Can Peru's Virtuous Cycle of Vicuña and Alpaca be Continued?

By Mike Safley

Vicuñas are a magical form of Andean alchemy. They consume the slow water coursing through the bofedales formed during the Little Ice Age in 1303 CE. When the ancient glaciers melted, great lagoons were formed miles above sea level, and the surrounding grasslands sprang forth. These bofedales became hosts for microbes, birds, plants, vicuña, alpacas, and llamas who consume their water, filtered by ancient peat bogs. This flora and fauna are the first and second components of the virtuous cycle.

Andean bofedales are peat bogs tended by indigenous pastoralists for centuries and grazed by the vicuñas and alpacas who are the native alchemists that spin the grasslands and slow water into the ***Gold of the Andes.***

This cycle is a prime example of the pristine harmony that allows Pachamama (Andean goddess revered as Mother Earth) to pull carbon from thin air, neutralizing the world's airborne poisons and simultaneously nurturing all aspects of Andean biodiversity.

Transmutation: a word that characterizes alchemy and is best understood in the context of transformation from old age to youth; the passing from an earthly existence to the supernatural. In this context, transmutation is most connected to the original alchemists who attempted to convert common minerals into gold. Back then, alchemical changes were positive, never involving harm or degradation. Alchemy was aimed at the greater human good: wealth, longevity, and immortality.

Virtuous Andean Cycle

Flora
Plants found their home in the bofedales and became food for the fauna in the area.

Fauna
Animals (i.e. alpacas and vicuñas) reside in and around the bofedales and feed on the flora.

Bofedales
They depend on photosynthesis to grow tiny flowers with deep roots that sequester more carbon than massive forests.

Grasslands
All organic carbon sequestered in the highland soils is extracted from the atmosphere and converted to complex molecules by bacteria and fungi in synergy with insects and animals. An effective, profitable, and culturally relevant method for increasing soil organic carbon is by restoring grasslands worldwide to their optimal health.

Indigenous Pastoralists
Indigenous pastoralists herd their livestock over the bofedales and into the grasslands, on a rotating basis, to graze and trim the plant life without overgrazing, keeping the terrain healthy.

Bofedales are found among the 100,000 acres of grassland that are fundamental to Picotani culture, alpacas, vicuñas and biodiversity. Photo by Robert Els.

Bofedales are the third component of the virtuous highland cycle. They depend on photosynthesis to grow tiny flowers with deep roots that sequester more carbon than massive forests. This ability to sequester and store carbon dioxide (CO_2) may provide an opportunity for these indigenous communities to supply carbon credits to the world.

Grasslands are the fourth necessary element in the virtuous cycle.

> *"Peatlands represent just 3% of the world's terrestrial surface, but store 2x as much carbon as all the world's forests combined."*[1]
>
> —Edward Struzik

According to this quote from the Savory Institute, "All organic carbon sequestered in the highland soils is extracted from the atmosphere and converted to complex molecules by bacteria and fungi in synergy with insects and animals. An effective, profitable, and culturally relevant method for increasing soil carbon is restoring grasslands worldwide to their optimal health.

To accomplish this at the scale and pace that we need, Holistic Management™ and one of its associated processes, Holistic Planned Grazing™ which offers us a tangible way to restore our climate by properly managing livestock to build soil life.

Since the 1970s Holistic Management's effectiveness has been well documented on millions of hectares on four continents. By restoring or maintaining grasslands through Holistic Planned Grazing, we have the potential to remove excess atmospheric carbon resulting from both anthropogenic soil loss over the past 10,000 years and industrial-era greenhouse gas emissions."[2]

*Plants like **distichia muscoides**, shown above, grow in the bofedales. Their roots can stretch up to 6ft deep into the Earth to help the landscape retain water. Photo by Robert Els.*

1 The Bog Squad. *You Asked 1,000 Questions about Peatlands, and Our Bog Experts Answered (Some of) Them,* The New York Times, 5 May 2022, https://www.nytimes.com/explain/2022/05/05/headway/peatlands-wetlands-bogs-swamps-fen.

