E-ISSN:2319-3050

Review Article Land And Identity International Journal of Research Pedagogy and Technology in Education and Movement Sciences

2024 Volume 13 Number 04 OCT-DEC



Finding Roots: Aboriginal Connections To Land And Identity

Kaur HP^{1*†}, Sandu RK^{2*†}

DOI:https://doi.org/10.55968/ijems.v13i04.460

1*+ Harsangeet Pal Kaur, Assistant Professor, Defence and Strategic Studies, Cdoe Punjabi University, Patiala, Punjab, India.

2** Rimpreet Kaur Sandu, Patiala, Punjab, India.

Aboriginal Australians, the Indigenous peoples of the mainland and many islands of Australia, represent one of the world's oldest continuous cultures, with a history spanning over 65,000 years. This research explores their enduring connection to the land, rich cultural heritage, and the significant challenges faced due to European colonization and subsequent government policies. The study highlights key historical milestones, including land rights movements, the impact of the Stolen Generations, and current efforts to protect culturally significant areas such as the Fitzroy River. The paper underscores the importance of recognizing and preserving Aboriginal cultures, promoting equity, and ensuring Aboriginal Australians' involvement in decisions that affect their communities and the broader society.

Keywords: Aboriginals, Australians, Culture, Kimberley, Fitzroy River

Corresponding Author	How to Cite this Article	To Browse
Rimpreet Kaur Sandu,,,, Patiala, Punjab, India. Email: rimpreetkaursandhu@gmail.com	Kaur HP, Sandu RK. Finding Roots: Aboriginal Connections To Land And Identity. IJEMS. 2024;13(04):64-71. Available From https://ijems.net/index.php/ijem/article/view/460	

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted 2024-08-01
2024-06-01	2024-06-03	2024-07-03	2024-08-03	
Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
Nil	Nil	Yes		Nil

© 2024by Kaur HP, Sandu RKand Published by The University Academics. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License https://creativecommons.org/licenses/by/4.0/ unported [CC BY 4.0]. 2024;13(04)

Aboriginal Australians: An Introduction

Aboriginal Australians are the Indigenous peoples of the Australian mainland and many of its islands, excluding the Torres Strait Islands. Aboriginal Australians are believed to have migrated from Africa to Asia and then to Australia over tens of thousands of years. They adapted to various environments across the continent, from deserts to rainforests, developing unique cultural and survival practices suited to these diverse landscapes. Their long history is marked by a deep connection to the land, rich traditions, diverse languages and social structures.

The origin of the term "Aboriginal"[i]can be traced back to the Latin word "aborigines," which combines "ab" (meaning "from" or "away from") and "origo" (meaning "origin" or "beginning"). This term was initially used in classical texts to describe the original inhabitants of regions, notably in ancient Italy, and was later adopted in the English language to refer to the earliest known populations of any land. In Australia, the term "Aboriginal" was used by European settlers to describe the Indigenous peoples of the continent. It is a broad term that encompasses the many diverse groups of Australia's first peoples, each with distinct languages, cultures, and histories. However, it is crucial to acknowledge that many Indigenous Australians prefer terms specific to their cultural or language groups, as "Aboriginal" does not fully encapsulate the diversity and distinct identities of Australia's Indigenous peoples.[ii]

Over time, they formed distinct groups with over 250 languages spoken across the continent at the time of European contact. Aboriginal Australians are not a homogenous group; rather, they encompass a wide range of cultures, languages, and traditions. Each group has its own unique connection to the land, mythology, and social structures. The languages spoken are diverse, with each language representing a distinct cultural heritage and worldview. Many of these languages are now endangered due to the impact of colonization and assimilation policies. However, Aboriginal people share a sacred connection to the land, having inhabited the Australian continent since time immemorial. This deep relationship is expressed through Dreaming stories, song lines, dance, and art.[iii]Archaeologists and anthropologists estimate that Aboriginal People have lived on the

Continent for approximately 51,000 to 71,000 years.[iv]Throughout this time, they experienced long periods of stability and abundance. The history of Aboriginal Australia is rich, complex, and spans tens of thousands of years.

