ASGM hot spots not only have to deal with their own health, and diseases of their children and relatives, but they also live in extreme poverty and in an insecure environment where they often face sexual abuse and/or drug and alcohol abuse. Mining communities often have scarce or no access to health care facilities, especially when they are located in very remote areas. Additionally, miners usually cannot afford to pay for health care, treatment and medication. In some regions women are excluded from families and communities, when they have impaired and sick children, and accused of being bewitched.

The WHO reports that "health-care providers generally lack knowledge about, and sensitivity to, environmental and occupational illnesses and the adverse health effects of elemental mercury used in ASGM in particular" (WHO, 2016). There is much effort needed to develop gender sensitive training, materials and awareness raising not only for health professionals, but also for affected communities. A lot needs to be done to implement safe technologies which do not put women, men and children at risk.

Urgent Action Needed

Mercury poisoning is just one of the terrible consequences of exposure to hazardous chemicals. There are hundreds of other chemicals that have harmful effects on human health and environment, and there are thousands that are not yet sufficiently tested yet. To reduce NCDs in relation to chemical exposure, even based on the scientific information that we have to date, it is crucial to phase out hazardous chemicals and pesticides, starting with the most hazardous ones, and introduce safe alternatives, including non-chemical alternatives.

The health sector and policy makers should recognize that chemicals are one of the key causes of NCDs. Therefore, environmental determinants should be integrated in national NCD action plans, and information systems and traceability of exposure to environmental factors related to NCDs, should be developed. The case of mercury exposure in ASGM teaches us that one of the most urgent areas for action is the prevention of early-life exposure to hazardous chemicals. There is no time to waste to enhance work on primary prevention. Raising the awareness of women, empowering them and making their voices heard is crucial in our joint fight against NCDs.

Alexandra Caterbow is a Co-director of the NGO Health and Environment Justice Support, based in Munich, Germany. She works on gender, sustainable development, and chemicals and waste issues.

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Women in ASGM:

What Does the Research Literature Tell Us?

By Morgane M.C. Fritz

This article summarizes recent research on women's roles in ASGM, based on a short review of abstracts of book chapters and articles published in academic journals since 2003, in all languages [1].

While it is commonly agreed that women are key to the stability and growth of communities involved in ASGM, there is a lack of research to document this and detail what women's specific roles are (UNEP, 2015; Yakovleva, 2007). Hinton et al. (2003) develop some hypotheses, and state that women may have a considerable role to play in the transition towards cleaner and healthier practices in ASGM.

Women can represent a large share of the mining force (e.g. 20 - 50% in the Democratic Republic of Congo, according to CIRDI, 2014, p. 5), but they are generally depicted as victims or vulnerable groups in research and practice. Hirons (2011) calls for this to change, for women's perspectives to be investigated further and for their suggestions for improvements to be taken into account. According to Nyame and Blocher (2010), the role of women in relation to land ownership needs to be investigated.

TABLE: MORGANE FRITZ

Criteria	Women in ASGM	ASGM in general
Timespan	2003-2018	2003-2018
Document type	Article (23); Review (2); Book Chapter (3); Article in Press (1)	Article (357); Review (16); Book Chapter (15); Article in Press (10); Book (1)
Main source	Resources Policy (3); Environmental Health Perspectives (2); Extractive Industries And Society (2); International Journal Of Environmental Research And Public Health (2) Journal Of The International AIDS Society (2) Other (18)	Journal Of Cleaner Production (28); Resources Policy (27) International Journal Of Environ..(16) Science Of The Total Environment (16) Environmental Research (13) Extractive Industries And Society (13) Chemosphere (10) Other (276)
Languages	English (28); Spanish (1)	English (384); Spanish (8); German (5); French (1); Portuguese (1)
Total	29	399

Literature on women in ASGM versus ASGM in general

[1] I used the keywords "women AND artisanal AND gold AND mining" to search the title, abstract and keywords of references in the Scopus database for publication years starting from 2003. The search was limited to articles, book chapters, reviews, articles in press and books; it excluded conference papers, letters, and editorials, which are usually not peer-reviewed or contain less detailed findings than peer-reviewed publications. No restriction was made on the subject area or the language. I used the same search terms to provide an overview of reference documents on ASGM in general to enable a comparison in terms of publication numbers, using the keywords "artisanal AND gold AND mining."

General Findings

Research on ASGM seldom focuses on women. Of 399 articles on ASGM published between 2003 and 2018, only 29 relate directly to women

The number of publications on ASGM in general has increased from less than 20 per year in the period 2003-2008, to about 50-60 from 2014-2018 (see Figure 1). The number of publications focusing directly on women in ASGM, however, has remained very limited in the same period.

This means that research on women and ASGM is in its infancy, which creates large opportunities for transdisciplinary research. Also, the areas under focus in these 29 papers concern a limited number of countries and regions, when we consider that about 73 countries have ASGM activities (Fritz et al., 2017). The studies focus on Colombia (2), the Amazon (1), Ghana (5), Mexico (1), Guinea (1), Papua New Guinea (1), Senegal (1), Tanzania (5), various countries (3), Nigeria (2), Uganda (1), Philippines (1), Peru (1), Burkina Faso (1), Venezuela (1) and Suriname (1).

Women in ASGM: Gender Specificities, Roles and Perceptions

Women in ASGM can play different roles and be perceived differently depending on the local socioeconomic and cultural context.

Figure 1: Number of publications per year on women in ASGM and on ASGM in general

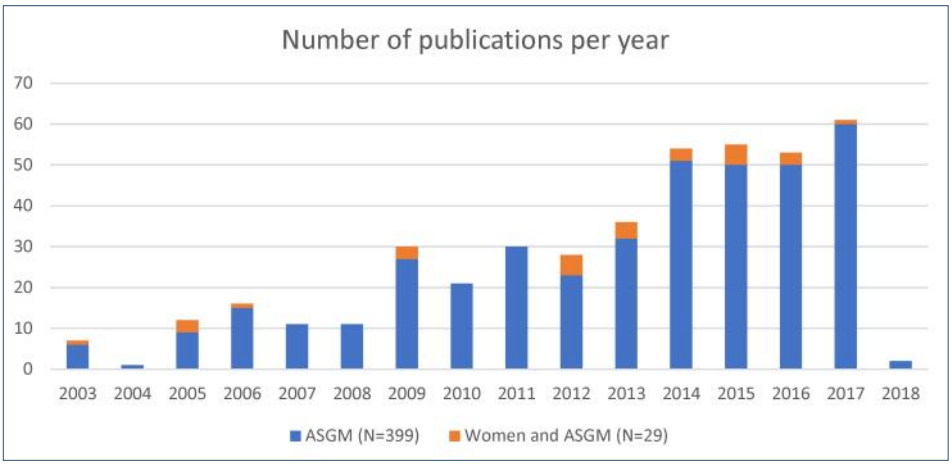

FIGURE: MORGANE FRITZ

About half of the articles (14 of 29) generally refer to women as part of a population under study for health and safety risks regarding mining activity, the use of mercury, or the use of other hazardous substances. Studies comparing mercury and methylmercury values between men, women, and children in specific ASM communities usually find a higher concentration in men's hair or urine samples (Salazar-Camacho et al., 2017; Rajaee et al., 2015). These concentrations are linked to fish consumption and location of residence of the participants. One study also investigates impacts on infants' birth weight, growth, and neurodevelopment due to mercury exposure and mercury-containing vaccines; it recommends that policymakers raise parents' awareness about Thimerosal-free vaccines (Dórea and Marques, 2016). Another study analyses mercury exposure risks in the context of mercury mining (not ASGM) in Mexico, where the results show that children, women and men are all highly exposed to mercury - which also contaminates soils and sediments (Camacho et al., 2016). Another study focuses on lead contamination from ore processing as well as exposure of children, miners, and pregnant women to mercury, arsenic, manganese, antimony and crystalline silica (Plumlee et al., 2013). Children are found to be among the most serious victims from direct ingestion, respiration of dust particles, and water contamination.

Other references mention women in diverse ways, either as part of the mining population in general (Dessertine, 2015; Tschakert, 2009) or because approximately 3 million women and children who participate in mining activities are exposed to mercury vapours, methylmercury contamination of fish, or other health hazards (Gibb and O´Leary, 2014; Girigisu et al., 2012; Ashe, 2012; Veiga et al., 2005; Mahaffey, 2005; Appleton et al., 2005).

The remainder of the abstracts analysed (15 of 29) focus on more women-specific issues in relation to ASGM.

Women's Working Conditions / Division of Labour

In Ghana, Armah et al. (2016) emphasize the domination of men in ASGM activity but mention recent increases in the number of women becoming miners too, whose environmental, health and safety (EHS) and economic working conditions lack assessment. EHS and economic working conditions appear to be different for men and women, which may be explained by discrimination or other unobserved factors. This research describes gender-specific differences, where education and the number of years spent in the community seem to be critical for women, whereas age and years of working experience seemed to be more important for men. These factors seem to influence how men and women are paid and their EHS working conditions.

Calys-Tagoe et al. (2015) find that women in Western Ghana are more likely to be physically injured in mining activities than men, especially during excavation and crushing processes or by being hit by objects (70% of reported injuries). These injuries are explained for all miners in general by a lack of protective equipment and employers' lack of interest in safety.

At the Tinkoto ASGM site in Senegal, women are found to be particularly exposed to mercury due to the traditional distribution of ASGM tasks where women are involved in the amalgam burning process (Niane et al., 2015). Awareness of health risks is often low, however, and may be even lower among women compared to men miners, as is also found by Charles et al. (2013) in Tanzania, which underlines the need for more EHS awareness-raising and monitoring in ASGM activities.

Women's Participation in Mining Activity

In Western and Central Africa, Malpeli and Chirico (2013) find an important correlation between women' roles in artisanal diamond and gold mining activities and the type of deposit. They found that women are likely to participate in the extraction of minerals in deposits with a thin overburden layer because the minerals are more easily accessible. When harder manual work is needed to access the mineral layer, women tend to

have non-mining support tasks (e.g., washing of minerals). The fact that women's activities in ASM can depend on the type of ore deposit has important implications for policy-making and the development of assistance programs.

For Moretti (2006), the participation of women in ASGM activities in Papua New Guinea (PNG) is related to more factors than just skills. It is related to factors such as "personal choice, pollution beliefs, land tenure practices, the unequal control of household resources, the gendered division of labour," as well as gender issues in the colonial history and current national laws and mining company practices. In her study, she shows that women are usually overloaded with agriculture, household, and childcare activities, leaving them no time to contribute to ASGM activities. In addition, culture and beliefs keep them away from the mine as women are believed to bring bad luck and are expected to be housekeepers. Since the 1980´s, the number of female miners has grown, however, for various reasons. Some women denounced men for wasting the money they earn on distractions rather than using it to feed their family, giving women no other choice than to become miners too. Other women considered that traditions and beliefs were just ways for men to keep control over gold production, and that in fact, both women and men can be successful in gold mining if they spend their earnings thoughtfully. Changes in mining legislation also supported women´s inclusion in mining activities. According to Moretti, history-sensitive ethnography can hence improve understanding of women in ASGM, by investigating such things as local culture and beliefs, in order to develop policies that support women's development in the sector.

Women as Household Heads

Lu (2012) highlights the extra burden for women in The Philippines who work in ASGM and are responsible for their households too. They do hard work and are exposed to mercury and/or cyanide and mineral dust particles which damage the respiratory system. Women work longer than men and no occupational health and safety measures are in place for them. Lu (2012) underlines the need for gender-specific health strategies, to develop alternatives and sustainable forms of employment for women and implement policies that support gender equality and equity, since women play a crucial role in the stability of societies.

Self-employment appears as one solution for women in ASGM (and in informal sectors in general) to earn a better living and have more gender parity. In the case of Suriname (Heemskerk, 2003), self-employment might provide women with an income that enables them to improve their family´s health and reduce poverty in their household. If women are involved in stakeholder engagement activities in ASGM to share knowledge about their costs and benefits, this could support the development of more sustainable policies by considering long-term health, cultural and social strategies rather than strategies focussing only on economic growth and efficiency.

Women's Biology and Traditions

ASGM activities can affect women´s biology. In Colombia, Rodríguez-Villamizar et al. (2015) compared the menstruation cycles and miscarriage rates of 72 women exposed to mercury to those of 121 women who are not exposed. They find that women exposed to elemental mercury in ASGM are more likely to experience irregular menstrual cycles, but they find no difference in the miscarriage rate. In their study area, amalgamation is mostly done at home (67.61%), 90.28 % of the women reported they never use protective masks and 82.19 % never use gloves, and 77.46 % generally wear clothes that do not cover their arms, legs and feet. Also, the estimated consumption of mercury-contaminated fish among women exposed to mercury amalgamation was higher.