2 Savory Institute. "Restoring the Climate through Capture and Storage of Soil Carbon." *Savory.* https://savory.global/restoring-the-climate-through-capture-and-storage-of-soil-carbon/

Forests around the world are credited as important carbon sinks. However, they are being cut down at the rate of hundreds of football fields daily, releasing CO_2 back into the atmosphere (especially if a forest fire occurs), with no end in sight. It's nearly impossible to burn a bofedale as it sequesters its carbon below ground.

Like bofedales, grasslands store carbon within their roots and soil. Trees on the other hand, store their carbon in their leaves and branches above ground. As global warming continues to create unstable and unpredictable conditions and forest fires in our environment, these grassy knolls and wetlands stand as the more resilient CO_2 combatant.

LEFT: A small family of Picotani's vicuña. Photo by Robert Els

BELOW: Mike Safley, Dale Cantwell, Alejandro Tejeda and Luis Villegas examine peat from a giant bog at 15,000 feet above sea level. Photo by Robert Els.

In Peru, this story paints a beautiful landscape managed by the indigenous Quechua people, that can help defeat global warming, and create a virtuous cycle of clean air for the world to breathe. But there are villains, mines, and the big industrial cities like Lima, who lure the able-bodied men away from their communities, in search of a living wage to fight their family's poverty.

Illegal mines in particular are an example of an extractive industry that degrades the land and battles with environmental advocates in the fight against global warming. One of the most famous of these mines, La Rinconada, operates just 25 miles from Picotani. It represents good versus evil.

The town of **La Rinconada** fills the air with an eye watering stench before you can even see it. With a population of 50,000, this gold mining town is the largest high-altitude community in the world. With the lack of infrastructure, there is no waste pick up or running water. Only the seagulls seem unfazed by the stink.

> *It takes approximately 250 tons of earth to mine enough gold for an average wedding band.*[3]
>
> —River of Gold Documentary

The illegal gold mining operators are at odds with this virtuous cycle in the Peruvian Altiplano. They mine for gold and other minerals in a manner that destroys ecosystems, displaces wildlife, and releases vast quantities of CO_2 and poisonous gas back into the atmosphere.

The potential mass exodus of Quechua alpaca shepherds from the highlands is another threat. One owner of a very large textile firm said, "We are afraid that there will no longer be and adequate supply of alpaca fleece in the next 10 to 20 years." Another mentioned, "The alpaca breeders do not want to raise alpacas anymore. They want to move to the big cities or work in the mines."

A mother and daughter tend the family's alpacas across the Andean rooftop just as their ancestors have always done. Photo by Ana Caroline de Lima

The reason alpaca shepherds are leaving is simple. Most families living in the remote, tiny alpaca breeding communities own between 25 – 100 alpacas. Their income is between $1,200 to $4,800 annually. This is certainly not what you would call a living wage for a family of five. We spoke with Sarita recently, a resident of Picotani, and asked her what it's like to live in her community.

*"**It is sad, we don't have enough of anything.** Our men are leaving to work in the mines and the kids are leaving for the big cities. It has been a little better since the sale of the wild vicuña's fiber has been made legal."*

3 River of Gold, Directed by Sarah Dupont and Reuben Aaronson. Final cut. 2018

This is the United Nations' Sustainable Development Goals (SDG) chart of which Quechua Benefit has implemented many of the items as identified above in their partnership with Picotani, which began in the year 2000.

The United Nations created a global framework for their Sustainable Development Goals (SDG). These goals are meant to guide project development by corporations, governments, philanthropists, and nonprofits when designing projects around the globe. The #1 goal for the United Nations Sustainable Development Goals (UN SDG) is No Poverty: end poverty in all its forms everywhere by 2030.

The principal behind the SDG goals is that projects should align themselves with as many goals as possible to create a positive impact on people, planet, prosperity, peace, and partnership.

