A photograph taken from inside a vehicle, looking out through a window. A woman with dark hair, wearing a dark jacket, is riding a light-colored horse. She is holding a cell phone to her ear and appears to be talking. The background shows a green, hilly landscape. The image is framed by a black border.

**What have we
learned since
1532?**

**Tony Hartshorn
Montana State University
soildoc@gmail.com #soilculture
480.406.1277**

06/03/2016 08:29



Cajamarca, Perú

05/26/2016 12:51

CAJAMARCA LA CIUDAD DEL ENCUENTRO DE DOS MUNDOS



Y LLEGAMOS A LA MITAD DE LA RUTA

SE VE AL LEGADO Y
COMPLETA LA HISTORIA.

EL INCA ATAHUALPA VA AL ENCUENTRO DE PIZARRO LA TARDE DEL 16 DE
NOVIEMBRE DE 1532. EN ESTA ZONA, QUE ANTES PERTENECÍA A LA PLAZA INCA,
OCURRIÓ EL INCIDENTE CON EL SACERDOTE DOMÍNICO VICENTE DE VALVERDE.

En la tarde del 16 de noviembre, el Inca ingresó a la plaza de Cajamarca. Iba en su gran litera dorada, acompañado
por un séquito que incluía músicos y danzantes. Por orden de Pizarro, se le



AGUA SI MINAS DO

05/26/2016 12:30

Conga



Overview [View](#)

The Conga project is a proposed hydroelectric project located in the northwestern region of the Department of Cauca, Colombia. The project consists of a dam and a power plant with a capacity of 1,000 MW. The project is located in the Andean mountain range, the Cordillera Occidental, at an altitude of 2,000 meters (6,560 ft) above sea level.

History [View](#)

The Conga project was first proposed in the late 1990s. It was approved by the government in 2001. However, the project faced significant opposition from local communities and environmental groups. In 2005, the project was suspended. In 2010, the project was re-evaluated and approved by the government. However, the project still faces significant opposition from local communities and environmental groups.

Community opposition forces Newmont to abandon Conga project in Peru

Cecilia Jamasmie | Apr. 18, 2016, 3:18 AM |

PEOPLEMINE

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Newmont Mining Corp's (NYSE:NEM), the world's 2nd largest gold miner, is walking away from its \$5 billion Conga copper and gold project in Peru after year of relentless community opposition.

In its [annual filing with the U.S. Securities and Exchange Commission \(SEC\)](#), the Colorado-based miner said that due to current social and political conditions, the company "did not anticipate being able to develop Conga for the foreseeable future."

While Newmont acknowledges that local opposition was an important factor in their decision, there were many other factors.

"At the end of the day, our community's resources were a business. Construction permits expired for future development and

Locals welcomed the news

Acuña, who has been at the project since it was first proposed in 2010, **said in a statement** she only has one more wish. "I



Peruvian farmer Máxima Acuña de Chaupe has won the Goldman Environmental Prize after Newmont removed its proposed Conga gold mine in northern Peru from its list of reserves in its annual filing with the SEC. (Image provided)



Output from Conga was supposed to replace production from the nearby Yanacocha mine (pictured), which is running out of gold. (Image from archives)

MINING.com.

ña de Chaupe the Goldman Environmental Prize.

ja project since it was first proposed in 2010, **said in a statement** she y land with my family for almost 20 years."

Successful delivery of the United Nations sustainable development goals and implementation of the Paris Agreement requires technologies that utilize a wide range of minerals in vast quantities



Sustainable Development

SHARE THIS

Sustainable development has been defined in many ways, but the most frequently quoted definition is from *Our Common Future*, also known as the Brundtland Report:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization and the environment's ability to meet present and future needs."