Traditions can be another risk factor for women´s health. In Tanzania, according to Nyanza et al. (2014), pregnant women traditionally practice geophagy and eat different types of soils (e.g., pemba, kichuguu) which, in an ASGM area in the Geita district, may contain arsenic, chromium, copper, iron, manganese, nickel, zinc, cadmium and mercury. This can pose a serious risk to pregnant women´s health due to their estimated daily intakes, which may be well above the Minimum Risk Levels defined by the U.S. Agency for Toxic Substances and Disease Registry.

Women's Sexuality and Sexual Exploitation

Bryceson et al. (2014) highlight gendered specificities regarding sex and power relations. They argue that while migrant women come to ASGM sites to earn a better living, they are perceived locally as a 'diversion' for miners. Their migration to ASGM sites often causes their exclusion from their home communities since they are seen as prostitutes, as noted by Bryceson et al. (2014) in Tanzania and Werthmann (2009) in Burkina Faso. Women also are at risk from occupational health and safety is-

sues, venereal diseases, and HIV/AIDS (Bryceson et al., 2014). Bryceson et al. (2013) discuss six different "wifestyles" in Tanzania which correspond to different forms of sexual and material commitment between the partners. It is argued that women negotiate arrangements with miners through sexual relations, without third-party interventions, which can offer them more freedom than in their home communities (Bryceson et al., 2014; Werthmann, 2009) and greater chances to access urban consumer goods (Werthmann, 2009).

Such dependence on male miners is dangerous for women, however, in cases where the ASGM activity stops – due, for instance, to resettlement operations or government restrictions on ASGM activities, as observed by Bush (2009) in Ghana. This is especially true for women as household heads who have to take care of their families when their partner or husband goes to mining sites. The burden is even higher when men work far away from their villages, since women then need to earn a living on their own to purchase food and pay for the costs related to the schooling of children, or when women have no source of revenue that does not depend directly or indirectly on the ASGM activity (Bush, 2009).

Conclusions and Implications for Policy-making

This short review underscores the need to conduct more research on women in ASGM. Findings show various specificities concerning women's roles and practices as workers, as sex partners, as mothers and simply as women. These specificities may be site-specific, but could also be true across different mining sites and countries; knowing more about women in ASGM is necessary in order to design appropriate policies and development programs. Considering the large discrepancy between the number of publications on women and publications on ASGM in general, it has to be emphasized that each field-study that does not engage with women is lamentably a missed opportunity to enrich the scientific and practical knowledge on women in ASGM.

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Artisanal and Small-Scale Gold Mining in Cameroon: Poverty Loop and Vulnerability of Women

By Gilbert Kuepouo

Introduction

In Cameroon, Artisanal and Small-Scale Gold Mining (ASGM) is a significant socio-economic activity undertaken mostly in the East Region, which hosts about 75% of ASGM activities in the country. However, ASGM activities are gradually becoming common livelihoods in marginalized and remote communities in the Adamawa, North, South and South West Regions as well. While about 15,000 people are involved directly in ASGM, the number reaches 100,000 if people who are indirectly involved are taken into consideration. In Cameroon, gold miners (informal and formal) are defined as people spending at least 250 days a year in gold extraction activities. They generally come from the disadvantaged portions of the communities and include women and children.

Women in ASGM in Cameroon

The roles and numbers of women involved in ASGM in Cameroon vary from one community to another depending on cultural and social values and beliefs. In Betare-Oya, one of the oldest and largest ASGM locations in Cameroon, about 50 percent of the mining workforce comprises women and children. In other areas, only 3-10% of the ASGM workforce are women and children. Women do upstream tasks; they transport gold from the pits to the storage and/or processing sites, and are involved in grinding, washing, and panning ore. Digging the ore is exclusively performed by men.

Some see the involvement of women in ASGM as positive because it drives more income to families and empowers the women. Others see it as modern slavery that involves young children in work that endangers their health with dust and toxic chemicals. Children come as helpers with their mothers and because they are too young to be left at home. From all angles, ASGM links to a contradiction between massive cash flows into communities and endemic poverty among miners. Women and children bear the highest burden of impacts on local communities.

The business of ASGM in most of the remote communities has the attributes of medieval trade. The artisanal and informal gold mines are located on lands

PHOTOGRAPH: GILBERT KUEPOUO, CERPD

A view of an ASGM site in Betare-Oya, East Region of Cameroon

owned by a handful of men. Because women do not have access to land title and mining pit ownership, they are relegated to secondary roles in the artisanal gold mining activities.

Land owners and/or pit owners subcontract the gold ore excavation and processing to miners who are paid in-kind at the end of the day (with some exceptions for longer tasks) with a bag of about 50 kg of raw gold ore. A miner needs to accumulate this in-kind wage 20 times to be able to gather one tonne of gold ore from which about 1 to 5 grams of gold can be extracted to be sold for cash. During the time it takes to accumulate enough for sale, illegal or informal gold buyers are always on hand to offer cash loans against the eventual gold; thus miners become indebted.

These loans render gold miners, specifically women who are taking care of the children, dependent on illegal gold dealers and renders government less able to respond by channelling an important portion of gold into the informal trade thereby reducing taxes paid to the government and local councils. In consequence, ASGM rural communities or ASGM hotspots rank highest in extreme poverty, illiteracy, prostitution, alcoholism, nicotinism, and crime. The extreme dependence of miners on gold traders, most of whom operate informally, is detrimental to the rapid conversion of ASGM to a genuine livelihood for miners, especially women.

ASGM and the Minamata Convention on Mercury

In Cameroon, the use of mercury and cyanide in ASGM was banned in 2014 by the Ministry of Mining following the instrumental advocacy role played by Research and Education Center for Development (CREPD) after the adoption of the Minamata Convention on Mercury in 2013. The Minamata convention encourages parties to take steps, where feasible, to reduce and eliminate the use of mercury and mercury compounds in processing, and to reduce and elimate the emissions and releases of mercury into the environment. Because the government allocates limited resources to enforce the regulations, illegal use of mercury is still practiced in many gold mining fields in Cameroon. Through the formalization efforts initiated almost a decade ago, and within its obligations under the Minamata Convention, the government should be able to translate its ambition for fair and sustainable ASGM activities in Cameroon into reality. The role of gold dealers in the illegal traffic of mercury that sustains the mercury supply for gold amalgamation needs to be further investigated.

Conclusion

Women represent an important workforce in ASGM activities in Cameroon where they represent up to 50 percent of local miners in some areas, in spite of the efforts made by the government through the ongoing process of formalization or regularizing the industry. Without formalization, ASGM benefits informal or illegal gold traders more than miners, and specifically women miners. A robust national action plan, which includes appropriate local action plans, is urgently needed to assess and address the issues related to women and ASGM in Cameroon.

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Helping Women Involved in Artisanal and Small-Scale Gold Mining Achieve Better Livelihoods

By Ana Maria Currea, George Ortsin, and Ingerid Huus-Hansen

Artisanal small-scale gold mining (ASGM) is estimated to be the biggest source of mercury emissions -- as a result of human activity -- in the world today, releasing about 1400 tonnes of mercury per year. Different methods are applied to successfully extract gold from the earth. ASGM processes usually involve ore or sediment crushing, grinding, panning, sluicing and using mercury to extract gold. The ground ores or sediments go through a process of amalgamation, in which elemental mercury is used to obtain a mercury-gold alloy, referred to as amalgam. The amalgam is then burned to remove the mercury by vaporizing it. Often, the gold goes through another refinement step where it is further heated to eliminate residual mercury and other impurities.

Women make up between 10 to 50 percent of artisanal small-scale miners, yet they often remain invisible and are frequently not formally identified as "miners" due to the nature of their labor. Women miners are commonly relegated to tasks that require less physical strength, and in ASGM this means work such as panning the crushed ores or sediments, mixing mercury and the impure gold together to create the amalgam, or burning the amalgam to extract the gold. This burning process releases mercury into the environment as vapor. In many cases, only 10% of the mercury added to an amalgamating barrel or pan combines with gold to produce the amalgam. The rest (90%) is excess and, if it is not recycled, is released into the environment. The release of toxic mercury in ASGM not only affects women but also their children, who are usually in the immediate vicinity of their mothers' place of work.

Since 2011, the Global Environment Facility's Small Grants Programme (SGP), implemented by the United Nations Development Programme, has been piloting and testing new approaches to this problem through its mercury management portfolio. An example of these approaches is the work that the SGP Ghana Country Programme has been implementing since 2016 along with a non-governmental organization (NGO) called the Green Waterhut.

Project Context

Ghana, formerly known as "the Gold Coast," is one of the most important gold producing countries in the world, and is second only to South Africa in production on the African continent. As of 2013, gold accounted for 34.4% of Ghana's national exports. ASGM accounts for 10.5% of Ghana's national gold production, and employs between 500,000 and 1 million people in Ghana, predominantly in rural areas. Nearly 80% of miners are unregistered. Between 1980 and 2000, Ghana's gold production increased sevenfold, and with this expansion came a variety of public health concerns. These concerns include water contamination, lack of sanitation facilities and infrastructure, inhalation of dust from pulverized ore, lack of protective equipment, and exposure to mercury and other heavy metals.

In the Black Volta watershed, mining activities disrupt the chemical, physical and biological components and dynamics of waterbodies that serve as habitats for fish, birds and other animals. Due to diversions made in streams and rivers, sediments are eroded into these waters by rain. Pollution of streams and rivers results in increased costs of water treatment and/or renders water unsafe for drinking. Unsafe mining practices lead to accidents and loss of lives, especially in illegal mining areas.

Project Activities

In November, 2016, SGP gave a grant of $23,500 in GEF funding, and $24,000 cash/in-kind co-financing, to build capacities of artisanal miners and local communities to reduce the use of mercury in ASGM in the Black Volta Basin. The objectives of the project include:

- Strengthening the organizational capacity of artisanal gold miners in Wakawaka, Jama, and Banda -Nkwanta areas of the Black Volta Basin
- Ensuring safe and limited use of mercury within the project area
- Developing a strategic plan for the management of mercury in artisanal and small-scale gold mining communities
- Supporting the development of alternative livelihood activities

Through the technical and financial support of SGP, the Green Waterhut NGO conducted a baseline assessment that revealed high levels of mercury in urine samples collected from 250 miners, of which 88 were women. The assessment also revealed that the miners did not have adequate knowledge of the health implications related to mercury.

Armed with this information, the Green Waterhut conducted a community awareness campaign and taught the local miners about the harmful effects of mercury on health and the environment. The miners learned gold extraction methods that limit the use and emission of mercury, such as minimizing impurities in the gold by using sluices, shaking tables, and centrifuges such as Falcon concentrators. They also learned how to reduce the loss of mercury by limiting spillage during amalgamation, and improving refining methods by avoiding open air burning and employing fume hoods to limit exposure to vaporized mercury. Now, these same miners are actively engaged in monitoring the levels of mercury in their environment.

Project Results

As a result of the project, 65 miners, of which 38 are women, opted out of mining activities to pursue alternative livelihoods, such as goat keeping, shea and cashew farming, and apiculture. Thirty women are involved in building a cashew plantation. Furthermore, a credit rotation scheme was established to support a local women's group with start-up capital to set up their trade, which provides them with a communal safety net and ensures the long-term sustainability of their alternative livelihood. As of 2017, 50 women and youth have been trained to find alternative sources of livelihood, and these beneficiaries are all involved in agriculture, telecommunications, and commerce.

These community-based projects are critical in raising awareness about the effects of mercury at the local level, and in helping women miners either handle gold extraction in a safer manner, or completely opt for other livelihood activities. Recently, the Government of Ghana banned ASGM, and Green Waterhut saw an increasing demand from miners to find alternative livelihoods, based on the successful precedent established by the SGP supported project.