Historical Background

In ancient times, Aboriginal Australians are believed to have arrived on the Australian continent at least 65,000 years ago, making them one of the world's oldest continuous cultures. They migrated from Southeast Asia via land bridges and sea crossings during a period when sea levels were lower. It was an amalgamation of various cultures and languages. Aboriginal Australia was not a single culture but a mosaic of over 250 distinct language groups, each with its own customs, laws, and traditions. The societies were deeply connected to the land, which was central to their spiritual beliefs and ways of life. Aboriginal Australians developed sophisticated land management practices, including controlled burning (fire-stick farming), which helped to manage the environment and increase biodiversity. Aboriginal culture is renowned for its art, including rock paintings, carvings, and bark paintings, some of which are tens of thousands of years old.

European Contact and Colonization (17th-20th century)

Aboriginal Australians came in contact with the European in the 17th century, but significant interaction started with the arrival of the First Fleet in 1788. The British claimed Australia as Terra Nullius (land belonging to no one), disregarding the existing Aboriginal presence. The impact of colonization was devastating on Aboriginal population due to introduced diseases, violent conflicts, and displacement from their lands. Traditional ways of life were disrupted, and many decimated. communities Despite were the challenges, many Aboriginal groups resisted colonization through various means, including warfare and negotiation. However, the imbalance of power and resources often resulted in significant losses for Aboriginal peoples.

The Period of Stolen Generations (20th Century Onwards)

During the 20th century, precisely between 1910 and 1970, many Aboriginal children were forcibly removed from their families in a government policy aimed at assimilating them into white society. 2024;13(04)

Finding Roots Aboriginal Connections Land Identity

This period is known as the Stolen Generations and has had lasting intergenerational trauma. Broadly, the term Stolen Generations refers to Aboriginal and Torres Strait Islander children in Australia who were forcibly removed from their families by Australian federal and state government agencies and church missions under policies of assimilation that were in place from approximately the late 1800s to the 1970s. These children were taken away with the intent to integrate them into white society, often with the belief that Aboriginal culture and identities were inferior and needed to be eradicated.

The government policies aimed to assimilate Aboriginal children into mainstream Australian society. The rationale was to "civilize" them and train them for work as domestic servants or labourers. The belief was that by separating children from their families and culture, they would eventually adopt white culture and values. Further, various laws facilitated the removal of children, including the Aborigines Protection Act (1909) in New South Wales and similar acts in other states. These laws gave government officials broad powers to remove children without parental consent or judicial oversight. The removals targeted mixedrace children, who were seen as easier to assimilate. Full-blooded Aboriginal children were also taken, but the focus was often on those of mixed heritage. Its adverse impact was loss of their culture and identity, emotional and psychological effects: The removal caused profound trauma, including feelings of loss, grief, and abandonment. Many individuals from the Stolen Generations experienced lifelong struggles with mental health, a sense of disconnection, and difficulties forming relationships and long-term consequences included intergenerational trauma. The breakdown of family structures and loss of cultural continuity has had lasting effects on health, social outcomes, and community cohesion. Poverty, lack of education, unemployment, and involvement in criminal activities due to the disruption of their upbringing and lack of support were some additional disadvantages. However, a landmark report by the Australian Human Rights and Equal Opportunity Commission, titled "Bringing Them Home," documented the experiences of the Stolen Generations. It found that the policies of removal were racially discriminatory and constituted

Genocide under international law. The report made numerous recommendations, including

The need for an official apology, reparations, and measures to address the ongoing impacts of the removals.

In another instance, on February 13, 2008, the then Prime Minister Kevin Rudd delivered a formal apology on behalf of the Australian government to the Stolen Generations. The apology acknowledged the suffering and trauma caused by the removal policies and recognized the need for healing and reconciliation. The apology was a significant moment in Australian history, marking a formal acknowledgment of past wrongs, although it did not include compensation.

The Stolen Generations represent one of the most tragic chapters in Australia's history, highlighting the destructive impact of colonial policies on Aboriginal and Torres Strait Islander people. While significant steps have been taken towards acknowledgment and reconciliation, the legacy of the Stolen Generations continues to affect individuals and communities. Addressing the ongoing impacts requires continued commitment to justice, healing, and the recognition of Indigenous rights and cultural heritage.