RELATED PROGRAMS

Economic Law and

Energy

Integrated Knowl

Needs

Needs

tomorrow

Mineral supply for sustainable development requires resource governance

Saleem H. Ali^{1,2,3}, Damien Giurco⁴, Nicholas Arndt⁵, Edmund Nickless⁶, Graham Brown⁷, Alecos Demetriades⁸, Ray Durrheim⁹, Maria Amélia Enriquez¹⁰, Judith Kinnaird⁹, Anna Littleboy¹¹, Lawrence D. Meinert¹², Roland Oberhänsli¹³, Janet Salem¹⁴, Richard Schodde^{15,16}, Gabi Schneider¹⁷, Olivier Vidal⁵ & Natalia Yakovleva¹⁸

There is an urgent need to establish a system for tracking mineral use along the **entire value chain**, from source to end of life. Such a system could also incorporate a **global chain-of-custody programme**, similar to that of the **food industry**. Furthermore, there is a need to promote domestic production and consumer cognizance of mineral use, incorporating a notion of **'metal miles'**

EAT LOW CARBON



Are you concerned about climate change?

Well, now that you've changed your lightbulbs, it's time to change your lunch!

DIET TIPS

FOOD SCORES

TAKE THE QUIZ

The food system is responsible for a third of global greenhouse gas emissions. Learn how to reduce your carbon "foodprint."

A. Estimate your food miles

* May not be representative of other demographic cohorts

PART A: GIVEN: FOOD MILES
FIND: ESTIMATE MY FOOD MILES!

| <u>FOOD CATEGORY</u> | <u>SERVINGS/YR</u> | <u>MILES/SERV.</u> | <u>EXTENDED MILES/YR</u> |
|----------------------|--------------------|--------------------|--------------------------|
| ELK/DEER | 400 | 160 ¹ | 64000 |
| EGGS | 1000 | 400 ² | 400000 |
| BEER | 540* | 700 ³ | 378000 |

1: HARVESTED MYSELF ≈ 160 MI AWAY (± 50 MI, WONDER WHERE)
2: GREAT FALLS (180 MI) + 120 MI WASHING/PACKAGING
3: $\approx 60\%$ PBR (MILWAUKEE 1200 MI) 40% LOCAL BREWERY (100 MI)

Types of metal
in SmartPhone

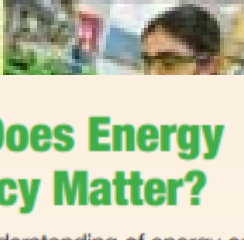
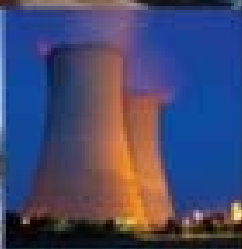
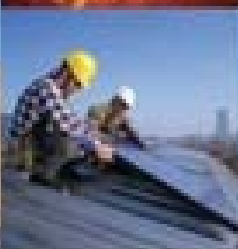
should be loosely structured after the table presented in Sa.

| Mine Site | Miles in Mine to Factory (China) | Miles in Factory to Me | Total Miles |
|----------------------|-------------------------------------|----------------------------|-------------|
| D.R. of the Congo | Congo → China 5,000 | China → Fact, USA 6,100 | 11,100 |
| Brazil | 8,100 | 6,100 | 14,000 |
| Australia | 6,600 | 6,100 | 12,700 |
| MT, USA | 6,125 | 6,100 | 12,225 |
| Philippines | 2,800 | 6,100 | 8,900 |
| | | | 58,925 |

- given that I've only done 5 out of 60 metals (1/12) ...

$$58,925 \times 12 = \boxed{707,100}$$

- So I was off by an
order of magnitude



~~Energy Literacy~~

metal

Essential Principles and Fundamental Concepts for Energy Education

- 1 Energy is a physical quantity that follows precise natural laws.
- 2 Physical processes on Earth are the result of energy flow through the Earth's systems.
- 3 Biological processes depend on energy flow through the food web.
- 4 Various sources of energy can be used to power human activities, but only so far energy must be transferred from source to user levels.
- 5 Energy decisions are influenced by economic, political, environmental, and social factors.
- 6 The amount of energy used by human society depends on many factors.
- 7 The quality of life of individuals and societies is affected by energy choices.