Ana María Currea, **George Ortsin**, and **Ingerid Huus-Hansen** are staff members of the The GEF Small Grants Programme which was established in 1992, the year of the Rio Earth Summit, to provide financial and technical support to projects that demonstrate that community action can maintain the fine balance between human needs and environmental imperatives. It provides grants of up to USD$50,000 directly to local communities, and has supported more than 14,500 community-based projects in more than 125 countries.
For more information, see: https://www.sgp.undp.org/

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Women Pay the Cost of Mercury Pollution in ASGM in Migori, Kenya

By Griffins Ochieng, Richard Kiaka and Aron Kecha

Artisanal and small-scale gold mining (ASGM) is a livelihood activity which directly and indirectly supports large numbers of families in many low-income countries. ASGM provides jobs in remote villages, reduces migration of economically productive people to urban areas, and earns income for mining communities, helping fight poverty. However, ASGM also involves considerable risks for the environment and people's health due to the use of mercury in gold processing. ASGM is listed by the Minamata Convention on mercury as a significant cause of mercury pollution since mercury is released to the air, water bodies and land resulting in negative effects on the health of mine workers and adjacent communities as well as in environmentally sensitive aquatic ecosystems.

In Kenya, ASGM occurs within the Lake Victoria basin in the western part of the country, spread across the counties of Migori, Narok, Homabay, Kisumu, Siaya, Vihiga, Kakamega, Busia and Nandi. The Centre for Environment, Justice and Development (CEJAD)'s work on ASGM in Kenya has mainly concentrated in Migori County, one of the main centres of ASGM in Kenya. Migori is located in in the south-western part of the country close to the Tanzanian and Ugandan borders.

Nature and Scope of ASGM in Migori

There are six ASGM sites in Migori area, namely Macalder, Osiri, Mikei, Masara, Kitere and Rongo. These sites lie within the Nyanzian greenstone belt which runs through to neighbouring Tanzania and Uganda. Large-scale gold mining in the Migori area started in the 1920s but declined in 1966 (J.S. Ogola et al. 2002). Since then, gold extraction in the area has only remained as artisanal and small-scale.

Although the exact contribution of ASGM to the Kenyan economy has not been well documented, ASGM in Migori has experienced rapid growth, providing key livelihoods to hundreds of thousands of proximate and distant communities. This growth has been attributed to a new Gold Rush, coupled with a decline in the agriculture sector which formerly formed the major livelihood source. In the absence of viable livelihood alternatives in rural settings, the ASGM sector has been a fallback refuge for women, men and children in remote mining villages, contributing to employment and poverty reduction.

With the dwindling agricultural productivity in the area, largely due to insufficient and unreliable rain-

PHOTOGRAPH: CEJAD, KENYA

Miner crushing gold rocks by hand stamping at Osiri mine site, Migori.

fall, the number of mine workers in ASGM in the six sites in Migori is reported through local narratives to be on the increase. It's estimated that up to 20,000 people invade Migori County during peak mining periods (J.S. Ogola et al, 2002). However, these numbers remain highly speculative because ASGM in Migori remains largely informal and unregulated, which is a significant impediment to obtaining reliable demographic data. In addition, miners do not have legal mining rights, further complicating efforts to gather demographic data in these areas.

ASGM in Migori are is done with limited capital injection, lack of specialized equipment and skills, high labour intensity, and thus exposure to various occupational health and safety hazards, which in some cases results in fatalities. In addition, it's largely carried out in a patron-client relationship. The landlords or owners of mines (usually they are men) are the patrons who eventually own the gold. Due to limited financial capacity, the patrons have invested in basic or crude equipment and supplies to enable mine workers to extract and process the gold. The mine workers are either paid as casual labourers or on commission.

The Role of Women and their Exposure to Mercury Pollution

In Migori mining sites, labour division is structured along gender lines. That is, while men do the excavation from the mine tunnels and crushing activities commonly known as hand stamping (crushing rocks to rubble), women are mainly involved in sluicing and ore amalgamation. The gold, however, belongs to the mine owner or patron, who then pays the women and excavators a commission and wage respectively. To recover the gold ore from the rubble, women use elemental mercury in a process called amalgamation. Afterwards, they squeeze the amalgam (mercury plus gold ore) in a piece of fabric and roast it on an open fire. This process emits mercury fumes into the environment which are inhaled by mine workers, and most immediately by women and their children (including infants) who accompany them during their amalgamation work. Mercury is listed by the World Health Organization (WHO) in the top ten chemicals of major public health concern. Mercury bio-accumulates in the environment and is known for causing neurological disorders and digestive and immune system dysfunction in humans amongst other health impacts. Women in these mining sites are thus more susceptible to exposure to mercury pollution and its adverse health effects than men, first because they are directly involved in the amalgamation process which is the chief source of mercury pollution, and second, because in the course of their work, women in these mining sites are not provided with or do not have the financial capability to access protective equipment since they are considered by the patrons of the mines to be only involved in auxiliary work. In the local narratives,

Women carrying out gold processing using mercury at Osiri mine site in Migori.

PHOTOGRAPH: CEJAD, KENYA

"Sometimes there are those who when they want to squeeze mercury, they do it with their teeth, so that mercury is not supposed to get in between his/her teeth."

A female miner narrating what they have heard should not be done while using mercury at a site in Masara, Migori

women's role in ASGM is considered less labour intensive and thus only supportive to the excavation role of men. It is thus no surprise that some patrons make some attempts to provide basic protective gear for men (such as gloves, helmets, torches and required gumboots) while for women, no equivalent attempt is the case.

Women Paying the Cost of Mercury Pollution in Migori Mines

CEJAD conducted a study in partnership with International POPs Elimination Network (IPEN) –*Global Mercury Hair Monitoring in Women of Child-Bearing Age in Migori County, Kenya*, where mercury levels in hair from 57 women of child bearing age from the 3 mining sites were measured. On average, we found the level of mercury in the sampled women to be 3.481 parts per million (ppm) which is beyond WHO and the US Environment Protection Agency safe limits. A good body of research including by WHO and the US Centre for Disease Control and Prevention has shown that women pass mercury in proportionate levels to fetuses and infants when pregnant and lactating/breastfeeding respectively.

"My poverty pushed me to this work, so that I can find food for my children. But this job has also tied me to poverty because the small commission I make, I use it for tablets [medicine or treatment] and daily food. I cannot even buy new clothes or build a hut from this work. Our men make much more commission. They can afford to marry extra wives. But me, I sit here the whole day panning and roasting gold, get sick and that is life for women in the Mikei"

PHOTOGRAPH: CEJAD, KENYA

Children work on gold processing at the Osiri mine site in Migori.

Women mine workers in Migori mining sites are no exception. In the course of work in the area, we often get complaints of ill-health from local women most of which they attribute to their working environment.

Furthermore, from field observations, the mine patrons only invest in treating ailments associated with physical injuries from excavation, which is largely a role for men, leaving untended the health effects associated with mercury pollution which by and large affects women. Ailments from mercury pollution that are not easily linked to mining by patrons end up being treated at the financial cost of the women whose proceeds are usually much less than those of the men (excavators). This practice, we conclude, creates a relief for male mine workers but locks women in a poverty cycle, as one middle-aged women who panned pebbles in Mikei mining sites, with a breastfeeding child on her back, remarked in the following vignette: "My poverty pushed me to this work, so that I can find food for my children. But this job has also tied me to poverty because the small commission I make, I use it for tablets [medicine or treatment] and daily food. I cannot even buy new clothes or build a hut from this work. Our men make much more commission. They can afford to

marry extra wives. But me, I sit here the whole day panning and roasting gold, get sick and that is life for women in the Mikei"

These gender disparities embedded in everyday practices and local narratives in Migori mining sites leave women bearing the brunt of mercury pollution, both in terms of health and financial cost.

Actions to Reduce Mercury Pollution in ASGM

Through the work in Migori, CEJAD has continuously engaged the government on the need to protect vulnerable populations and fragile ecosystems from mercury pollution. Results of this influence are beginning to show. For example, currently, there is a growing effort at the national level in favour of formalization of the ASGM sector to promote sustainable livelihoods for the ASGM miners and protect human health and the environment from harmful effects of mercury used in gold mining. In 2016, Kenya enacted a new mining law which aims to promote a more orderly artisanal and small-scale mining sector for safer, healthier and more environmentally compliant operations, via enhancement of the investment environment for large scale mining through the elimination of some of the threats caused by the informal mining for formal mineral exploration and extraction operations. We continue to emphasize that through these efforts, the role of women in ASGM in Kenya has to be genuinely recognised and the reduction of their vulnerability to mercury pollution be made a priority.

View a video about CEJAD's work in Kenya:
https://www.youtube.com/watch?v=dN8buXVY5z4

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Aron Kecha is the Programme Advisor for Artisanal and Small Scale Gold Mining at CEJAD. He holds a Master of Arts Degree in Planning and a Bachelor's degree in Environmental Science. Kecha has been extensively involved in research focusing on environment, health and social justice for the past 10 years in various parts of the country, as well as within the region. He has keen interest in environmental protection, and its relation to human livelihoods, human health and the general wellbeing of society.

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Mercury Exposure in Kodaikanal, India:
Ex-Workers v. Unilever
An Interview with Shweta Narayan

By Reena Shadaan

Kodaikanal is located in the hills of the Dindigul district, within the state of Tamil Nadu, India. The hill town is known for its biodiversity and picturesque landscapes, and is a popular tourist destination. However, in 1983, Kodaikanal saw the import of a second-hand mercury thermometer factory, brought from Watertown, New York by Chesebrough Pond's. In 1986, the plant was acquired by Unilever – a multinational corporation with heinous disregard for the health and safety of workers, their families, and the residents of Kodaikanal in general. In fact, workers and their families were knowingly exposed to mercury, and Unilever dumped mercury waste in the area.

In the following interview, Shweta Narayan – a researcher and environmental justice activist from India – details the successful struggle of ex-workers, who launched a legal campaign to hold Unilever accountable. This campaign centered on the impacts of Unilever's disregard for health and safety, and particularly the disproportionate health impacts experienced by ex-employees and their families. These include intergenerational health impacts caused by mercury exposure. Narayan also discusses the social media campaign that emerged alongside the worker's struggle – an effort to "make the invisible visible," as Narayan notes. For Narayan, Kodaikanal is an important example of the wider struggle for environmental justice as it manifests in India and worldwide.

RS: You work on a variety of campaigns related to environmental justice advocacy. Before we discuss the campaign for justice in Kodaikanal, can you share how and why you became involved in the environmental justice (EJ) movement?

SN: I'm an environmental justice researcher and activist. I joined the EJ movement after graduating from college, where I did my Masters in Social Work. After graduation, I started volunteering with the International Campaign for Justice in Bhopal (ICJB), which is a network of supporters and activists around the world who have come together to assist the survivors [of the Bhopal gas disaster] in achieving their demand of a right to a life with justice and dignity. After joining the ICJB campaign, my perspective towards the environmental justice movement in India changed completely. I decided to continue my work assisting communities affected by pollution in strengthening their voices against environmental and health violations, and holding the violators accountable.

RS: Part of your work has been on the Kodaikanal struggle. Can you give us an overview of what happened in Kodaikanal?

SN: I started assisting community members and ex-workers from the mercury thermometer factory in Kodaikanal in 2002 - 2003. Just to give you a background on what

PHOTOGRAPH: AMIRTHARAJ STEPHEN

In the early 1980s, a second-hand mercury thermometer plant that was shutdown in Watertown, New York, was relocated to Kodaikanal, a beautiful hill-town and erstwhile summer retreat of the British colonial government in Tamil Nadu, India.

happened in Kodaikanal. In 1983, Pond's India Ltd. [now owned by parent company Unilever] imported a second-hand mercury thermometer factory from Watertown, New York. This was a factory that manufactured mercury thermometers under the label of Chesebrough Pond's. The reason that it was imported to India was because the EPA regulations were becoming very strict in the U.S. on mercury emissions, and it was not profitable for the company to continue operations in the U.S. So, they shifted this whole factory to Kodaikanal in India, and started operations, but with very, very little regard for occupational health and environmental emissions. This factory operated until 2001, so almost for 18 years. In 2001, it was caught red-handed dumping toxic mercury waste in the forest, and in the middle of the town to the scrap dealers. Once it was caught in violation of the provisions of the hazardous waste rules in India and because of the public outrage, the factory was shut down. Since then, the factory has refused to accept any responsibility in terms of the occupational exposure that it subjected its workers to, or even the contaminants that it let out in the environment. So since 2001, the fight of the workers has been to get social rehabilitation and medical compensation for the exposure to mercury. The fight has also been, at another level, for Unilever to clean up the contaminated factory site and environment in Kodaikanal.

Giyaz Mohammed's teeth: Giyaz worked in a high-exposure area. All his teeth have fallen out. Unable to eat properly, Giyaz's livelihood options have disappeared as he does not have the strength to do manual labour. Mercury is known to affect the teeth.