Aboriginals and their Connection to Land

One of the core aspects of Aboriginal resilience is the deep spiritual connection to the land. This relationship has been crucial in maintaining their culture, traditions, and identity. Land is not just a physical space but a source of knowledge, law, and spirituality, which has helped Aboriginal Australians survive environmental changes and external threats. It is a living entity with which they have a reciprocal relationship. The land is an integral part of their identity, spirituality, and community. This connection is reflected in their practices of land management, including traditional fire stick farming and other sustainable land-use methods that have been employed for thousands of years.[v]

Historically, the arrival of British colonizers in 1788 the Aboriginal Australians were systematically dispossessed of their lands under the doctrine of terra nullius (land belonging to no one), which ignored their existing rights and presence. Colonizers seized vast areas for

Settlements, agriculture, and resource extraction, pushing Aboriginal people off their traditional lands. It was involved violence, forced removal, and the destruction of sacred sites, disrupting

Finding Roots Aboriginal Connections Land Identity

Their connection to the land and cultural practices. The expansion of pastoral leases and agriculture further displaced Aboriginal communities. Large tracts of land were fenced off for sheep and cattle grazing, disrupting traditional hunting and foraging practices. Aboriginal Australians were often forcibly removed from fertile areas to make way for European settlers, relegated them to less productive and remote areas or to missions and reserves where they had limited autonomy.

Further, government policies in the 19th and 20th centuries, such as the establishment of reserves and missions, sought to control and assimilate Aboriginal populations. Many Aboriginal people were moved away from their traditional lands to these reserves, where they were subjected to restrictive rules and loss of cultural freedom. Under the policy of The Stolen Generations Aboriginal children were forcibly removed from their families as part of assimilation efforts, further severing their connection to their communities and ancestral lands.

In recent times, Aboriginal lands have continued to be threatened by mining and resource extraction. Australia's mineral wealth often lies beneath traditional Aboriginal lands, leading to disputes and displacement when mining companies seek access. While native title and land rights have been recognized legally, the enforcement and protection of these rights was still inconsistent. In addition, Aboriginal communities often face significant challenges in negotiating fair terms or protecting their sacred sites from development.

Displacement has further disrupted the cultural and spiritual connection that Aboriginal Australians have with their land. Losing access to their traditional territories affects their ability to practice their customs, ceremonies, and languages, leading to a loss of cultural heritage. They often find themselves pushed into poverty after being displaced, losing their traditional livelihoods tied to the land. This economic marginalization has worsened their social And health disparities compared to the broader population, Struggles for land rights and recognition. Aboriginal Australians have fought for and rights and recognition of their traditional territories.[vi]

Legal battles, protests, and advocacy efforts continue as they seek to reclaim

Their lands and secure their rights against ongoing encroachments. Various movements were organised to secure the land rights by achieving political representation, preserving culture, and addressing social and economic inequalities. An overview of the Aboriginal struggle and the Indigenous rights movement in Australia include Colonization and Terra Nullius, it is when the British colonized Australia in 1788, they declared the land terra nullius, or "land belonging to no one," disregarding the presence and land rights of Aboriginal and Torres Strait Islander peoples. This legal fiction justified the widespread appropriation of Indigenous lands for European settlement, agriculture, and industry.[vii]

Key Milestones in the Aboriginal Land Rights Movement

From the beginning of colonization, Aboriginal people resisted European encroachment through guerrilla warfare, protests, and other acts of defiance, collectively known as the Frontier Wars. However, these efforts were largely overwhelmed by superior colonial military power. In the early 20th century, Aboriginal leaders and organizations began to advocate for land rights, often in the face of significant resistance from government and settler interests. These early efforts laid the groundwork for later, more organized movements. Second, One of the most iconic events in the Land Rights Movement was the Wave Hill Walk-Off in 1966, led by Vincent Lingiari and the Gurindji people in the Northern Territory. The Gurindji walked off the Wave Hill cattle station to protest poor working conditions and demand the return of their traditional lands. The Walk-Off gained national attention and support, becoming a symbol of the broader struggle for Aboriginal land rights. It led to the first successful land claim, culminating in the symbolic handover of land by Prime Minister Gough Whitlam to Vincent Lingiari in 1975.

In 1976, the Australian government passed the

Aboriginal Land Rights (Northern Territory) Act, one of the first laws in Australia to recognize Aboriginal land rights. The Act allowed Aboriginal people in the Northern Territory to claim land based on traditional ownership.