The alpaca breeders leaving the mountains for the mines and cities are not making a simple binary choice. They inherit their alpacas, just as they inherit their culture. The way they manage the ecology of their land is based on their belief in Pachamama. Their way of life and their communities have existed for over 8,000 years. For their culture, the grasslands, bofedales, and their alpacas and vicuña to survive they simply need to make more income from their fleece sales.

The Quechua women of the highlands are tough, stoic, and connected to their way of life. Photo by Wasim Muklashy

The illegal miners of La Rinconada are not the alchemists from 1,000 years ago, but they are driven by the same desire to possess gold. The motives are timeless; the opportunity for higher income to support families, educate children, and escape grinding poverty.

> *"The motivation is luck.*
> *The luck of finding a good quantity*
> *of gold, the luck of finding a hidden vein."*[4]
>
> —Richard Arpita Uchiri
> (Miner in La Rinconada since 2010)

The labor and pay system at the mines set the hook deep into those who would be "lucky" in hope of supporting their families. The payment scheme is known as *cachorreo*. The workers provide free labor to the illegal mine operator for up to 30 days followed by a single day where the worker can keep whatever gold they can find and haul on their own.

> After subtracting the costs of a small processing fee, which is set according to how much mercury is used, Wilfredo Paredes is happy to receive his 580 soles (approximately $200 depending on price of gold and the exchange rate). He flares the bills in the air, like a teenager who has just cashed his first paycheck. But it may be be two weeks before Paredes receives any more compensation.[5]

4 Raison, Victor. "'Annihilation by Pollution': Peru's Toxic Gold Mines." *The Telegraph,* Telegraph Media Group, 15 Mar. 2022, https://www.telegraph.co.uk/global-health/climate-and-people/perus-toxic-gold-mines/.

5 Why the heavens of Peru are a hell of a place to seek a fortune. Mining above the highest-known inhabited settlement in the world? Under the ice? Is there no limit to what can be borne by a global gold rush? By Jennifer Wells, Star Business Columnist

The La Rinconada illegal mine has been compared to Sodom and Gomorrah. In the biblical tale where God rained fire and sulfur on the two cities, the rain in La Rinconada is acidic. "This isn't life, this is murder."[6]

The contrast between good and evil cannot be starker. Picotani, located 25 miles west of La Rinconada, practices slow water conservation that feeds the bofedales, which sequester 10x more CO_2 per acre than the Amazon Forest. This community is the protector of the once endangered vicuña and practices holistic grazing that nurtures the 100,000 acres of grassland within their borders.

"The Water from La Rinconada DOES NOT flow through Picotani. It goes north past San Anton then through Azángaro, then on to Lake Titicaca."

—Dale Cantwell,
Executive Director, Quechua Benefit

The irony of this story is shocking. It pits the indigenous people that leave their pastoralist culture to engage in illegal mining against their own communities who are living with Pachamama's vision of harmony with nature.

The grasslands in the Altiplano of Peru grazed by vicuña and alpaca sequester approximately 200 million tons of CO_2 emissions annually. Once this land is no longer holistically managed, the dry barren earth will reveal itself and release a millennium's worth of carbon back into the atmosphere.

Don Julio Barreda, the world's finest alpaca breeder, with a fleece that weighs 20 pounds. The average alpaca fleece in Peru weighs 6 pounds. Photo by Mike Safley

In a survey of 30,000 consumers across 60 countries, 66% of consumers are willing to pay more for products or services from companies committed to positive social and environmental impact.

—2015 Nielsen Survey
How Socially Responsible Companies are Turning a Profit

The pastoralists want to stay put just as their forebears did for thousands of years, but they cannot live on a few dollars a day. The obvious solution is for the pastoralists to receive more money for every pound of fleece they produce. Companies insist on squeezing out every drop of profit from the bottom of the supply chain and they soon may succeed in squeezing billions of tons of carbon back into the atmosphere.