PHOTOGRAPH: AMIRTHARAJ STEPHEN

PHOTOGRAPH: AMIRTHARAJ STEPHEN

Esther and her husband: Esther cannot speak of her son Britto without crying, even now more than 10 years after his death. Britto died after both his kidneys failed at a young age of 23. Mercury affects the kidneys.

RS: What have been the impacts of mercury exposure and contamination in Kodaikanal? Who is predominantly impacted, and how have they been impacted?

SN: The main constituent that was impacted because of the operations of the mercury thermometer factory in Kodaikanal was the workers. There were about 1,200 and mostly contractual workers, out of which about 200 workers were women, who were employed at various points of time in the factory and potentially exposed to mercury. Obviously, the company refused to accept any responsibility in terms of providing medical care or medical compensation. More than 35 workers died due to the exposure to mercury by contracting various kinds of diseases. Most prominent were kidney failures. The workers fought a legal case from 2006 – 2016, and after ten years of legal struggle by the way of filing a Public Interest Litigation in the Madras High Court, eventually Unilever agreed to a settlement and compensated the workers, and settled out of court in a negotiation with the workers.

Peter Sundarajan, a worker: "Mercury would inevitably return home with us. There would be small droplets in our nails beneath where the skin covered the base of the nail. It would hang to the edges of our mustache, eyelashes, nasal hair and eyebrows. Our shoes would have mercury. We must have spread it all over our homes, and also the community. Now that I think back, we were so casual with mercury. We stood on mercury; we ate mercury; we drank it."

PHOTOGRAPH: AMIRTHARAJ STEPHEN

Mercury is a neurotoxin and the most prominent health impacts include tremors, neurological problems, mood swings, memory losses, kidney and lung disorders, and death. A lot of children of the workers were also affected because of poor factory shop floor management practices. Workers were carrying mercury on their bodies to their homes, where the workers' families, including children, were exposed to mercury. In fact, some of the workers told us during interviews that it was a known fact that workers were carrying mercury on their bodies back home. Their managers had sometimes jokingly informed them that they should collect that mercury that they take back home and bring it back to work the next day.

RS: Many environmental disasters have disproportionate impacts on women, including gendered violence and health impacts. Are there any gendered impacts associated with the Kodaikanal struggle?

SN: I feel that in Kodaikanal like many other disasters, women had faced the brunt of both the chemical impacts and the associated social ostracization and discrimination as a result of being affected by chemicals. I say that because a lot of women who were of reproductive age worked in the factories and got exposed to toxic mercury. Mercury is a chemical, an element that breaches the placental barrier, and has the potential to poison the fetus. A lot of women have reported repeated miscarriages, abortions, or children born with severe disability. We have documented cases where women – because they had repeated miscarriages – were abandoned by their husband, or divorced because they could not bear children. There have also been cases where in the event of a child with a disability, the responsibility of the care was primarily on the woman, or cases where the woman and the child with a disability were abandoned and basically turned away from the husband's family.

As I said, it was not just the impact of chemicals on the women's bodies; it was also social ostracization because of their exposure and exposure-related diseases that women had to deal with.

RS: What has been the struggle for justice in Kodaikanal? Who initiated this struggle, and who is leading the struggle? What are the demands?

SN: Around 575 workers of the factory came together as an association. They initiated the legal struggle against Unilever. While the battle was fought in the court, where a lot of claims made by the workers were refuted by Unilever by the use of their better economic position and influence over scientists and medical institutions, there was a social media campaign that was also initiated by the supporters of the workers in Kodaikanal. That social media campaign garnered a lot of support online, not just from India, but all over the world. As a result, in March 2016, Unilever settled with the workers providing them financial compensation as part of the settlement.

The demand of the workers in the legal case was of socio-economic rehabilitation, medical rehabilitation, and provision for care for their children given that they were most likely to be affected by the mercury contamination.

RS: On the social media campaign, Sofia Ashraf released a song and video – Kodaikanal Won't – in support of the Kodaikanal struggle, which went viral. How did that come about? What was the impact?

SN: Sofia Ashraf is a volunteer with the Vetiver Collective in Chennai. Vetiver Collective is a collective of like-minded socially conscious individuals, who come together to work on common themes and common issues. So-

fia was affected by the Kodaikanal struggle and the stories of the workers immensely. She's a [rapper] and she decided to use her skills and her talents to put together a message about Kodaikanal and reach out to members of social media among her age group. Her video, Kodaikanal Won't, was a music video that was shot by a filmmaker, R. Rathindran Prasad. That music video was very popular. In technical terms, it went viral within days of being launched. It has garnered about 4 million views on YouTube. It brought the attention of media on the issue of Kodaikanal.

This was an interesting event that unfolded with Sofia's music video. For the last eleven years of our campaign, every time we have reached out to mass media (print and television), we got the sympathies of the editors, but they never carried the stories because nobody wanted to challenge Unilever. Unilever is a big advertiser. Its annual advertising budget is about 8 million dollars, and none of the newspapers and media houses wanted to risk their advertising by putting out a negative story about their biggest advertiser. That was the reason why social media was chosen as a platform to promote awareness about Unilever and its deeds in Kodaikanal. So, with Sofia's video going viral, suddenly the same media houses who had extended their sympathies but not their support by putting out stories, reached out to us. Suddenly, it was not just national media, we had international media looking into Kodaikanal. We had stories coming out in New York Times, in Washington Post, in Sunday Times, London Times. It was phenomenal in terms of getting the attention of the media on the issue of Kodaikanal. The whole purpose of the music video was to make the invisible visible. Here in this case, the invisible was the injustices in Kodaikanal, and we managed to make it visible. We managed to put it out to the world to know what exactly happened in Kodaikanal, and Unilever had no place to hide.

Won't Buy Unilever: Despite their ill-health and desperate financial situation, ex-workers have put up a spirited fight to be heard by the world and be compensated by Unilever. In September, 2015, they were shocked to hear that the United Nations had chosen to confer the Champion of the Earth Award to Unilever CEO Paul Polman. "Perhaps, UNEP thinks Kodaikanal is on a different planet," the workers joked.

PHOTOGRAPH: AMIRTHARAJ STEPHEN

The video managed to capture the attention of people internationally. To see a young Indian woman rapping to a popular tune, but at the same time, being an environmental justice warrior by talking about this grave injustice that has happened in a small hill town, and taking on a big global multinational. The video had all the elements in it to get the attention of the global media. This is our post-video launch analysis because none of us expected it to go viral, and it's great that it went viral. We did have the PR and the directors of Hindustan Unilever, which is Unilever's Indian subsidiary, call up the lawyers of the workers begging the lawyers to stop this mayhem, which the video unleashed on social media. It was just amazing to see how Unilever just did not have a place to hide. It just was exposed to everybody.

RS: How does the Kodaikanal struggle connect to the wider context of environmental justice in India, and to environmental justice globally?

SN: The issue definitely connects to the wider context of environmental justice in India because it is the same sort of pattern where you have a rich multinational corporation, you have a corrupt government protecting the interests of the rich multinational corporations, and you have socio-economically and politically marginalized communities that don't have many resources at their disposal to strengthen their voices in their fights for justice. The demands of the communities are the same. These all connect back to the Bhopal campaign because it's a story similar to the Bhopal gas disaster, but with different names of corporations, and a different city, and a different toxic chemical, though equally toxic. Like in Bhopal, these are communities that are demanding a life of justice and dignity. They're demanding clean air, clean water. So, there is a com-

mon thread in the struggles of Kodaikanal or the struggle of Bhopal, or any other environmental justice struggle in India.

The same case can be made for EJ movements around the world. What are the demands of these communities internationally or locally? It's again clean air, clean water, safe environment, and a life of justice and dignity.

Reena Shadaan is a doctoral student in the Faculty of Environmental Studies at York University. Her work focuses on the gendered implications of environmental disasters (including slow disasters). In 2017, Shadaan received the Canada Graduate Scholarship in honour of Nelson Mandela for her work on gender, toxics, and environmental justice activism.

Suzanne Farkas

Suzanne Farkas is a senior environmental and occupational health scientist currently with the Ontario government. Her interest in mercury and its effects(aka Minimata disease) came during her experiences in social justice activism and her work in the late 1970s, as the Senior Land Claims Researcher for the Treaty 3 Band Council, of which Grassy Narrows reserve was a member. She was a WEI Board member and co-editor of several WEI issues (1998 to 2003), as well as the outdoor adventure magazine "Explore".

Stealing Breath

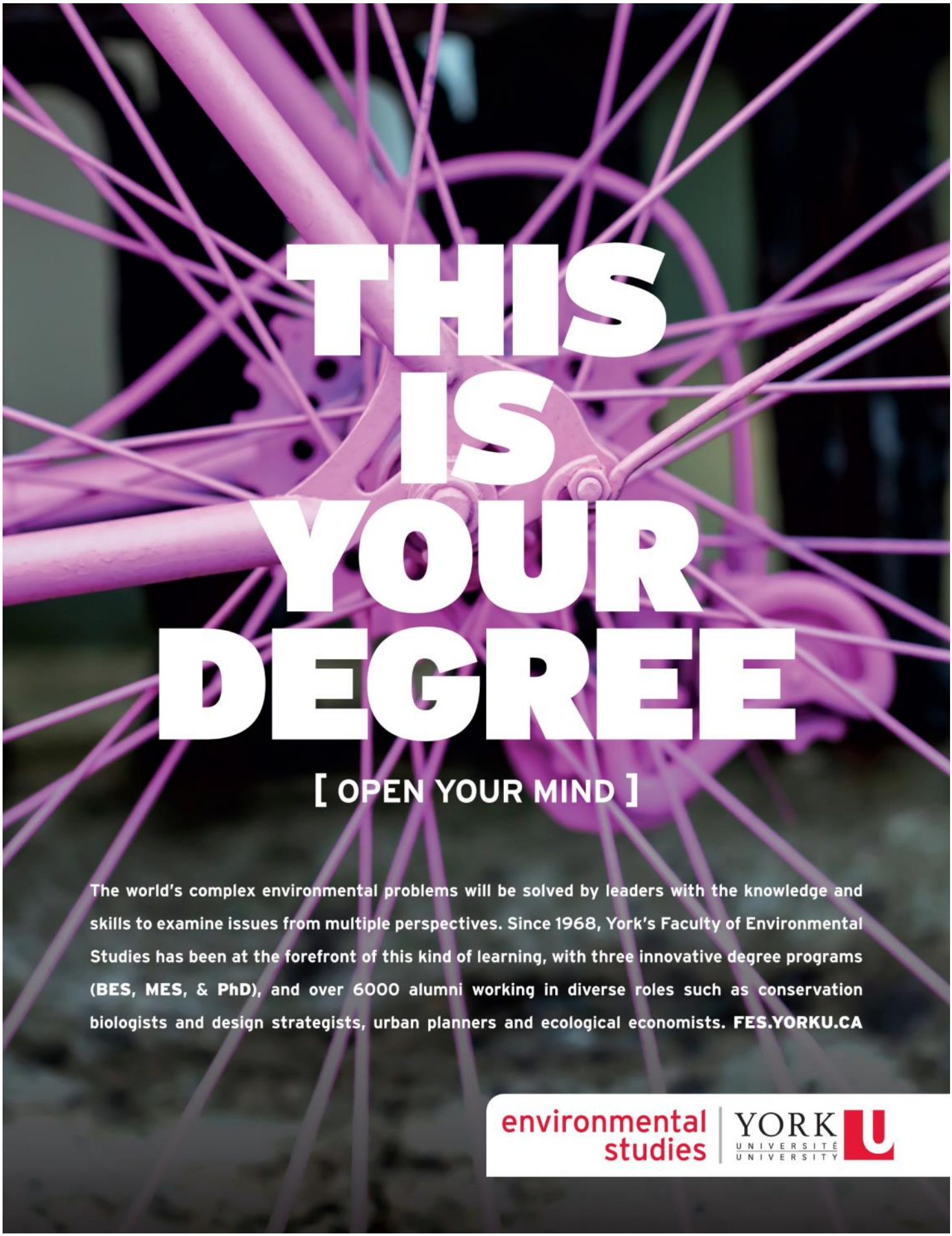
Mary knowing, as she did, nothing
of the world of steel
engulfing John each morning
belching him free
each night she catches whiff
as he crosses the threshold.

pocket by pocket, inspected, each
emptied, inside out
bubble gum and mysteries
dot soot black landscapes
spilled mountains
onto Maytag white.

Her hand at peace, she smoothes
the creases of John's jeans
bundle of warmth
set out, as she does, onto the bed
in anticipation,
a good day's work at an end.