Another major case was the Mabo Decision (1992) which overturned Terra Nullius: The 1992 High Court case Mabo vs Queensland

Finding Roots Aboriginal Connections Land Identity

Was a landmark victory for Aboriginal land rights. The court ruled in favour of Eddie Mabo and the Meriam people of the Torres Strait, recognizing that Indigenous land rights had existed before colonization and continued to exist unless explicitly extinguished. The Mabo decision overturned the doctrine of terra nullius, acknowledging that Indigenous people have legal rights to their land based on traditional laws and customs. This recognition of native title laid the foundation for further legal and legislative developments.[viii]

Following the Mabo decision, the Native Title Act 1993 was enacted to provide a legal framework for the recognition and protection of native title in Australia. The Act established processes for Indigenous groups to claim native title and set up a tribunal to resolve disputes. The challenge was that while the act was a significant step forward, it also imposed strict requirements for proving native title, and subsequent amendments have often weakened protections, making it difficult for many groups to succeed in their claims.[ix]

In 1996, the High Court's Wik decision determined that native title could coexist with pastoral leases, which cover large areas of land used for grazing livestock. This ruling expanded the scope of native titles but also led to political backlash. In response, the government introduced the Ten Point Plan, which led to amendments to the Native Title Act in 1998. These amendments were seen by many as limiting the rights recognized under the Wik decision, favouring pastoral and mining interests over native title holders.

Case Study of Kimberley Region

The Kimberley region in the Northern part of Western Australia is one of the most remote and culturally rich areas and the home To a significant population of Aboriginal Australians. This case study explores the lives of Aboriginal communities in Kimberley, their historical and contemporary challenges, their connection to the land, and their ongoing efforts to preserve their culture and assert their rights.

Background of the Kimberley Region

The Kimberley is a vast region covering approximately 423,000 square kilometres, characterized by rugged landscapes, including mountains, gorges, rivers, and extensive coastlines. It is home to diverse Aboriginal groups, including

The Gooniyandi, Bunuba, Yawuru, and many others, each with distinct languages, cultures, and traditions.[x]

Its Cultural heritage is renowned for its rich Aboriginal cultural heritage, with a history that stretches back tens of thousands of years. The region is dotted with ancient rock art, sacred sites, and places of deep spiritual significance for the Aboriginal communities. Historically, the Aboriginal people of Kimberley have lived as hunter-gatherers, with deep knowledge of the land, flora, and fauna. Fishing, hunting, and gathering bush foods remain important cultural practices that connect them to their ancestral lands. Since European colonization, Aboriginal communities in the Kimberley have faced significant land dispossession, with their traditional lands being taken for pastoralism, mining, and other commercial activities.[xi]

Kimberley is rich in natural resources, including oil, gas, and minerals, leading to ongoing pressures from mining companies. While some land rights have been recognized, the region continues to face conflicts over land use, where economic interests often clash with the cultural and environmental values of Aboriginal people.[xii]

Aboriginal communities in the Kimberley experience high levels of socio-economic disadvantage compared to the broader Australian population. Issues include lower life expectancy, higher rates of unemployment, limited access to education and healthcare, and poor housing conditions. The remoteness of the region exacerbates these challenges, making it difficult to provide essential services and economic opportunities. Manv communities rely on government support, with limited avenues for

Sustainable economic development. The imposition of European culture and policies, including past assimilation efforts, have had lasting impacts on Aboriginal cultural practices, languages, and identities in the Kimberley. Younger generations face pressures from modern influences, including mainstream media and education systems that often do not reflect Aboriginal knowledge and values, leading to a gradual erosion of traditional languages and customs.

The environmental degradation resulting from overgrazing, deforestation, and industrial activities threatens the ecological balance of

Finding Roots Aboriginal Connections Land Identity

The Kimberley, which is crucial to the Aboriginal way of life. Climate change poses additional risks, with increasing temperatures, changing rainfall patterns, and extreme weather events impacting the natural environment and traditional food sources.