6 Raison, Victor. "'Annihilation by Pollution': Peru's Toxic Gold Mines." *The Telegraph,* Telegraph Media Group, 15 Mar. 2022, https://www.telegraph.co.uk/global-health/climate-and-people/perus-toxic-gold-mines/.

The people of Picotani are industrious, focused on improving their standard of living in a sustainable manner. The community reached out to Quechua Benefit for assistance with a water project that would accomplish this goal of increasing the individual family income.

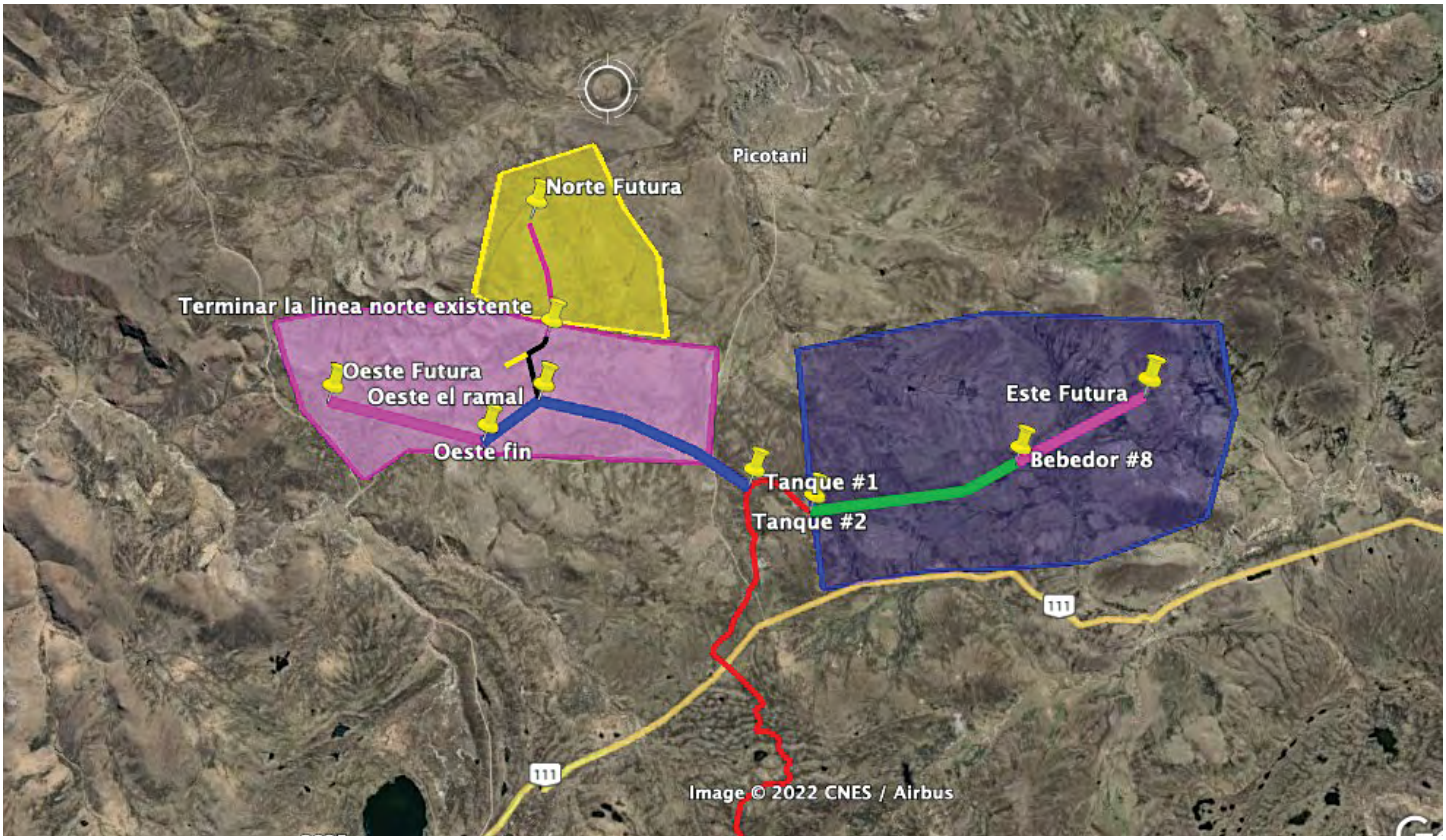
This particular water conservation project will impact an estimated 3,166 acres of land, allowing for an additional 1,282 vicuña to be supported in the area (the sixth component of the virtuous cycle). This project checks off SDG goal #6: Clean Water and Sanitation (bonus, it enhances the carbon sequestration capacity of the area) and SDG goal #11: Sustainable Cities and Communities. This additional vicuña population will produce an additional $283 of annual income for each family in the community. This accomplishes SDG goal #8: Decent Work and Economic Growth.