Cilia working overtime, coughing
Mary lays on their bed
pleural effusions expelled, inside out
changes in these genes
causing cells to grow
out of control

they knowing, as they do, nothing
but the world of stealing
breath taken,
a good life's work at an end.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Weaving Resistance Through Action:

Strategies of Women Human Rights Defenders Confronting Extractive Industries

By Anna-Kay Russell

The Association for Women's Rights in Development (AWID) and the Women Human Rights Defenders International Coalition (WHRDIC) recently teamed up to create a tool that will benefit some of the world's most important actors in areas impacted by extraction: Women who are human rights defenders. Using information compiled from consultations with 48 women activists from 22 countries in Latin America, Asia and Africa, the AWID and WHRDIC produced "Weaving Resistance Through Action: Strategies of Women Human Rights Defenders Confronting Extractive Industries," a report published in August 2017 authored by Inmaculada Barcia, an AWID Consultant and member of the WHRDIC. This report contains valuable information that women human rights defenders around the world can use to effectively confront and resist extractive industries.

The report is beautifully illustrated, presented in an easy-to-read manner, and includes key definitions and background on the importance of this issue.

Throughout the report, Barcia provides great quotes that put into context the significance of women human right defenders and their resistance against extractive industries. One such example comes from Bonita Meyersfield of the Center for Applied Legal Studies (CALS) in South Africa, who identifies the difference between economic development and eco-

Credit: The Association for Women's Rights in Development (AWID) and the Women Human Rights Defenders International Coalition (WHRDIC

Weaving Resistance Through Action: Strategies of Women Human Rights Defenders Confronting Extractive Industries. Author: Inmaculada Barcia, Editors: Tracy Doig, Inna Michaeli. 38 pages.

Free download at: https://www.awid.org/sites/default/files/atoms/files/eng_weaving_resistance_through_action-web.pdf

nomic exploitation (especially in regions of mass protest against extractive industries) when she states that "a project that will generate economic benefit can only be called development if those profits are reinvested in the community. If not, we are talking about exploitation, not development."

In another part of the report, Barcia notes that corporations view development and economic prosperity as outcomes of foreign investments and higher profits, a perception usually shared by government agencies and state officials. There is a danger in this, she explains, as natural resources are a key area of foreign investment and, therefore, are highly vulnerable to exploitation, often leading to the destruction of people's communities, livelihoods and cultures.

The core of the report, however, lies in its listing and explanations of the six key strategies women human rights defenders can use to achieve their human rights goals in the safest and most efficient way possible.

The first of the six is Community Consultations, which the authors call a great method to inform and mobilize. This strategy develops the benefits of social engagement in action.

Another social strategy suggested is Social Mobilization and Direct Action, whereby mass participation through rallies, protests, strikes and demonstrations allows for a powerful joining of forces to make effective change. The author takes a deeper look into different forms of social mobilization and how each can create unique outcomes beneficial to social change.

Strategy 3 incorporates Women's Movements and Cross-Movement Solidarity, great ways to leverage women's strengths and gain recognition for their leadership to build collective power. These are also avenues for building connections with other networks that are gender-diverse. Cross-movement solidarity encourages collective action by female leaders and activists.

The final strategy, strategy 6, explains how Media and Communications can be used against – but also for – women human rights defenders. Media coverage and social media platforms can enable defenders to inform their communities and societies, to challenge misinformed positions and to exercise political pressure on decision makers, and the report highlights how these communication tools should not be overlooked.

Two of the strategies are what I would consider to be golden strategies: those that movements may not consider immediately, but are significant nonetheless. The first is strategy 4: Self-Care and Collective Wellbeing. Getting rid of the mentality that women must sacrifice themselves entirely "for the cause" is so important, because women defenders often neglect their physical and mental wellbeing in the process of social activism. Several ways in which women are leveraging health and wellbeing through their daily work are explored in this section which emphasizes the reminder to take action on self-care.

The fifth strategy is Litigation, which defines how the courts and laws can be very useful tools when fighting against big, powerful and rich corporations. This strategy explores how litigation can be useful to bolster the position of women human rights defenders and their organizations in negotiation processes.

In addition to the many examples found throughout the report, Barcia concludes with a few examples of how women have used these strategies in places like the Moutis Mountain region of Indonesia, where an Indigenous Molla woman named Aleta Braun led non-violent resistance against mining companies using social mobilization and litigation tactics; or in Rustenberg, South Africa in the wake of the Marikana massacre, where community leaders used litigation to bring to light the violent killings of more than 30 workers who were protesting in front of the mine.

One can only hope Barcia's report will reach the people it can help the most; the information it provides is so important and the way it is conveyed, so comprehensible. This report can help equip those who are new to the stage for what lies ahead. Moreover, it shows that they always have support from other women worldwide.

Anna-Kay Russell is a second-year Master's student at the School of Public Policy & Governance at the University of Toronto. Her policy interests include environmental and urban policy, municipal affairs and policies affecting the Black and Indigenous communities across Canada, topics she hopes to explore further in her career beyond graduation.

Violence on the Land, Violence on our Bodies

Building an Indigenous Response to Environmental Violence

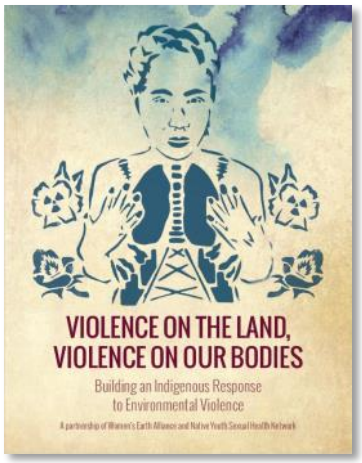
A partnership of Women's Earth Alliance and Native Youth Sexual Health Network.

By Helen Lynn

"If you're destroying and poisoning the things that give us life, the things that shape our identity, the places that we are from and the things that sustain us, then how can you not be poisoning us? How can that not be direct violence against our bodies, whether that be respiratory illness or cancer or liver failure, or the inability to carry children?"

Iako'tsi:rareh Amanda Lickers

(Turtle Clan, Seneca)



As extraction industries tear through the earth's surface to extract its vital resources, parallels can be drawn with how Indigenous communities are torn apart by the resulting destruction of their lands, their health and their dignity. The industries drilling, fracking and mining their way through traditional territories show scant regard for the environment or human life.

To Indigenous peoples, the waters of the Earth and those of our bodies are the same; there is an undeniable connection between the health of our bodies and the health of the planet. How could it be otherwise?

This tool kit and report suggests practical actions for Indigenous communities to explore the connections between how their bodies and their lands are being adversely impacted by environmental violence. This term was defined by the International Indian Treaty Council (IITC), recognizing that "The disproportionate impacts of environmental contamination on Indigenous Peoples and communities of colour are the basis of the now well-accepted concept 'environmental racism'… [but the] concept of 'gender-based environmental violence' is not yet as common."

Environmental Violence as an issue, separate from other forms of violence such as environmental racism and environmental justice, is now becoming more globally recognized. The systemic disregard for the environment through the violent extraction of the Earth's valuable minerals and ores equates with the violent outcomes for those living near the extraction sites: the open air wastewater pits, the contaminated air, soil and water, and the workers' encampments.

While the benefits are reaped by multinational corporations and national economies, the cost to Indigenous peoples who live on the land is still being quantified -- a cost which is most deeply felt by women and young people. These connections have been understood by generations of women who have articulated the concept for decades. The current movement rising up to combat environmental violence is doing so on the backs of the women who have long led the resistance.

This report defines forms of environmental violence such as: cancer and other illnesses, reproductive health issues, and chronic social stressors such as sexual, domestic and family violence, human trafficking, and social issues such as increased drug and alcohol misuse in communities.

"From a traditional perspective, the health of our peoples cannot be separated from the health of our environment, the practice of our spirituality and the expression of our inherent right to self-determination, upon which the mental, physical and

social health of our communities is based." – International Indian Treaty Council's Oral Intervention at the 7th Session of the United Nations Permanent Forum on Indigenous Issues, 1996.

When the wealth of the land is considered, it's easy to see why industry is so keen to plunder and pillage indigenous lands. In the U.S. alone, some 5% of oil and 10% of gas reserves, as well as 30% of low sulphur coal reserves and 40% of privately held uranium deposits, are found on Native American reservations. In Alberta, Canada, the largest industrial project in history, the Tar Sands gigaproject, is taking place in territories that are home to numerous First Nations and Métis communities.

This report stems from a partnership between the Women's Earth Alliance (WEA) and the Native Youth Sexual Health Network (NYSHN), begun in 2014 to explore the impact of the extraction industry on the health of Indigenous peoples' lands and bodies. With the extraction industry comes violence; regions where the industry is most active in the U.S. see increases in crime rates, sexual and domestic assaults, drug and gun crime, and rape.

"For women, there is no separation between production and reproduction, land and life, resistance and survival. Because of this, women taking on roles in the struggle to defend their territory and fighting gendered oppression for their own liberation are not separate, but always interconnected."

Indigenous American women and young people bear the brunt of this violence. Native American women are 2.5 times more likely to experience a violent crime than other women and in 86% of the cases their assailants are non-Native. In Canada the Tar Sands region has the country's highest rate of domestic violence and homicide rates for Indigenous women are 7 times higher than for non-Indigenous women.

Indigenous young people, both in the US and Canada, also face disproportionate levels of violence and trauma. In Canada, one reserve which was evacuated because of a contaminated water supply had 21 young people between the ages of 9 and 23 commit suicide in one month alone.

"Woman is the first environment. In pregnancy our bodies sustain life. At the breast of women, the generations are nourished. From the bodies of women flows the relationship of those generations both to society and the natural world. In this way, the earth is our mother, the old people said. In this way, we as women are earth." – Katsi Cook, Mohawk Midwife.

Illustration by Erin Marie Konsmo from Violence on the Land, Violence on Our Bodies.

Case studies are included from Indigenous Feminist Land Defenders such as Vanessa Gray, a community organiser and Anishinaabe-kwe from the Aamjiwnaang First Nation. Her community, located near Sarnia, Ontario, has been called "one of the most singularly poisonous locations in North America".

Campaigning with Aamjiwnaang + Sarnia Against Pipelines (ASAP), Vanessa and her sister Lindsay organise 'Toxic Tours' of their community, known as Chemical Valley, to highlight the pollution and resulting health impacts.

"The tar sands industry treats women and gender non-conforming bodies in the same way as the earth: with violence and disregard. Pollutants that make the land infertile and the waters undrinkable are also polluting the water that carries our children in the womb."

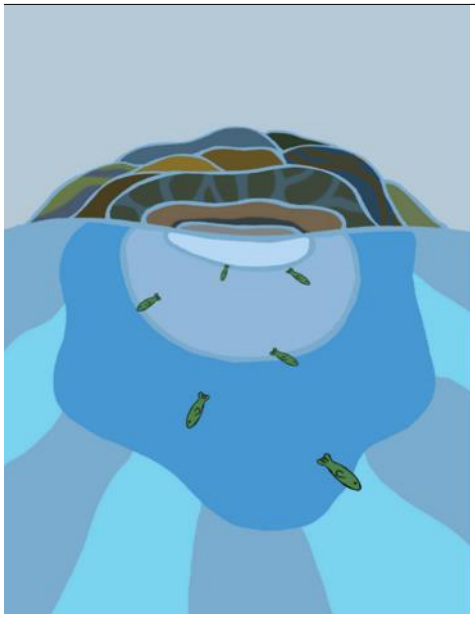
– Sâkihitowin Awâsis.

The report ends with suggested workshops and talking points for trainers, including how to build a process for land and body consent. Despite the horrific impacts on people's health, the suggestions for looking after our bodies are very gender sensitive, such as how to make beaded menstrual cycle

(moon time) bracelets. These can be used to monitor the menstrual cycle or 'moon time' because the contamination from the extraction industry chemicals like PCBs is linked to early puberty and other adverse health effects. There are recipes for herbal teas from the ancestors and how to make salves and compresses and do vaginal steaming. A very inclusive approach is modelled for the workshops, ensuring no one is excluded, and using the evocative term Two-Spirits as an umbrella for Indigenous people who identify as LGBTTQQIA, gender nonconforming, gender queer and/or non-binary.