Community Responses and Movements

Aboriginal communities in Kimberley have been active in pursuing land rights and native title claims to regain control over their traditional lands. Landmark legal victories, such as the 2006 recognition of the Yawuru people's native title rights in Broome, demonstrate the importance of legal avenues in asserting Aboriginal land rights. Native title allows Aboriginal groups to negotiate agreements with mining companies and other stakeholders, securing economic benefits and protections for their cultural heritage.[xiii]

Numerous initiatives are underway to preserve and revive Aboriginal culture in Kimberley, including language programs, cultural camps, and art projects. Traditional knowledge is being passed down through community-run programs that teach young people about bush tucker, hunting, fishing, and cultural protocols. The region is also known for its vibrant Aboriginal art, which serves as both a cultural expression and an economic opportunity. Art centres in the Kimberley support Aboriginal artists in creating works that reflect their connection to the land and share their stories with the broader world.[xiv]

Aboriginal ranger programs play a crucial role in

Managing and protecting the Kimberley's unique landscapes. These programs employ Aboriginal people to conduct land and sea management activities, including fire management, biodiversity monitoring, and protection of cultural sites. These initiatives not only provide employment and training opportunities but also empower Aboriginal communities to lead environmental stewardship efforts based on traditional knowledge and practices. Aboriginal leaders and organizations in the Kimberley continue to advocate for improved social services, economic opportunities, and policies that respect Aboriginal rights and aspirations. This includes pushing for better access to education, healthcare, and housing, as well as support for community-led development initiatives. Programs focused on youth engagement, mental health, and community resilience are essential

In addressing the socio-economic disparities faced by Kimberley's Aboriginal communities. Communityled tourism initiatives are emerging to share Aboriginal culture with visitors while providing sustainable economic opportunities. These include guided tours, cultural experiences, and eco-tourism ventures that highlight the Kimberley's natural beauty and rich heritage.[xv]

Fitzroy River Protection

The Fitzroy River, known as Mardoowarra in Aboriginal culture, is a vital waterway in the Kimberley, holding deep spiritual significance for multiple Aboriginal groups. The river is not only a critical source of water and food but also a cultural and ancestral link for the communities.[xvi]

In recent years, there have been significant efforts to protect the Fitzroy River from large-scale water extraction and industrial development. Aboriginal leaders have been at the forefront of these campaigns, advocating for the river's rights to be recognized and protected.[xvii]

The Martuwarra Fitzroy River Council[xviii], composed of traditional owners, has been established to ensure that decisions about the river's management prioritize Aboriginal voices and values.This collaborative approach aims to protect the river's ecological and cultural integrity for future generations.[xix]

Conclusion

To conclude the role of Aboriginal Australians, it's essential to recognize their profound connection to the land, their rich cultural heritage, and their contributions to contemporary Australian society. They are the original custodians of the land, with a history that dates back over 65,000 years, making them one of the world's oldest continuous cultures. Their traditional knowledge, practices, and relationship with the environment have greatly influenced conservation efforts and sustainable land management.

In modern Australia, Aboriginal people continue to play a significant role in various aspects of society, including art, music, politics, and education. They bring unique perspectives that enrich the nation's cultural diversity and help foster a deeper understanding of Australia's history. However, ongoing challenges such as social inequality, discrimination, and the need for reconciliation

Finding Roots Aboriginal Connections Land Identity

Highlight the importance of supporting Aboriginal communities and respecting their rights. The recognition of Aboriginal Australians' role in society goes beyond acknowledgment; it involves active efforts to preserve their heritage, promote equity, and should involve them in decision-making processes. Thus, it is crucial to continue addressing historical injustices and building a future where Aboriginal Australians can flourish and lead in shaping their country's destiny by getting their own earth.

References

Attwood, B. (2020). The making of the Aborigines. In Routledge eBooks. [Article][Crossref][Google Scholar] [Crossref][Google Scholar]

Social Justice and Native Title Report 2016. (n. d.). Australian Human Rights Commission. [Article] [Crossref][Google Scholar] [Crossref][Google Scholar]

The Survival of Aboriginal Australians through the Harshest time in Human History: Community Strength. (n. d.). *ResearchGate.* [Article][Crossref] [Google Scholar] [Crossref][Google Scholar]

Malaspinas, A., Westaway, M. C., Muller, C., Sousa, V. C., Lao, O., Alves, I., Bergström, A., Athanasiadis, G., Cheng, J. Y., Crawford, J. E., Heupink, T. H., Macholdt, E., Peischl, S., Rasmussen, S., Schiffels, S., Subramanian, S., Wright, J. L., Albrechtsen, A., Barbieri, C., . . . Willerslev, E. (2016). A genomic history of Aboriginal Australia. Nature, 538(7624), 207–214. [Article][Crossref][Google Scholar] [Crossref] [Google Scholar]