These additional animals also support one of three Quechua Benefit "Breaking the Cycle of Poverty," goals: 1) economic empowerment through increased income per person and family unit. SDG GOAL 2: Zero Hunger.

Part of this water project focuses on establishing a new vicuña habitat that channels water to regenerate

The women of Picotani hand dehair vicuña fleece. The bag contains 2 pounds of fleece worth $1,282. Photo by Ana Caroline de Lima

the bofedales. By increasing the availability of water, especially during the dry season, the potential influx of an additional 1,282 vicuñas supports UN SDG Goal #15: Life on Land. To put this into perspective, the fleece produced by these additional vicuñas, worth $48,075 annually, adds an additional $283 of annual income for each family in the community. Imagine receiving a 10% to 42% pay raise in a year. This is SDG goal #10: Reduced Inequality.



Picotani's water conservation project designed by Dale Cantwell, Executive Director of Quechua Benefit, and constructed by the Picotani community. Photo courtesy of Google Earth

Picotani is vast, high, and picturesque. Photo by Wasim Muklashy.

Our goal is to create partnerships with various indigenous communities that may have vicuña habitat within their property lines. Through proper education and training, we can help revitalize the health of their grazing pastures, allowing for additional vicuñas and thus increasing the overall economic growth of their community and attract donors and investors.

Quechua Benefit would develop and manage these projects. The interested parties would provide the capital for a feasibility study and construction funds to build the project. The community would own the additional Vicuña's fiber production pursuant to Peruvian law and agree to assign the voluntary carbon credits created by the project to the NGO and the investor once the community agreed on the development plan and construction is complete.

Quechua Benefit is a registered NGO in both Peru and the United States, founded in 1996. They would use their share of the carbon credit sales, after a return of the investor's capital, first to operate their social justice programs in Picotani and, if sales permit, additional Andean pastoralist communities.

Quechua Benefit
FOUNDED 1996

The partnership proposal is aligned with the United Nations Sustainable Development Goals, particularly the last goal; SDG GOAL 17: Partnerships to achieve the Goal. This goal's objective is to bring together multi party partnerships consisting of governments, public finance corporations, public corporations, private investors, donors, and NGOs in pursuit of all the individual United Nation's goals. The goal 17 guidelines include the following objectives.

1. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

2. Mobilize additional financial resources for developing countries from multiple sources.

3. Adopt and implement investment promotion regimes for least developed countries.

This new partnership may well become the global warming alchemists of a new age.

Quechua Benefit is a registered 501(c)(3) nonprofit organization that works in the remote highlands of southern Peru. They work with Quechua families to break the cycle of poverty through programs in:

- **EDUCATION**
- **ECONOMIC EMPOWERMENT**
- **PREVENTATIVE MEDICINE**

All of these services touch on the UN SDG Goals to ultimately end poverty in all forms by 2030.

Interested parties can contact Mike Safley, Founder of Quechua Benefit at mike@alpacas.com or 503.703.6020 and Dale Cantwell, Executive Director, Quechua Benefit at Dalecantwell@yahoo.com or 303.902.4503.