

American University Washington College of Law

Digital Commons @ American University Washington College of Law

PEEL Alumni Scholarship

Program on Environmental and Energy Law

Winter 2009

Mongolia: A Case for Economic Diversification in the Face of a Changing Climate

Nathan Borgford-Parnell

Follow this and additional works at: https://digitalcommons.wcl.american.edu/peel_alumni

Mongolia: A Case for Economic Diversification in the Face of a Changing Climate

Nathan Borgford-Parnell

Follow this and additional works at: <http://digitalcommons.wcl.american.edu/sdlp>



Part of the [Environmental Law Commons](#), and the [International Law Commons](#)

Recommended Citation

Borgford-Parnell, Nathan. "Mongolia: A Case for Economic Diversification in the Face of a Changing Climate." *Sustainable Development Law & Policy*, Winter 2009, 54-56, 75-76.

This Article is brought to you for free and open access by the Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. It has been accepted for inclusion in *Sustainable Development Law & Policy* by an authorized administrator of Digital Commons @ American University Washington College of Law. For more information, please contact fbrown@wcl.american.edu.

MONGOLIA: A CASE FOR ECONOMIC DIVERSIFICATION IN THE FACE OF A CHANGING CLIMATE

by Nathan Borgford-Parnell*

INTRODUCTION

In the past two decades Mongolia has experienced significant environmental changes driven both by human action and climate change. These changes have had considerable detrimental effects on Mongolia's economy and people. Basic survival in this country of harsh climates requires a careful balance with the environment.¹ Climate change, which may exacerbate climatic extremes, in combination with unsustainable land use practices, have begun to change that balance and reveal Mongolia's significant environmental vulnerabilities. In response to these changing conditions, the Mongolian government instituted a number of mitigating and adaptive measures to decrease its vulnerability, but without further economic diversification the success of these measures is limited.

Basic survival in this country of harsh climates requires a careful balance with the environment.

In more recent years, Mongolia has begun to depend upon its rich mineral resources to diversify its economy away from a dependence on the more traditional vocations of herding and animal husbandry. Although diversification is the key to Mongolia's future, these mining operations pose additional real threats to Mongolia's fragile environment and represent only one economic alternative to animal husbandry. Mongolia's economic diversification should include the development of renewable energy resources. Mongolia has strong, untapped wind and solar resources in abundance and their development may help tilt the environmental balancing act back towards sustainability.²

CLIMATE CHANGE ON THE STEPPE

Climate change is making Mongolia both warmer and drier.³ Over the past sixty years, Mongolia's mean temperature has increased by 3.4°F, compared to the global mean of 1°F in the past century.⁴ Rainfall is also more infrequent and heavier, which is increasing erosion on already fragile pastureland.⁵ Mongolia's glaciers, which feed many of the country's rivers, have decreased in flow causing approximately fifty of the country's rivers to vanish between 2004 and 2005.⁶



Photo courtesy of Nathan Borgford-Parnell

The combination of these effects is causing a significant drying of Mongolia's soil.⁷ Desertification has become so significant that Mongolian dust storms are causing environmental impacts on countries as far away as Japan.⁸ As of 2002, over seventy percent of Mongolia's pastureland was considered degraded.⁹ This has led to a decrease of pasture biomass of 20–30% over the past twenty years.¹⁰ Livestock fodder production today is one third that of 1986 production numbers.¹¹

Mongolia's livestock live on open pastures year-round, making them susceptible to any severe changes in the weather, climate, or changes in biomass. Typically, the animals build up fat stores during the summer to help them get through the harsh Mongolian winters. However, with the decrease in pasture biomass it is much more difficult for the animals to build the reserves they need.¹²

Mongolia depends upon the livestock industry both for employment and basic food products. Almost fifty percent of Mongolians are employed in animal husbandry or a related field.¹³ Livestock accounts for thirty-four percent of annual gross production and thirty percent of Mongolia's total exports.¹⁴ However, pasture degradation brought on by climate change is only partially to blame for these changes. Institutional and economic collapse of the Mongolian government in the early 1990s conspired to exacerbate the damage that climate change was already doing to Mongolia's pasturelands.¹⁵

*Nathan Borgford-Parnell is a J.D. candidate, May 2009, at American University, Washington College of Law. He is also the founder of Valkyrie Energy LLC, a renewable energy development firm focusing on new and developing markets.