Why Does Energy Literacy Matter?

A better understanding of energy can:

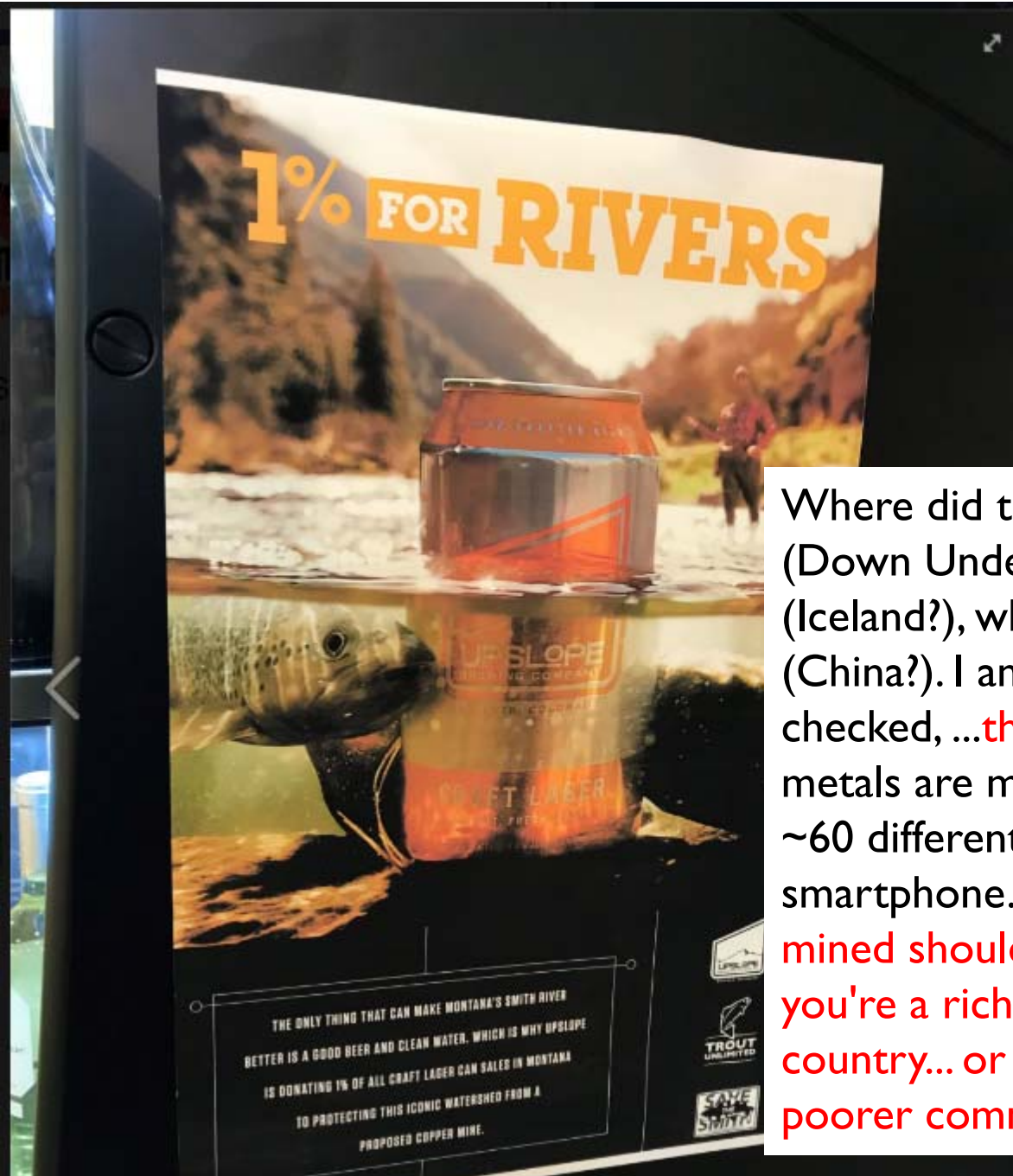
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- redu
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- help
- mon