This is a very useful report which can serve as a guidance tool for other environmental community work. The term "environmental violence" must make its way into other campaigns where unwanted impacts from chemical pollution affect our health. Download the report for free at: http://landbodydefense.org/uploads/files/VLVBReportToolkit2016.pdf

Helen Lynn, of Wildcard Research, is a Visiting Researcher at the Occupational and Environmental Health Research group at the University of Stirling, UK. She also works as a Facilitator for the Alliance for Cancer Prevention www.allianceforcancerprevention.org.uk, a Campaigner for www.coolgreen.org.uk, a Campaigner for www.frompinktoprevention.org, and a Health Adviser to the Women's Environmental Nework www.wen.org.uk



"No More Mercury!"

About Artist Samay Arcentales

Samay Arcentales Cajas is a (Kichwa) filmmaker, digital media and community artist born in Toronto. In her creative practice she explores the sense of being uprooted, the migration experience, and the meaning of urban indigeneity. Through multimedia work and performance she tangles and untangles her mixed ancestry (Kichwa, mestizx) by including the voices of her family and community. Much of her inspiration comes from her multiple histories and ever-evolving relationships with the outside world, its people, and technology.

Her creative journey in the digital realm began with the creation of "Mi Familia Annex Audio Tour", a tour that sketches her family map in the highly-gentrified Annex neighbourhood. Her first short stop motion film "Rimanakuna", premiered at imagineNATIVE Film and Media Arts Festival, 2014. She performed at the Toronto Fringe Festival in 2016 with the production "We Are XX."

Her 2017 film "In Moment" takes its inspiration from the Juno-nominated musical act Kanatan Aski (from the Cree word for "clean land"), which has included collaborations with Indigenous artists from across the Americas. In an experimental drama, the work follows people from different walks of life as they receive a message about unfolding ecological crises. "It definitely diverges from the traditional western notion of storytelling by placing emphasis in the power and importance of spirit within an Indigenous context," Samay says. "Ultimately, the film is a call for all us to come together, not by ignoring our differences, but by celebrating them."

"Will You Listen?: Latinx Voices in Tkaronto," Samay's 2017 video installation at Whippersnapper Gallery, is a collection of stories which explore how people of colour experience public spaces. Centering the lives of women and non binary latinx identified people, this media based exhibit contextualizes urban stories and histories often buried in the mainstream white experience. While chronicling their brave journeys visually on a map, these stories highlight personal power and self-healing in the face of feelings of insecurity, unacceptance and heteropatriarchal power struggles.

Says the artist, "In this projection based installation, every "window" shares a personal story of belonging/unbelonging, a journey of self love and acceptance, despite the violence that surrounds us. All of them are connected to different places in Tkaronto. Our experiences shape who we are, and no matter how much we are put down even by those in our communities, we continue to build and shape spaces for ourselves to grow, love and heal."

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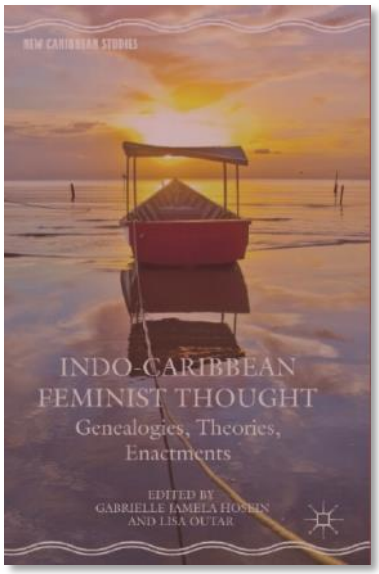
Indo-Caribbean Feminist Thought:
Genealogies, Theories, Enactments

Edited by Gabrielle Jamela Hosein and Lisa Outar,
Palgrave Macmillan 2016, 349 pages, $99.99 hardcover



By Chantal Persad

In their groundbreaking new text, *Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments* , co-editors Gabrielle Jamela Hosein and Lisa Outar chart new paths forward in conceptualizing Indo-Caribbean feminist thought as a cohesive epistemological framework thatdraws on and extends our considerations of the complex "feminist navigations" of gender, sexuality, race and class in relation to state violence, ethnonationalisms, and diasporic migrations in the Caribbean and other post-indentureship societies (p. 6). Through the collection of essays in the book, readers are invited to attend to Indo-Caribbean feminist thought as a dynamic intellectual space wherein we may interrogate how indentureship has given rise to distinct conditions of gendered oppression and social struggle, and how this can further advance an analysis of gendered relations as they intersect with race, class and sexuality within Caribbean nation-states and also in second and third diasporic Caribbean communities in the Global North. Furthermore, *Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments* enables us to critically engage with the ways in which descendants of indentureship have drawn from and continue to draw from the legacy of indentureship to create a feminist politics of resistance and to contribute to the political and feminist landscapes of the Caribbean. The book urges us to interrogate the distinct contributions that Indo-Caribbean women and feminists have made to the advancement of feminist consciousness and activism in the Caribbean and beyond and to consider how their actions within private and public spaces enable us to further conceptualize what anti-colonial, feminist resistance might look and feel like.

Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments consists of five parts: Tracing the Emergence of Indo-Caribbean Feminist Epistemology; Transgressive Storytelling; Art, Archives, and Cultural Practice; Dougla (mixed African and Indian/South Asian) Feminisms; and New Masculinities and Femininities. Essays in each section engage with multifaceted sources, encompassing Indo-Caribbean feminist scholarship, activism, art and cultural production, oral tradition and storytelling, and lived and embodied experiences, in order to demonstrate the various sites of knowledge production through which Indo-Caribbean feminist thought has blossomed into an area of rigorous and dedicated scholarship. In decidedly resisting the false hierarchy into which knowledge is often compartmentalized and reified, the curative work of Hosein and Outar prompts us to take seriously Indo-Caribbean feminist thought as a living, breathing intellectual and creative project with resonances, implications and ample space for those whose histories and realities have been directly shaped by indentureship or are intertwined with indentureship and its descendents. The multidisciplinary scope of work is one of its many strengths because it enables each of the authors to pose and grapple with complex questions that could only be accessed through a dedicated and sustained engagement with the historically grounded sites of knowledge production that emerge within post-indentureship societies. It also emphasizes the different sites in which feminist resistance is cultivated and expressed. The book also locates the longstanding and foundational theoretical work of Caribbean feminists and intellectual elders as antecedent to the articulation of Indo-Caribbean feminist thought as an epistemological lens. In so doing, they situate Indo-Caribbean feminist thought within a trajectory whose exciting future promises new and renewed anti-colonial feminist possibilities and transnational and cross-racial solidarities.

The essays in *Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments* offer us a conceptual framework to articulate and analyze historically-situated particularities of the experiences of Indo-Caribbean and dougla peoples as direct descendants of the indentureship system.

The anchoring of Indo-Caribbean feminist thought as post-indentureship feminism allows the authors to shift away from the geopolitical site of India as an origin point into the inquiry of gendered and sexual relations as it concerns descendants of indentureship. Instead they resituate indentureship- both as a collective history and a theoretically generative site- as central to exploring and unpacking "the intersections of Indianness, Caribbeanness, gender, and feminism," (p. 3). Building on this strength, this framework encourages critical and self-reflexive engagement with historically-constructed differences of race, class, gender and sexuality in ways that resist essentialist reproductions of identity in our interrogations of state power, gendered and sexual violence, and "feminist navigations" in the lives of Caribbean peoples. Through the conceptualization of Indo-Caribbean feminist thought as post-indentureship feminism, the book moves us to think critically about how Caribbean Feminism as a political and epistemological project and movement has been and can continue to be enriched through a genuinely sustained and committed effort to grapple with particular formations of gender, sexuality, race and class that have emerged in life after indentureship. Through the conceptualization of Indo-Caribbean feminist thought as post-indentureship feminism, the book moves us to grapple with the ways in which particular formations of gender, sexuality, race and class have emerged in life after indentureship and the long-standing impacts on not only those who are direct descendants of indentureship through ancestry, but also on Caribbean societies, states, and peoples as a whole. The conceptualization of Indo-Caribbean feminist thought as post-indentureship feminism, also opens up space to consider "transoceanic" (p. 9) and transnational connections and comparisons between regions, lands, and societies impacted by the 19th century Indian indentureship system, in order to expand our understanding of post-indentureship economic, political, social, cultural and ideological formations. Thus, *Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments* outlines a theoretical framework and an array of methodologies that both confront, articulate and analyze constructions of difference and serve the goals of building toward collective liberation and sustainable, generative feminist futures for Caribbean and post-indentureship peoples.

While the book does not engage explicitly with questions around environmental justice or health, the epistemological framework mapped out by the essays in *Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments* makes it possible to intervene and challenge the kind of scholarship which can be understood as constitutive of environmental studies. Through the book, anti-colonial, anti-racist feminist scholars, activists and artists are able to consider how the anti-colonial Caribbean feminist, and particularly in this case, post-indentureship/Indo-Caribbean feminist genealogies of activism, cultural production and theory-making are engaged in the work of radically shifting and reorganizing our social, political, and transnational landscapes and our relationships to the very lands we inhabit. The book moves us to consider how closer examination of our collective historical displacements through systems like indentureship may inform the ways in which we build solidarities and struggle with Indigenous communities on the Indigenous geographies that we inhabit. Furthermore, through the book, we might be moved to consider how our conceptualizations of spaces of resistance can be remapped through a reorientation to transoceanic connections and the building of South/South solidarities. In this way, Indo-Caribbean Feminist Thought: Genealogies, Theories, Enactments makes an important intervention in reminding us of the indispensability of attending to modern formations of race, gender, sexuality and class in our theorizations of the environment and environmental violence. It can also be used to help elucidate the ways in which transnational feminist voices from communities enduring colonial state violence and the aftermath/afterlives of brutal legacies of colonialism have historically been, and continue to reside at the forefront of transforming our social and political landscapes.

Chantal Persad is a recent graduate of the Master in Environmental Studies program at York University. She is a settler of colour and treaty person living on the traditional lands of the Huron-Wendat and Petun First Nations, the Seneca, the Mississaugas of the Credit River. She is interested broadly in anti-colonial feminisms and environmental justice.

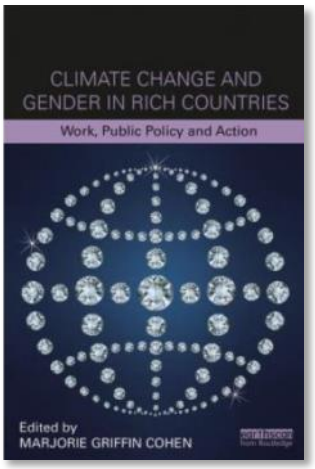
Climate Change and Gender in Rich Countries:
New Book Addresses Blind Spot in the Fight against Climate Change

By Ghada Sasa

Climate Change and Gender in Rich Countries, edited by Marjorie Griffin Cohen, was launched at a University of Toronto event on November 10, 2017. The book addresses a major blind spot in the fight against climate change – the limited gender analysis of climate change mitigation strategies.

While women make up half of the world's population, the book highlights how the gender dimensions of climate change and associated public policy issues in wealthy nations continue to be neglected. This neglect weakens the fight against climate change, because a male-centred vision of climate change narrows climate mitigation strategies and ignores the need for the wider participation of women in the battle for a more sustainable world. For example, recent research (ILO 2011) demonstrates that about 80% of the greenhouse gas emissions (GHGs) produced by human activity in developed countries are work-related, spurring many projects that target workplaces in order to investigate ways in which employers can green their practices and how to facilitate such large-scale change. However, this book highlights that training programs for green jobs have primarily focused on males and on training for greening industries that have the highest greenhouse gas emissions, which are predominantly industries in the energy, manufacturing, and building sectors, where male workers predominate. When women were considered and initiatives to include women were designed, "they were usually only an afterthought to the focus on males' training and employment, and consisted of small and underfunded 'pilot' programs that were one-off in design..." (Cohen 2017, pg. 12).

These kinds of programs not only raise ethical issues, as they overlook women's rights to green and safe workplaces, but they are also very limited as solutions to climate change, because they leave the "basic economic structures intact" (pg. 310). As the book argues overall, the dominant capitalist and patriarchal economic paradigm has to change in order to tackle climate change. A gendered perspective on economic organization can replace this paradigm as a more equitable and green alternative, because this perspective values social reproduction and understands the possibilities of having low-carbon social reproduction activities in contributing to economic growth.



This book draws on case studies from the UK, Sweden, Australia, Canada, Spain, and the US to address key issues, such as how gendered distinctions affect the most vulnerable, paid and unpaid work, and activism on climate change. The authors argue that this volume will be of great relevance to students, scholars, trade unionists and international organizations with an interest in climate change, gender, public policy and environmental studies. The message is clear that the fight against climate change goes hand in hand with the fight against economic and social injustice. This book provides unique insight on how a gendered analysis of climate change, particularly in wealthy nations, will help humanity reach the goal of creating a more sustainable, equitable, and just world.