THE FALL OF COMMUNISM AND THE RISE OF THE HERD

In 1990, Mongolia's peaceful transition from a communist regime to a democratic government signaled the dissolution of the central planned economy and state-subsidized systems of food distribution. As a result of this transition, virtually overnight thousands of Mongolians found themselves out of work. Many Mongolian families, searching for a means of survival, turned to traditional livestock herding to fill the economic void. Between 1990 and 2001 the number of herding households in Mongolia more than doubled, from 75,000 to 185,500.¹⁶ Many of the new herding families had no experience in animal husbandry and were unaccustomed to the careful and balanced nature of traditional nomadic herding.¹⁷

Prior to the 1990 transition, the communist government limited the number of livestock in the country to about fifteen million; with its dissolution and the introduction of a market economy livestock populations grew unchecked.¹⁸ Without centralized controls, livestock populations ballooned until 1999 when herd populations reached thirty-three million, more than ten times the number of people in Mongolia.¹⁹

The meteoric increase in herd populations combined with the decrease in biomass discussed above left Mongolia supremely vulnerable to any dramatic shift in environmental conditions. This vulnerability became most evident between 1999 and 2002 when Mongolia was hit with four historic droughts and abnormally severe winters.

MONGOLIA'S LONGEST WINTER

In Mongolian *dzud* is a term for severe winter weather conditions of the type that are so extreme they can prevent animals from grazing on open pastures.²⁰ *Dzud* are quite common in Mongolia, occurring typically once every seven years, but always in localized areas.²¹ However, between 1999 and 2002 Mongolia experienced three *dzud* in sequence each covering approximately seventy percent of the country.²² The *dzud* were preceded by particularly dry summers where over three thousand water sources, including 680 rivers and 760 lakes, literally disappeared, decimating the already stressed and low weight livestock population.²³

In four years, more than eleven million adult animals died from the combination of extreme summer droughts and severe winter weather.²⁴ The loss of so many animals was devastating to Mongolia's herders as almost ten thousand families lost their entire herd and seventy-five percent of the remaining families were left with herds below maintenance levels.²⁵ The economic impact of the 1999–2002 *dzud* is estimated at over 200 million U.S. dollars and dropped Gross Domestic Product growth to 1.1% from 3.2% in 1998.²⁶

Climate change deserves much of the blame for this tragic convergence of events but its effects would have been much more localized were it not for the unpreparedness of the Mongolian state. The institutions of the new Mongolian state were not prepared to manage the drastic increase in new herding families, or the dramatic changes brought about by the new market economy. This left the government agencies unable to cope with rapidly changing environmental conditions and the herders with little to no capacity to adapt to the deteriorating environment.

NEW INSTITUTIONS NOT UP TO THE TASK

In 1990 the new Mongolian state dismantled the communist era herding collectives that had managed herd populations and allocated pastureland for over half a century.²⁷ The remaining traditional and customary institutions for pasture management could not cope with the influx of new herding families, and so the responsibility fell to the new government.²⁸ Stepping into the void, the Mongolian government passed a battery of laws

and regulations seeking to lay a foundation for environmental protection, ease pressures on pastureland, and strengthen the capacities of herders to adapt to changing conditions. Between 1990 and 2000 Mongolia passed more than twenty laws regulating land rights and environmental standards.²⁹

There is little question that the Mongolian government recognized the significance of the problems and challenges it faced. The real impediment is

not a lack of will, but institutional capacity. Overall coordination between the agencies and institutions tasked with environmental protection and pasture management was often limited.³⁰ While the laws were robust, the administrative procedures for implementation had no clear guidelines for dealing with administrative overlaps.³¹ Agencies tasked with pasture management suffered from a significant lack of resources, both in trained personnel and budget.³² Nowhere was this more true than at the local level where small community governments were tasked with the lion's share of environmental and pastureland management and oversight.³³