Without a l sources, g strategies, make infor smart ener to national national an supply and energy edu

Producers to Consumers: Energy Flow Through Trophic Levels



| | | |
|---------------------|-------------|--------|
| Tertiary Consumers | 1,000 J | 0.004% |
| Secondary Consumers | 10,000 J | 0.04% |
| Primary Consumers | 100,000 J | 0.4% |
| Producers | 1,000,000 J | 4% |



Save Our Smith

Like This Page · January 30 ·

A poster at Rosauers in Bozeman, reminding you that 1% of all Upslope craft lager sales go to protecting the Smith River. You can also find "Save the Smith" stickers in each Upslope variety pack in Montana, thanks to Rep Your Water!



Where did that aluminum come from (Down Under?), where was it smelted (Iceland?), where was the can born (China?). I am with you 100% on "Last we checked, ...**there is no planet B.**" Almost all metals are mined from rocks; there are ~60 different metals in that flyfisherman's smartphone. **Whose rocks on Planet A get mined shouldn't depend on whether you're a richer country or poorer country... or a richer community or poorer community.**

SAVE OUR SMIT

A photograph of a man and a young boy in a raft on a river. The man is wearing a green cap and a blue plaid shirt. The boy is wearing a blue cap with a logo and a red life jacket. They are both smiling. The background shows a rocky riverbank with some trees.

The Smith River is not a location for another failed mining experiment

**But... the right
location for the
next mining
experiment
would be...**



“If you are rethinking higher ed I would suggest the professors need to do month-long internships in government and industry to see the other end of the pipeline. I think this would radically change how higher ed worked. **And as much as I love college professors and many of my friends are college professors, many have never really worked in the ‘normal’ economy since they were freshman in college.** Therefore they don’t have an up-to-date view of where students work and what students do”





About 17,400,000 results (0.39 seconds)

Land rehabilitation is the process of returning the **land** in a given area to some degree of its former state, after some process (industry, natural disasters, etc.) has resulted in its damage. Many projects and developments will result in the **land** becoming degraded, for example mining, farming and forestry.



[Land rehabilitation - Wikipedia](https://en.wikipedia.org/wiki/Land_rehabilitation)

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[Land Rehabilitation Option < Montana State University](https://catalog.montana.edu/undergraduate/agriculture/environmental.../land-rehabilitation/)

catalog.montana.edu/undergraduate/agriculture/environmental.../land-rehabilitation/ ▼

Freshman Year, Credits. ENSC 110 - Land Resources and Environmental Sciences, 3. BIOB 170IN - Principles of Biological Diversity, 4. BIOB 160 - Principles of ...

You've visited this page 2 times. Last visit: 4/7/18

[Land Rehabilitation - Graduate School | Montana State University](https://www.montana.edu/gradschool/graduate-programs/land-rehabilitation.html)

www.montana.edu/gradschool/graduate-programs/land-rehabilitation.html ▼

The Graduate Record Examination (GRE) is required for the **Land Rehabilitation** Program. Theses scores