Dark emu: Aboriginal Australia and the birth of agriculture / Bruce Pascoe. (n. d.). *Collection -State Library of NSW.* [Article][Crossref][Google Scholar] [Crossref][Google Scholar]

Boyer Lectures 2012: The Quiet Revolution: Indigenous People and the Resources Boom / Marcia Langton - Catalogue | National Library of Australia. (n. d.). [Article][Crossref][Google Scholar] [Crossref][Google Scholar]

Aboriginal and Torres Strait Islander Health Performance Framework 2017. (n. d.). *AIHW Indigenous HPF. [Article][Crossref][Google Scholar] [Crossref][Google Scholar]*

Final report of the Council for Aboriginal Reconciliation. (n. d.). [Article][Crossref][Google Scholar]

Conservation Standards. (2020). Evaluation of the WunambalGaambera Healthy Country Project in Australia's Kimberley: Plan: Intercultural Governance of Land and Sea. а https://conservationstandards. org/wpcontent/uploads/sites/3/2020/10/H.-Evaluation-ofthe-Wunambal-Gaambera-Healthy-Country-Projectin-Australias-Kimberley-1.pdf [Crossref][Google Scholar] [Crossref][Google Scholar]

Hill, R., & Baird, A. (2003). "Kakadu, Kimberley, and Cape York: Comparative Case Studies of Australian Indigenous Protected Area Management. *" Environmental Science & Policy, 6(1), 109-123* [Crossref][Google Scholar] [Crossref][Google Scholar]

Altman, J. C., & Whitehead, P. J. (2003). Caring for country and sustainable Indigenous livelihoods: A case study of Bawinanga Aboriginal Corporation in the Northern Territory. CAEPR Discussion Paper No. 257/2003. Australian National University [Crossref] [Google Scholar] [Crossref][Google Scholar]

Kimberley Land Council. (2017). Kimberley Land Council 2016-17 Annual Report. https://static1. squarespace.com/static/59fecece017db2ab70aa187 4/t/5a37299e652dea7bc21b137e/1513564658800/ klc-annual-report-2016-17-final-27-sept-%28webversion%29.pdf [Crossref][Google Scholar] [Crossref][Google Scholar]

Land and Sea overview — Kimberley Land Council. (n. d.). *Kimberley Land Council.* [*Article*][*Crossref*] [*Google Scholar*] [*Crossref*][*Google Scholar*]

Hill, R., & Baird, A. (2003). Kakadu, Kimberley, and Cape York: Comparative case studies of Australian Indigenous protected area management. *Environmental Science & Policy, 6(1), 109-123* [Crossref][Google Scholar] [Crossref][Google Scholar]

Toussaint, S., Sullivan, P., & Yu, S. (2005). Water Ways in Aboriginal Australia: an interconnected analysis. The UWA Profiles and Research Repository. [Article][Crossref][Google Scholar] [Crossref] [Google Scholar]

NgapaKunangkup (Living water) - Aboriginal cultural values of groundwater in the La Grange sub-basin. (2023, January 25). Western Australian Government. https://www. wa.gov.au/government/publications/ngapakunangkup-living-water-aboriginal-cultural-valuesof-groundwater-the-la-grange-sub-basin [Crossref] [Google Scholar] [Crossref][Google Scholar]

Prober, S. M., O'Connor, M. H., & Walsh, F. J. (2011). Australian Aboriginal Peoples' Seasonal Knowledge: a Potential Basis for Shared Understanding in Environmental Management. Ecology and Society, 16(2). [Article][Crossref] [Google Scholar] [Crossref][Google Scholar]

Kimberley Land Council. (2017). "Protecting the Fitzroy River: A Guide to the Martuwarra Fitzroy River Council's Plan. ". [Crossref][Google Scholar] [Crossref][Google Scholar]

Jackson, S., & Palmer, L. (2015). "Reconciling Indigenous and Western Knowledge in Water Resource Management: Australian Experiences. " International Journal of Water Resources Development, 31(4), 453-466 [Crossref][Google Scholar] [Crossref][Google Scholar] 2024;13(04)