Following the *dzud*, the Mongolian government, international donors, and multilateral institutions took action to combat the worst effects of the disaster. In 2003 Mongolia passed the Law on Disaster Protection, designed to improve coordination between government and institutional actors within the context of existing environmental and pastoral management laws.³⁴ The World Bank implemented the Sustainable Livelihoods Project, designed to improve institutional capacity for pastoral risk management, develop funds for local development, and make micro-finance more available to rural households.³⁵

While significant effort has been made to mitigate and prevent future disasters, Mongolia has thus far only had limited

Desertification has become so significant that Mongolian dust storms are causing environmental impacts on countries as far away as Japan.

success in changing the paradigm of environmental vulnerability for its herding families. If any silver lining can be found from the 1999–2002 *dzud*, it is the fact that tens of thousands of herders were forced out of the industry, thereby decreasing pressure on critically damaged pastureland. Unfortunately, by 2008 herd populations have climbed back to their 1999 numbers, once again threatening pastureland with extreme overgrazing.³⁶ As of January 2009, 120,400 live-stock have died from extreme winter temperatures in Mongolia, nearly a seventy percent increase from 2008; it remains to be seen whether Mongolia's institutions are ready for another hard winter.³⁷

CONCLUSIONS: ECONOMIC DIVERSIFICATION, THE KEY TO MONGOLIA'S FUTURE & A ROLE FOR RENEWABLE ENERGY

There are two general means of addressing the human vulnerabilities to climate change in developing countries: mitigation and adaptation.³⁸ While the Mongolian government must continue its progress in institution-building and environmental protection to help mitigate human impact on the environment it must also focus on diversifying its economy away from a dependence on one or two industries. For Mongolia's herders, economic diversification is the key to decreasing their vulnerability to changing climatic conditions. Economic diversification is an adaptive measure that will decrease herder vulnerability to climate change by providing the ability to move away from animal-husbandry, easing pressures on the environment and government.

Unfortunately, the Mongolian economy has only had a limited capacity to diversify away from a dependence on herding. The two largest industrial sectors in Mongolia today are animal husbandry and mining of coal, gold and copper.³⁹ The formal mining industry is Mongolia's fastest growing industry, currently accounting for a third of Mongolia's economy; recent surveys of miners found that more than fifty-five percent are from families that lost their herds during the *dzud* and turned to mining to survive.⁴⁰

While mining has helped take some of the pressure off herders, dependence on mining will only further stress Mongolia's fragile environment. However, under the right conditions

*The dzud were preceded
by particularly dry
summers where over 3000
water sources, including
680 rivers and 760 lakes,
literally disappeared.*

Mongolia's mining growth can be a windfall for the country, especially if it is used to spur new forms of development, particularly in the field of energy generation. Mongolia should use this opportunity to invest in renewable energy, particularly in rural communities. As a nation, Mongolia has strong, proven wind and solar resources that it has yet to tap on a commercial basis.⁴¹ The development of such resources can help Mongolia adapt to changing

environmental conditions, spur new industry in rural communities and help shift the country away from an exclusive dependence on coal for power generation.⁴²

Global experience has shown a strong positive correlation between increases of stable electricity use and economic growth in developing nations.⁴³ Stable electrical distribution provides a strong foundation for new commercial and industrial opportunities for small communities, as well as an increase in working hours and productivity.⁴⁴ In addition to creating a new economy based on domestic, clean, and unlimited resources, renewable energy development will create new jobs and facilitate development in rural communities.

Development of renewable energy will also strengthen Mongolia's commitment to environmental protection by decreasing its own generation of greenhouse gasses. As energy services come on-line in Mongolia's rural communities, families will have a broader range of choices in securing their economic future. Economic diversification will strengthen local communities and local institutions, thereby improving capacity to protect pastureland and bringing herding practices back into equilibrium with the environment. While Mongolia's actions alone cannot reverse the effects of climate change, giving its citizens the economic flexibility to adapt to those changes without overburdening its already fragile, harsh environment will go a long way towards preventing the kind of catastrophic disaster that occurred between 1999 and 2002.



Endnotes: Mongolia

¹ See generally P. Batima et al., *Observed Climate Change in Mongolia* (AIACC, Working Paper No. 12, 2005), available at www.aiaccproject.org/working_papers/Working%20Papers/AIACC_WP_No013.pdf (last visited Feb. 25, 2009).