Natural Resource and Environmental Restoration in Montana

Case Studies in Restoration and Associated Workforce Needs

August, 2012

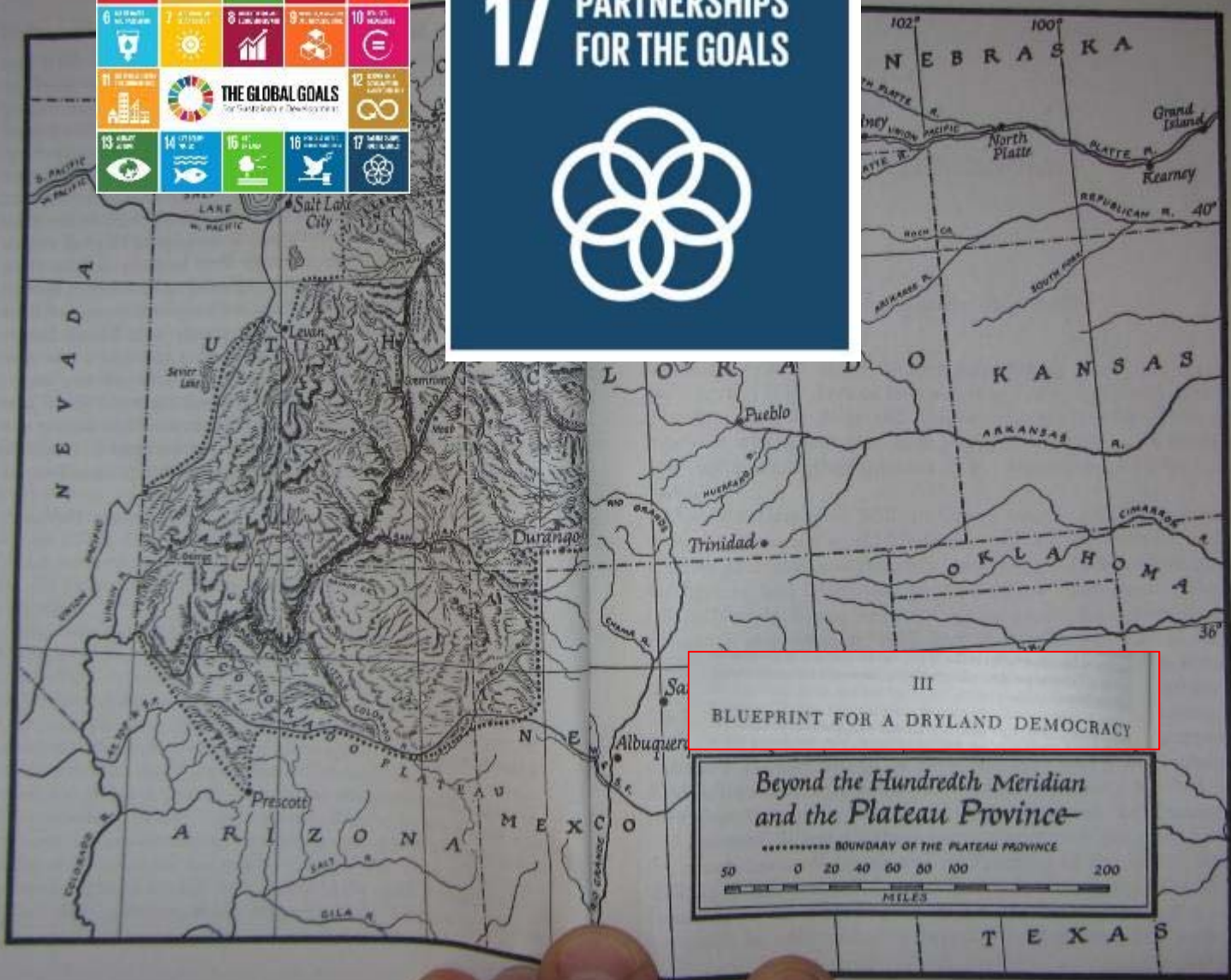
A Report by

Larry Swanson and Hayden Janssen


O'Connor Center for the Rocky Mountain West¹
The University of Montana



INTERNACIONAL DE MINERÍA 30-31 MAYO 2016



05/28/2016 08:15

A photograph taken from the interior of a vehicle, looking out through a window. A woman with dark hair, wearing a dark jacket, is riding a light-colored horse. She is holding a cell phone to her ear and appears to be in conversation. The background shows a lush green landscape with rolling hills and a clear sky. The image is framed by the dark interior of the vehicle.

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Do the math.

