



Review article

The half-lives of African uranium: A historical review



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ABSTRACT

This review examines the history of uranium mining in sub-Saharan Africa to contextualize recent extraction developments on the continent. From the secretive days of uranium mining in the first half of the twentieth century to today's ambitions of African nations to domestically mine uranium and generate nuclear power, Africa remains largely invisible from the global nuclear record in spite of its historical significance. The Cold War dynamics that bound the nuclear world are increasingly untenable as African states turn to nuclear power to meet growing energy deficits. This article reveals how African states challenge narratives serving to obscure the African origins of uranium. Connecting the history of uranium mining with non-proliferation agreements and aspirations for nuclear power, this review examines the current place of Africa in the nuclear world, and looks to the future.

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1. Introduction

This review explores the history of African uranium in the global nuclear context, from the rush for strategic resources in the early days of nuclear knowledge to the nonproliferation, anti-

colonial, anti-racist Cold War atmosphere, to the increasingly pro-extraction rhetoric seen today. Integrating that mineral history with that which led to the 1996 agreement among African countries to not manufacture, acquire, test, or assist in the creation of nuclear weapons, will bring the many permutations of uranium

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into the same article. Doing so will challenge simplistic narratives that segregate uranium ore from refined uranium, often in the process erasing the African mines that served as sources for the mineral. The objective of this review will be to gain a greater understanding about African uranium, about the global uranium market, and about the continent of Africa and its changing place in the world.¹

Fuel for power plants, weapons, and medical isotopes are among the diverse end products stemming from a single source: raw uranium ore. The connection between raw uranium and end products is often difficult to trace. Along the path from uranium ore to feared weapon or powerful, modern energy source, the deletion of the link between the raw mineral and the end products is worthy of additional academic focus. Therefore, an examination of African uranium cannot be separated into peaceful and military purposes. Hecht (2012a) argues that technopolitics brokers “nuclearity,” whether something is considered banal or part of the nuclear supply chain and therefore extraordinary. The duality of uranium—as a fuel for peaceful electricity generation and as a feared weapon—leaves room for ambiguous interpretation of the naturally occurring, raw mineral. Applying this premise, it is crucial to follow the supply chain of African uranium from its sources of origin, through transport and processing, to end products. Highlighting the tangibility of this mineral, the physical experience of African interactions with uranium in its various forms will also be reviewed.

This article will also follow the themes of modernity of nuclear power and the military priority of controlling the development of nuclear weapons that consistently obscure the African roots of uranium in the international nuclear market. Playing on the concept of radioactive decay, or the amount of time required for a radioactive atom to lose protons or neutrons and become another element, I consider how this can be applied to the politics of African uranium. Looking at the politics from the early days of mining African uranium until today, how much have the politics shed previous attitudes and shifted, and how much have remained constant? American dominance following the Second World War triggered efforts by France and the U.K. to undertake efforts to retain prestige and power in the waning days of empire. I will illustrate how this resulted in erasing the role of Africa in their rise to nuclear prominence. The politics of the Cold War served to obscure African perspectives on African uranium by narrowly focusing on narratives coming from the “great powers.” This convergence of military, technical, and political needs served to promote the interest of nuclear states and erase the role of Africa. At the end of colonialism, aging Cold War and colonial dynamics became increasingly tenuous and the narratives that hid Africa’s presence in the nuclear world continued to be revealed and negotiated. Old colonial rationalities tying once colonial powers to former colonies are increasingly challenged by investment and interest from rising powers—Brazil, Russia, India, and China. This article argues that, in some ways, the old logics cannot hold with regards to the continued development of international nonproliferation agreements with roots in prior eras. The security perceived to be afforded to countries with nuclear weapons and the modernity associated with nuclear energy production, once the sole domain of former (neo)colonial powers, perhaps are shifting, reflecting a geopolitical half-life for African uranium. However, paternalistic attitudes skeptical of the possibility of a future of African uranium or nuclear aspirations that appeared throughout history may not yet be at the point of decay.

This article will begin with an overview of secondary sources reviewing uranium mining, processing, and marketing,

underscoring the politics influencing the obfuscation of the African origins of uranium and the continental history of physical contact with uranium.² Turning to history that identifies African agency, the article will examine the origins of the African Nuclear-Weapon-Free Zone (NWFZ) Treaty (Pelindaba Treaty) through its entrance into force. With that historical background, this article will then examine recent developments in the field of nuclear power, including increasingly optimistic outlooks on African nuclear power, and the associated impacts on uranium mining. More than two decades after the signing of the Pelindaba Treaty, it is time to rethink the role of African uranium in a rapidly warming, post-Fukushima world, with increasingly energy-hungry sub-Saharan African countries.

2. Uranium and its global historical context

The history of African uranium mining, processing, and marketing falls into three general time periods. The first period, before the use of the first atomic weapons, reflects a time leading to the militarization of uranium. The second begins with the use of the first atomic bomb and lasts through the end of the colonial era, attending to the three major actors (the U.S., the U.K., and France) in African uranium mining. The third period spans the post-colonial era to present. Though the Cold War and associated nuclear arms race undoubtedly impacted the atmosphere around uranium mining, processing, and marketing, the analysis below will highlight how the struggles of the nuclear powers were, in many ways, separate from the dynamics impacting uranium across the African continent. Trends in uranium mining and processing taking place outside of sub-Saharan Africa will not be considered in depth in this article.³

2.1. Pre-nuclear weapons

In the late 1700s, uranium was discovered in Bohemia, and grew in use as a glass and ceramic glaze. From the discovery of radioactivity by Henri Becquerel in Europe, its use and popularity expanded as a medical treatment (Bothwell, 1984) and as a luminescent glaze.⁴ At the turn of the twentieth century, the research of Marie and Pierre Curie revealed the properties of radium and uranium, as well as the associated radiation. Private companies took the lead on mining and marketing the valuable radium, during this time (Bothwell, 1984). Research continued through the 1939 publication of the calculations of energy released through uranium fission, which garnered international attention (Landa, 1993). The Manhattan Project, the U.S. Army’s effort to develop a nuclear weapon, began soon after, prompted by a letter from Albert Einstein warning of the risks of such a weapon in the hands of Nazi Germany (Bernstein, 1996; Reed, 2014).⁵ The U.S.

² The history of uranium, and more specifically its uses in nuclear weapons, is intertwined with that of rare earth elements. For a review of rare earth elements, please see Klinger (2015).

³ Briefly, the U.S. (Kuletz, 1998), Canada (Keeling, 2010), and Australia (Gerster, 2013) extracted uranium from largely indigenous lands. The Soviet Union, and later Russia, would at various times extract uranium from China, Kazakhstan, and across Eastern Europe (Klinger, 2015) with China and Kazakhstan going on to develop domestic uranium extraction programs (Geddes, 1983; Hodge and Weinberger, 2009; Liu and Liu, 2009). Pariah state North Korea mined uranium domestically with help from the Soviet Union and China (Grunden, 2016).

⁴ The risks of uranium were confirmed in the U.S. in the 1928 court case of the Radium Girls, women who sued the Radium Dial Company for workplace illness after applying uranium glaze to dials. For additional information about the Radium Girls, please see Clark (Clark, 1987). Brugge and Goble contend an association between uranium mining and lung disease was known in Europe as early as 1879 (2002).

⁵ Recent scholarship continues to debate the development of Nazi nuclear knowledge. For further information, please see Popp (2016).

¹ This article will only examine sub-Saharan Africa.

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