² WORLD WILDLIFE FUND, OVERVIEW OF CLIMATE CHANGE ISSUES IN MONGOLIA (2006), available at http://assets.panda.org/downloads/climate_change_issues_mn_oct2006.pdf (last visited Feb. 25, 2009).

³ P. Batima et al., *supra* note 1, at 23.

Endnotes: Mongolia continued on page 75

- ⁴ Stefan Lovgren, *Climate Change Driving Mongolian From Steppe to Cities*, NAT'L GEOGRAPHIC NEWS, February 21, 2008, available at <http://news.nationalgeographic.com/news/2008/02/080221-mongolia-herders.html> (last visited Feb. 25, 2009).
- ⁵ *Id.*
- ⁶ See generally William Kennedy, *Survey: Bad News Around the bend for Mongolia's Water Supply*, UB POST, Dec. 4, 2008.
- ⁷ THE WORLD BANK, LAND RESOURCES AND THEIR MANAGEMENT: MONGOLIA ENVIRONMENT MONITOR iii (2003).
- ⁸ L. OCHIRKHUYAG & R. TSOLMON, ISPRS, MONITORING THE SOURCE OF TRANS-NATIONAL DUST STORMS IN NORTH EAST ASIA 835 (2008), available at http://www.isprs.org/congresses/beijing2008/proceedings/7_pdf/5_WG-VII-5/17.pdf (last visited Feb. 25, 2009) (The increased dust storms carry air pollutants from China and Mongolia to neighboring states, damaging human and animal health. Dust storms have also been responsible for grounding aircraft and closing businesses and schools).
- ⁹ UN ENV'T PROGRAM [UNEP], MONGOLIA STATE OF THE ENVIRONMENT 2002 53 (2002), available at, http://www.ricap.unep.org/reports/soe/mongolia_part1.pdf (last visited Feb. 25, 2009).
- ¹⁰ N. Enkhbayar, President of Mongolia, Climate Change Concerns in Mongolia, Address at Columbia University World Leaders Forum (Oct. 29, 2007), available at <http://www.ambassademongolie.fr/Article/89-climate-change-concerns-in-mongolia.html> (last visited Feb. 25, 2009).
- ¹¹ *Id.*
- ¹² *Id.*
- ¹³ P. Batima et al., *supra* note 1, at 5. See also UNEP, *supra* note 9.
- ¹⁴ UNEP, *supra* note 9.
- ¹⁵ See generally Maria Fernandez-Gimenez & B. Batbuyan, *Law and Disorder in Mongolia: Local Implementation of Mongolia's Land Law*, 35 DEV. AND CHANGE 1 (2002).
- ¹⁶ THE WORLD BANK, MONGOLIA ENVIRONMENT MONITOR 2003: LAND RESOURCES AND THEIR MANAGEMENT 16 (2003) [hereinafter LAND RESOURCES], available at <http://siteresources.worldbank.org/MONGOLIAEXTN/Resources/MEM2003.pdf> (last visited Feb. 25, 2009).
- ¹⁷ See Maria Fernandez-Gimenez, *Sustaining the Steppes: A Geographical History of Pastoral Land Use in Mongolia*, 89 THE GEOGRAPHICAL REV. 3 (1999).
- ¹⁸ LAND RESOURCES, *supra* note 16, at 17.
- ¹⁹ Stefan Lovgren, *supra* note 4.
- ²⁰ P. Batima et al., *supra* note 1 (There are two types of *dzud*, *white dzud* and *black dzud*, in a *white dzud* the snow and ice is so thick that animals are unable to forage for food. In a *black dzud* there is so little snow and ice that livestock have no water to drink).
- ²¹ THE WORLD BANK, ENV'T AND SOC. DEV. DEP'T, DISCUSSION PAPERS: MONGOLIA: A REVIEW OF ENVIRONMENTAL AND SOCIAL IMPACTS IN THE MINING SECTOR vii (2006) [hereinafter WORLD BANK], available at <http://siteresources.worldbank.org/INTMONGOLIA/Resources/Mongolia-Mining.pdf> (last visited Feb. 25, 2009).
- ²² P. BATIMA, AIACC, CLIMATE CHANGE VULNERABILITY AND ADAPTATION IN THE LIVESTOCK SECTOR OF MONGOLIA (2006) [hereinafter CLIMATE CHANGE], available at http://www.aiaccproject.org/Final%20Reports/Final%20Reports/FinalRept_AIACC_AS06.pdf (last visited Feb. 25, 2009).
- ²³ P. Batima et al., *supra* note 1, at 24.
- ²⁴ CLIMATE CHANGE, *supra* note 22, at xvii.
- ²⁵ LAND RESOURCES, *supra* note 16, at 22, 27.
- ²⁶ Olivier Mahul, Senior Insurance Specialist, The World Bank, Insurance for the Poor Program, Address at Regional Workshop on Microinsurance: Index-Based Livestock Insurance in Mongolia (Jan. 17, 2008) (on file with the author).
- ²⁷ See generally Fernandez-Gimenez & Batbuyan, *supra* note 15.
- ²⁸ See *id.* at 2.
- ²⁹ LAND RESOURCES, *supra* note 16, at 31.
- ³⁰ *Id.*
- ³¹ *Id.*
- ³² *Id.* at 3.
- ³³ *Id.* at 31.
- ³⁴ P. Batima et al., *supra* note 1, at 5. See also Dashnayam Nachin, Natural Disasters in Mongolia and Some Experiences on Strengthening Disaster Protection Capacity (July 2006) (unpublished abstract for presentation at 2006 APEA Conference) (on file with the author).
- ³⁵ The World Bank, Rural Development & Agriculture in Mongolia: Overview, <http://go.worldbank.org/YKHTMU79W0> (last visited Feb. 17, 2009).
- ³⁶ Lovgren, *supra* note 4.
- ³⁷ See MONGOLIA WEB NEWS, *Herders report 120,000 animals lost in January* (Feb. 23, 2009), available at <http://www.mongolia-web.com/content/view/2248/2/> (last visited Feb. 25, 2009); see also Fang Yang, *Over 60,000 livestock die in hard winter in Mongolia*, XINHUA NEWS, Feb. 2, 2009, available at http://news.xinhuanet.com/english/2009-02/02/content_10752836.htm (last visited Feb. 25, 2009).