Ghada Sasa completed her MES degree at York University in 2017. She worked as a research assistant with the Work in a Warming World (W3) project. She holds a Bilingual Bachelor of Arts degree in International Studies and Environmental & Health Studies, also from York University, and her research interests lie in environmental justice, climate change mitigation, and indigenous rights.

When WEI-Mag was just W&E:
Writing the Early History of Women and Environments

By Jessica Campbell

My curiosity in the topic of women and environments stemmed from my initial interest in ecofeminism, more specifically the ecofeminist movement, and through reading the works of Carolyn Merchant, who grappled with the cultural concepts of woman/nature and man/science. These concepts have evolved over time, and can help explain the sexist and environmentally unsound practices which continue to undergird Western culture today. I was intrigued by the idea of merging critical analyses of human interactions and "nature" with feminism in the past. I was intrigued by the idea that "woman" is a culturally constructed category, and female identities have been shaped by women's relations to non-human "nature." It seemed to me that this idea could be a source of empowerment.

From there, I learned about the cohesive ecofeminist movement in the United States that began around 1980, signified by works, conferences, and protests carried out by people who linked environmentalism with feminism. But then I thought, what about Canada? Did an ecofeminist movement play out in Canada as well? After researching, I learned that while there was not really a cohesive ecofeminist movement in Canada, there were signs that Canadian women were thinking about and actively engaging with environmental concerns around the same time that ecofeminism emerged in the United States. I explored this through secondary research, which led me to learn of the network and magazine Women and Environments International -- published in Canada, by Canadians. Additionally, I was pleased to find that the magazine had been publishing since 1976 and had actually gone by the name Women and Environments, commonly called W&E, until 1998. It had been founded by three Environmental Studies professors from York University, in Toronto. This mid-1970s magazine was the only regular publication documenting English-speaking environmental-leaning feminism in Canada. I started to hypothesize that maybe, just maybe, this was an ecofeminist magazine. Even though the description on the website stated the magazine was interested in natural, rural, built, and social, environments, maybe this was actually a portal into a burgeoning ecofeminist movement in Canada!

The next step was to access this magazine. I specifically wanted issues from its conception in 1976 to 1997, the last year it went by the name Women and Environments. Access to the magazine's back issues was not as easily achieved as I had thought, because it lacked digital replicas, and the original hardcopies were housed in different areas all over Toronto. What's more, the turnover in today's editorial staff meant corresponding with different people via email and telephone, and reiterating my requests multiple times. Once I had the physical copies of all issues, it was clear to me that W&E was not Canada's unrealized ecofeminist movement. But, my initial disappointment with this discovery was short-lived. As I read the journal and learned about the wide-ranging definitions of environments it included, I realized that the women of W&E were, just as Carolyn Merchant is, concerned about the relationship between physical and conceptual space and the construction of women's identity.

W&E's mission was first, to address women's multiple relations to their environments – natural, built and social – from a feminist perspective; second, to provide a forum for academic research and theory, professional practices and community experience, and lastly, to give equal attention to Canadian and American topics as well as provide information about activities in other parts of the world. From of its mission statement, I learned two things. First, W&E identified from the outset as an international periodical, which got me thinking: maybe I couldn't accurately call it a Canadian magazine. Second, my initial readings of the first five years suggested that this magazine was all about cities and buildings and urban space, which – from my post global warming frame of mind – didn't qualify as 'the environment.' At this point, I had to concede that W&E was not entirely, or even mostly, interested in "natural" spaces. I thought: was this an urban studies periodical? In the end, after reading the issues published in the 1970s, 80s, and 90s, it was clear to me that the magazine's objectives in both scope and coverage were not at all equally realized in each issue. All this information led me to my main research question: How successful was W&E in offering comprehensive coverage of environmental concerns from 1976 to 1997 and how much was W&E's narrative a Canadian story?

Choosing a periodical as my object of study showed me that an everyday, somewhat disposable, product is valuable for historical observation. A lot of

scholars, myself included, treat newspapers, magazine, or journals as minor sources that shed light on something "bigger." But there's a whole world going on in periodicals themselves. Getting drawn into W&E's world and tracing its development was like getting hooked on the first three seasons of a Netflix TV series. Seriously, some days I would just binge read articles, especially if they dealt with ongoing, controversial subjects. For me, to be able to tell the story of how these women communicated with each other allowed me to appreciate the magazine as an entity in its own right, and not just some side character in larger feminist and environmental stories.

After employing qualitative and quantitative methods of analysis, I learned that, on the whole, W&E was able to offer attention to several types of environments for an international readership, and that this distribution varied over time. W&E had been founded with the intention of being global in scope. Yet, for the first few years the magazine limited its feminist critique to urban planning, and later to psychological impacts of built social spaces in central Canada. It was only later on that it expanded its scope to rural areas, and eventually to "natural" environments in Canada and around the world. Despite expanding its scope to global topics and becoming accessible to readers worldwide, I saw that for the most part, W&E's writers and readers were Canadian, and specifically represented a Toronto perspective. As such, the magazine was not necessarily a national magazine, but was still a Canadian magazine. Its variations in topics and scope were related to larger societal trends going on in the background, which affected written submissions, reader requests, and changes in editorial management. I arranged the 21 years of back issues I was studying into three blocks, each of which was marked by particular editorial influence, and thus their preferences for the representation of certain environments and topics. Regardless of its fluctuation in focus, however, W&E upheld its mandate to provide a feminist analysis of environments for English-speaking women.

At the end of the day, W&E had international ambitions at the outset, but its scope and impact was chiefly concerned with English-speaking Canada, before it transitioned officially into an international magazine and changed its name to Women and Environments International Magazine, in 1997. The magazine's equally ambitious attempt to provide balanced coverage of built, social, and natural environments was also slow to come to fruition. While quantitative analysis showed W&E's fondness for representing urban, built spaces, a closer look at specific issues that were excluded from some sample years showcased its engagement with women's psychological and social well-being, built spaces, and eventually women's relationship to "natural" and sometimes rural environments. I found that W&E demonstrated its versatility by covering a wide range of environments.

The story of W&E contributes to Canada's cultural, feminist, and environmental history, because it tells the story of people who launched the conversation about women's experiences in and formations of environments within Canada. W&E shows that since 1976, English-speaking Canadian women have grappled with the gendered aspects of environmental design and interaction, and provided nuanced interpretations of the term 'environment.' By doing this, W&E pushed the boundaries of both the feminist and environmental realms in Canada. I hoped to share a new story of Canada's gendered environments by interpreting its pages.

After completing her Master's degree in Saskatoon, **Jessica Campbell** has been working as a heritage consultant. Her M.A. thesis about Women and Environments magazine is available online at:

https://ecommons.usask.ca/xmlui/bitstream/handle/10388/7963/CAMPBELL-THESIS-2017.pdf?sequence=1&isAllowed=y

The Dry Season

Katia Grubisic

Katia Grubisic is a writer, editor, and translator. Her work has appeared in Canadian and international publications. She has been a finalist for the Governor General's Literary Award for translation and the A.M. Klein Prize for Poetry, and her collection of poems *What if red ran out* won the Gerald Lampert award for best first book

A long time ago
never happened here: now is now is now.

For weeks we'd slept outdoors,
you and I,

outfitted with pas grand-chose—derring-do,
the coffee biggin, velvet and cashmere

waiting at the door. In town
we docked and craved

a bath, went straight to the bar
and trippled back in the broad midnight

daylight. You shelled
for a room at the Fairview but we lay strange

at each other—indoors, walls stretched thin
and low. Not our shelter

in the wilderness, it was not
just May December, not

the woeful fall
of Violetta at the Palace Grand.

As the century turned
in Dawson women had their pick. Forever

never happened here. Over the door
of the maison de joie someone had roughly carved

formidinem mortis vicit aurum. Everywhere
there were men, four fingers

between them and more hope
than teeth. I hadn't paid for a drink

all summer, but it was you
and I—

no more implausible
than anything else: think of the way

we can love each other more than life, the weight
of what we have to work with. The frontier was false

fronts and the rime
of winter's craquelure.

If the function was warmth,
protection and some flim

of belonging, the form—scorched
dust and canvas skins bestrewed—betrayed

the flats, the hills,
the riverbed. We snugged in

for the fig-plucker cold, tried
to stoke that saloon spontaneity. We had hope

more than luck. When they came looking
the place was aflame: the stove, the spark

the last slim sabre of air. Bet it was hotter
than a French whore on dollar day,

they said, and didn't say. You
were not home at the time and now

in the dark sifting
through the holes in the hours I

wait for the promised,
hands full of that gold.

Extracting Gold with Mercury Exacts a Lethal Toll

PBS News Hour – Reporter P.J. Tobia and Photographer Larry C. Price

By Jennifer Spalton

Tucked away on a small island in Indonesia, Puasi, a distressed mother, rocks her baby while feeding her with her hand. A closer look reveals that the woman isn't rocking an infant, but the body of a young child, with an "oversized head". The narrator informs us that the child, Nyimas, sufferers from hydrocephalus, one of the many symptoms linked to mercury poisoning.

Originally aired on October 9, 2015, this brief PBS special showcases small-scale gold mining in Indonesia and the horrific and detrimental effects of mercury poisoning that are rampaging the small island of Sulawesi. The graphic film is narrated by P.J. Tobia, and helping him tell the story is Dr. Stephan Böse-O'Reilly, a volunteer with the Indonesian non-governmental organization BaliFokus.

The film takes us through the role of liquid mercury in the process of small-scale gold mining, from first being used in harvesting the gold, separating the (gold) rock from the dust, to being used again later, when the gold is rolled with liquid mercury and then the mercury is burned away. Not only are the workers directly exposed to the liquid mercury while mixing mercury and ore with their bare hands, but they also inhale mercury vapors in the air around amalgam burning. The vaporized mercury accumulates in soil, contaminating the rice fields, and in sediments of ponds contaminating water, fish and thereby the whole food chain. This is a textbook case of environmental injustice. The poor Indonesian workers, already subjecting themselves to the harsh metal and terrible working conditions for a small profit, are then doubly burdened when they must dispose of their chemical by-products right beside their food source, contaminating food for their families.

P.J. Tobia informs the viewers that small-scale gold mining, most common in the developing world, is the biggest contributor to mercury poisoning globally. The film explores research currently being conducted in Sulawesi, in attempts to explain the "uncommon diseases", the neurological disorders and birth defects affecting the people of the village. Indonesian residents have been found with up to 50 times the safe limit of mercury in their bodies.

The film is a great introduction to small-scale gold mining in Indonesia and the consequential effects of mercury poisoning. P.J. Tobia mentions that 800 gold-mining hot spots are found within Indonesia alone, focusing on the thousands of affected workers, predominantly male. While gender is not explicitly mentioned, almost all the villagers featured in the film are women or girls, bringing into the light the effects of environmental pollution on women, specifically in their role as harvesters or in their role as bearers of children.

The film blames the continuation of mercury use in small-scale gold mining, despite the introduction of policy in 2014, on the lack of policy enforcement. While I'm sure this is an important factor, I think it would be dangerous to ignore the pull factors that are undoubtedly coming from the Global North. Let's be honest-as long as there is a demand for gold, there will be people willing to supply it, who may not understand the health risks or are desperate to feed their families. Is a piece of jewelry or decorative trim really worth destroying the lives of an entire village? We must ask ourselves this the next time we are shopping for accessories.

View this program at: https://www.pbs.org/newshour/show/mercury-mining

Jennifer Spalton is an MES Candidate in Environmental Studies at York University, focusing on feminist political ecology, urban planning and access to greenspace.

The United Nations Framework Convention on Climate Change Commits to Bridging the Gender 'GAP'

By Joanna Patouris

PHOTOGRAPH: VALTER MUNIZ

Joanna Patouris (second from left, holding the banner) and other climate justice activists at the Bonn United Nations climate change Conference of the Parties (COP).

The 23rd Conference of the Parties (COP23) of the United Nations Framework Convention on Climate Change (UNFCCC) -- held in Bonn, Germany from November 6-17, 2017 -- was the first COP presided over by the Small Island Developing State of Fiji. COP23 was one to be remembered, for several reasons. For some it may be remembered as the first Pacific COP hosted by the government of Germany. For others it may be remembered as the COP that did not effectively secure a response to the losses and damages faced by those living on the frontlines of climate change. And for those championing gender equality, COP23 might be remembered as the COP that adopted the first ever Gender Action Plan (GAP).