³⁸ SETH VORDZORGBE, CLIMATE CHANGE AND RISK MANAGEMENT IN AFRICA: MAJOR ISSUES 2 (2007).

³⁹ CIA, The World Factbook, Mongolia, <https://www.cia.gov/library/publications/the-world-factbook/geos/mg.html> (last visited Feb. 17, 2009).

⁴⁰ THE WORLD BANK, MONGOLIA MINING SECTOR: MANAGING THE FUTURE 24 (2005), *available at* http://siteresources.worldbank.org/MONGOLIAEXTN/Resources/Mongolia_Mining_sector_report_ENG.pdf (last visited Feb. 25, 2009) (In addition to the environmental concerns related to mining, Mongolian artisanal miners live in some of the worse and most dangerous conditions in Mongolia. In 2002 more than 100 artisanal miners reportedly died in mining accidents although this number is likely to be grossly underestimated because accidents are only recorded when the Mine Rescue Service is called for help).

⁴¹ *See* D. ELLIOTT ET AL., NATIONAL RENEWABLE ENERGY LABORATORY, WIND ENERGY RESOURCE ATLAS OF MONGOLIA (2001), *available at* <http://www.nrel.gov/wind/pdfs/28972.pdf> (last visited Feb. 25, 2009).

⁴² *See id.*

⁴³ *See* Seung-Hoon Yoo, Electricity consumption and economic growth: evidence from Korea (Mar. 19, 2004) (unpublished paper for Hoseo University School of Business and Economics, Republic of Korea) (on file with the author).

⁴⁴ MARK BERNSTEIN ET AL., PEW CENTER ON GLOBAL CLIMATE CHANGE, DEVELOPING COUNTRIES & GLOBAL CLIMATE CHANGE (2006), *available at* http://www.rand.org/pubs/monograph_reports/2006/MR1102.pdf (last visited Feb. 25, 2009).