There is a wealth of evidence and experience-sharing to confirm that climate change disproportionately impacts people and communities that are already experiencing injustice and inequality in various forms. Statistics also show that women are not equally represented as decision makers under the UNFCCC, hindering women from contributing their climate related actions, concerns and solutions necessary for a truly gender- responsive climate agenda. Witness to this is the lack of gender-responsive climate policies at the community, national and international levels.

On November 14th, 2017 the Gender Action Plan to the UNFCCC was adopted. Along with the GAP, Parties (member countries) have agreed to integrate local and traditional knowledge in climate change policy, and have made progress in recognizing the value of the participation of grassroots women. The GAP is the result of the tireless efforts of Parties, constituencies and civil society organizations advocating, lobbying and negotiating for the full integration of gender through all processes of the climate governance architecture.

Since COP7 in 2001, when a decision was taken to ensure that countries' National Adaptation Programs of Action are guided by gender equality, there have been over 50 gender mandates. These decisions range from promoting gender balance, to the integration of gender in the various policy areas, to enhancing women's participation and capacity building. While the intention to progress towards gender equality is evident, reality suggests otherwise as these efforts have not been enough to mainstream women's full, equal and meaningful participation in the UNFCCC.

Recognizing that gender mandates are not enough to realize gender equality, the GAP identifies five priority areas for the next two years to support the implementation of existing gender mandates. These include i. capacity building, knowledge sharing and communication; ii. gender balance, participation and women's leadership; iii. coherence within the UNFCCC and other UN stakeholders; iv. gender responsive implementation and means of implementation; v. monitoring and implementation. The GAP outlines key activities, timelines, responsible actors and the specific deliverables to be achieved under each priority area.

The hope is that making actual progress in these five areas will ripen the conditions necessary for the creation and implementation of

gender-responsive climate policies that protect and promote human rights at all levels. As the majority of activities proposed in the GAP require financial resources, a lack of secured financing might pose a threat to its implementation.

The GAP presents an opportunity to implement gender decisions under the UNFCCC. Its implementation will allow the world to inch closer towards ensuring gender justice and women's human rights are at the heart of all climate policy and responses. It is essential that parties, and all relevant actors get this right!

Read the climate change Gender Action Plan here: http://unfccc.int/resource/docs/2017/sbi/eng/l29.pdf

Joanna Patouris completed her Masters in Environmental Studies degree at York University in 2017. She has participated in the UNFCCC process since COP19 in 2013, and has worked on issues of climate induced migration, gender and climate change and equity and transparency in climate change governance. Her work during the MES explored an implementation pathway of the UNFCCC Paris Agreement for the Africa Group.

Suzanne Farkas is a senior environmental and occupational health scientist currently with the Ontario government. Her interest in mercury and its effects(aka Minimata disease) came during her experiences in social justice activism and her work in the late 1970s, as the Senior Land Claims Researcher for the Treaty 3 Band Council, of which Grassy Narrows reserve was a member. She was a WEI Board member and co-editor of several WEI issues (1998 to 2003), as well as the outdoor adventure magazine "Explore".

Suzanne Farkas

Hydragyrum

in memoriam to Azraya and Grassy Narrows

Bending by the river
she reaches out
to grasp
the alchemist's mercurial gift,
beads of hope shimmering
beneath shifting sands

the crone, shaman of the light
flickering between this world and the other
that place between
infused in the cells
all flesh and bone with knowing
became hard, petrified flesh, stone
transfigured
transformed with fire glow

crystals now grow

crushed by the weight
of generations,
Azraya,
her tomb quicksilver moonbeams lit,
calls out
still.

Mercury Justice Now: Updates from Grassy Narrows

By Meagan Dellavilla

On November 6, 2017, Indigenous land and water protectors currently battling environmental injustice in their communities across Turtle Island hosted a sobering meeting in Toronto.

Following drumming and a warm welcome from Plains Cree Elder Pauline Shirt, four Mayan Q'eqchi' women from El Estor, Guatemala spoke of their ongoing struggle for justice against Canadian mining company HudBay Minerals. The women recounted the atrocities they experienced during forced eviction from their ancestral lands. Through three precedent-setting lawsuits, the women are seeking to hold the company accountable in Canadian courts for the human rights abuses committed at the Fenix mining project in Guatemala, which HudBay owned from 2008 to 2011. Angelica Choc, whose husband, Adolfo Ich Chamán, was brutally murdered by mine security personnel in 2009, stood beside three of the eleven women who were gang-raped by mine security, military and police personnel in 2007, asking attendants for their strength and solidarity as they prepared for a taxing week of cross-examination from HudBay's legal team.

Next, Vanessa Gray from Aamjiwnanng First Nation recounted the myriad injustices her reserve faces as a result of its proximity to Canada's so-called "Chemical Valley". Surrounded on three sides by petrochemical plants and refineries, the residents of Aamjiwnaang continue to experience health issues, such as a significantly higher than usual rate of miscarriage and stillbirths. Gray, who was arrested in 2015 for shutting down Enbridge's Line 9 Pipeline, expressed continued hope in the potential of direct action efforts. The Canadian court system, she explained, "is not a place of comfort for Indigenous women, but these corporations, and our government, must be held accountable". Gray's tireless advocacy is stimulating dialogue and recourse for this ongoing example of environmental racism.

Finally, Coast Salish author and storyteller Lee Maracle spoke about the Asubpeeschoseewagong (Grassy Narrows) battle against mercury contamination. Beginning in the 1960s, a paper mill upstream from the reserve released tons of mercury into the English-Wabigoon river system, which long served as a lifeline for the Grassy Narrows community. This contamination continues to plague the community today. After a decades-long campaign, the Ontario government agreed in 2017 to allocate $85 million to clean up the river system. However, Maracle reported that the community has yet to see this money. Recent reports of continued contamination have the government holding tightly to the promised funds. According to Maracle, the government won't release these funds until the points of continued contamination are identified – but who will fund and conduct such investigations remains unclear.

As grandmother Judy Da Silva of Grassy Narrows explained, they are "fighting for life. We simply want to be alive, to be healthy, to enjoy our children and grandchildren". Da Silva, who suffers from mercury poisoning herself, remains optimistic that the money will eventually flow. "It'll go to the scientists though, not our community," she said, "but eventually the river will be clean, it's the only way".

The community has been working with scientists and engineers to identify the safest and most effective remediation plan. Da Silva expressed continued uncertainty about how the cleanup will occur, and insisted that no dredging, which would potentially disturb settled pockets of mercury, should take place.

The community, in addition to a clean river, is seeking a Mercury Home and Treatment Centre on or near the reserve so that impacted community members can receive necessary medical care near to family members; adequate healthcare for all community members; an environmental monitoring centre; fair compensation for the historical injustices; and a commitment from the government to never again engage in clear-cut logging without first receiving free, prior and informed consent from the community (since logging is another assault the community has long been forced to bear).

In early November, the Toronto Star published a front-page article about a newly-released report showing that government officials have been aware of continued mercury contamination near Grassy Narrows since the 1990s. Grassy Narrows Chief Simon Fobister said, "Never once was I told that mercury poison is still under the mill, right next to our river. I was told over and over that the mill site was cleaned up and that the problem ended in the '70s". Da Silva is quoted in the article calling the development "sickening". "It shows how lowly we are, the Anishinabeg, to the government and corporations. Like we are not worth it to be alive," she states; "They knew about this poison and they did nothing." The Grassy Narrows community is demanding a

binding commitment from Premier Kathleen Wynne and Prime Minster Justin Trudeau to provide victims with the care and support they need.

Meagan Dellavilla is currently pursuing a Masters in Environmental Studies and a graduate diploma in Environmental and Sustainability Education at York University. Since 2016, she has acted as a Research Assistant for the York-based Indigenous Environmental Justice Project.

References:

For updates and more information on the legal cases related to HudBay violence in Guatemala, see: http://www.chocversushudbay.com/

For additional information about environmental racism and Chemical Valley, see the Aamjiwnaang Solidarity website: **https://aamjiwnaangsolidarity.com/**

For historical and ongoing accounts on the Grassy Narrows case, or to offer support to the community, see: Free-grassy.net

Bruser, David and Jayme Poisson, "Ontario knew about Grassy Narrows mercury site for decades, but kept it secret," Toronto Star, Nov. 11, 2017, p. 1. https://www.thestar.com/news/canada/2017/11/11/ontario-knew-about-mercury-site-near-grassy-narrows-for-decades-but-kept-it-secret.html

In Memoriam

HILKKA PIETILÄ (1931 - 2016)

Hilkka Pietilä, a pioneer theorist in feminist ecological economics and advocate for the recognition of the importance of women's unpaid work in homes and communities, died on December 18, 2016. She served as Secretary General of the Finnish United Nations Association for 27 years (1963 to 1990).

She was born the daughter of a farmer in 1931 in Kiika, Finland. She majored in nutrition chemistry, microbiology and home economics at the University of Helsinki, graduating in 1956.

Pietilä worked for years as a freelance researcher and activist. In the 1990s she taught at the University of Helsinki and lectured at the Development Institute. From 2000 to 2008 she lectured on "Globalization, Development and International Organizations" at the Institute of Development Studies. She participated in all four UN World Conferences to promote the status of women, in Mexico City (1975), Copenhagen (1980), Nairobi (1985) and Beijing (1995).

In her books and articles she spoke about women's rights, peace-building and development issues. Among other things, she criticized traditional economic research that ignored jobs outside the market such as unpaid domestic and community volunteer work, and she criticized the liberalization of trade and financial transactions and neoliberal economic policies. She also objected to Finland's membership in the European Union.

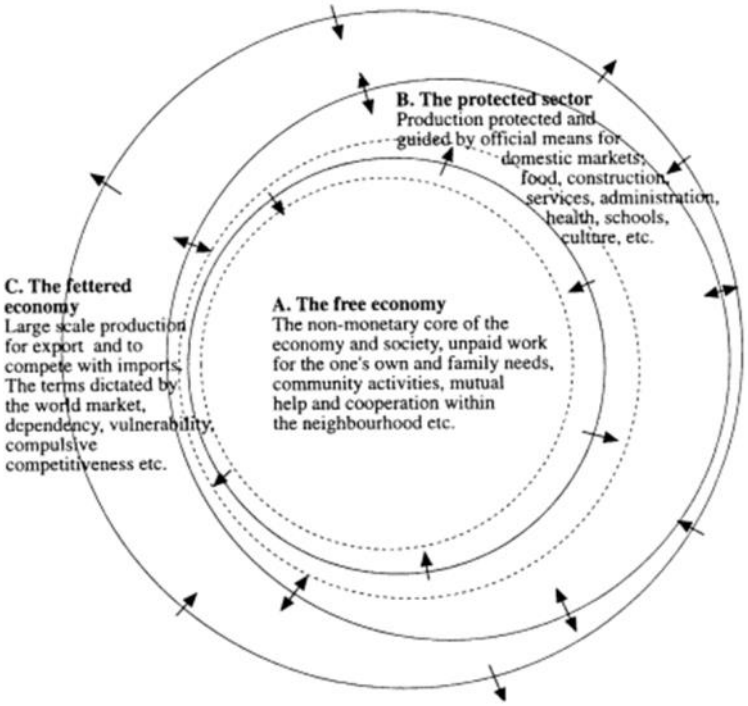
Hilkka Pietilä

Pietilä held a Masters Degree in Agricultural and Forestry education, and received two honorary doctorates: in Education from the University of Oulu in 2002 and in Political Science from the University of Helsinki in 2011.

At its 60th anniversary in 2014, the United Nations union founded the Pietilä Fund in her name. It grants scholarships for research.

Her books include Making Women Matter: the Role of the United Nations (with Jeanne Vickers, 1990), Engendering the Global Agenda of Women and the United Nations (2002), and The Unfinished Story of Women and the United Nations (2007). Her chapter in Sisterhood is Global: The International Women's Movement Anthology, edited by Robin Morgan, is entitled "Finland: The Right to be Oneself." Pietilä was interviewed in Women and Environments International Magazine no. 54/55 (2002).

Many of Pietilä's publications are available on her website: www.hilkkapietila.net/en/index.html



Pietilä's model of the economy, showing the centrality of voluntary, unpaid, caring work as the basis for all other economic activity. Reprinted from WEI Issue 54/55, 2002, p. 11.

Based on an obituary from the Finnish national public broadcasting company, translated by Marita Rollo.