

THE INFLUENCE OF 'MERTI CODE' ON ACHIEVING SDG GOALS FOR RIVER CONSERVATION IN YOGYAKARTA

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Abstract

This paper examines the impact of the local wisdom known as "Merti Code," a cultural practice of communities along the Code River, on river environmental preservation in line with Sustainable Development Goals (SDGs). The study analyzes both empirical observations and policy frameworks regarding government regulations on river management. The findings reveal that the implementation of "Merti Code" significantly contributes to maintaining a clean river environment, preserving a balanced aquatic ecosystem, and providing economic benefits to both the local community and the Yogyakarta City government through cultural tourism, which has been an annual event since 2000. The study further highlights that community belief and trust in the principles of "Merti Code" are more effective in sustaining river cleanliness and environmental stewardship than formal government regulations alone.

Keywords: *Merti Code; Community Culture; Local Wisdom; River Environmental Preservation; Sustainable Development Goals (SDGs)*

1. Introduction

The river is one of the places that cannot be separated from human life even since ancient times. Most of the world's civilisations have been cultivated by rivers.¹ In the past, rivers had the main function of a vehicle for transport because transport at that time had not developed as it does today. The river became a crossing place for people to go from one place to another. Humans utilised the freshwater resources available in rivers, which they used for subsistence and agricultural production, as well as navigation and transport.² At present, the river has a function to fulfil the needs of the community such as a source of water, for bathing, washing clothes and so on. However, in the past the cleanliness of the river was still maintained, in contrast to the current condition of the river, which has been heavily polluted due to community activities. So that various policies carried out by the central and regional governments become regulations that must be carried out by people who live on the banks / around the river

¹ Menárguez ABB, Holgado PM. "Assessing the landscape value of public works: validation of the methods in the lowlands of the middle section of the Tajo River", Spain. *Landsc Res* (2014); 39: 305–323.

² Du LJ, Peng X, Wang F. "City walking-trace: how watershed structure and river network changes influenced the distribution of cities in the northern part of the North China Plain". *Quart Int* (2019); 521: 54–65.

So that in carrying out their activities related to the river they do not pollute the river environment or the environment around the river. However, the policy is not fully implemented in practice. There are still

many violations committed by people around the river and the general public, even factories that dispose of waste into the river. The operation of shared water resources frequently causes conflicts between stakeholders due to differing priorities and goals. In addition, economic, and social development in river basins reduces water flow and augments pollutants discharged to rivers, thus leading to the degradation of riverine ecosystems. The point of pollution of the river environment is usually in the area around dams, riverbanks, and bridges, because in these areas many people usually throw garbage, liquid waste that has not been processed properly or other objects, so that the quality of river water is poor this is due to the large amount of garbage that accumulates along the river flow. In ideal conditions, urban rivers can act as ecological corridors and provide habitat for many species. With the intervention of intense human activities and industrialisation and urbanisation, there is a new trend to prioritise residential development along river systems. Thus, river management aims to restore the longitudinal connectivity of rivers to allow continuous migration and movement of water, sediments and biota.

The Code River, which has an area of 4,006.25 Ha, crosses three districts/cities, namely; Sleman Regency, Yogyakarta City and Bantul Regency. Code River has a length of $\pm$ 41 km, consisting of Code River (downstream) with a river length of 17 km and Boyong River (upstream) with a river length of 24 km. The Code River, which is divided into upstream, middle and downstream areas, has its own properties and characteristics, namely upstream is dominated by agricultural activities, the middle is dominated by densely populated residential areas although there are still small areas of rice fields and industry, while downstream is dominated by rice fields, settlements and industry.

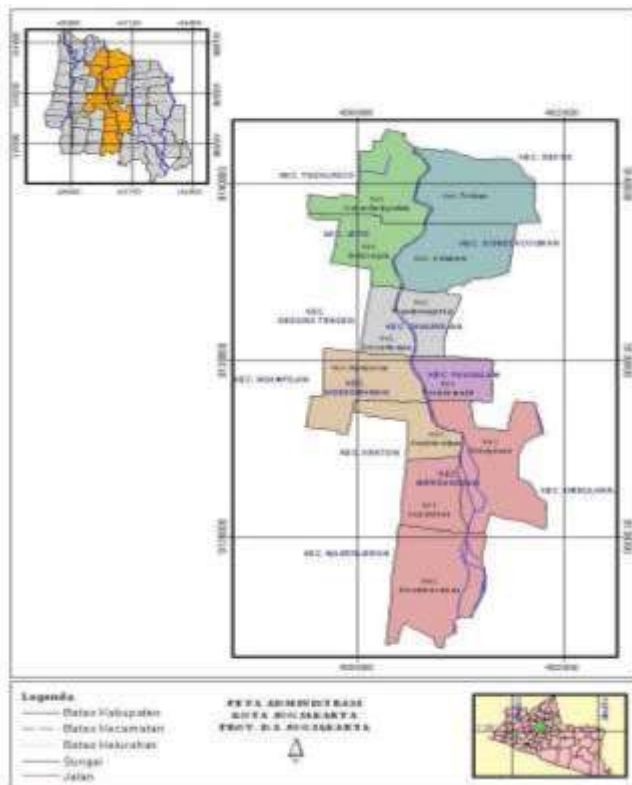


Figure 1. Stretch of the Code River

Of the three divisions of the Code River, the best condition of water quality and the river environment is in the upper reaches of the river. The upstream area of the Code River is still poor in environmental management and still contributes a lot of waste in the middle part of the Code River which is carried by the flow to the heart of Yogyakarta City. The imbalance is because the "Merti Code" culture is carried out in the Terban area, Jetis, Yogyakarta City where the area is the middle area of the Code River stretch. While the Hulu area does not carry out the Merti Code ceremony. The existence of public awareness in implementing the community-based clean river programme "Merti Code" has the benefit of increasing the awareness of the community around the river to preserve and protect the river environment such as not throwing garbage in the river, washing in the river and taking plants and animals that live in the river and around the river to maintain the river ecosystem. In addition, the "Merti Code" ceremony has also become an annual routine agenda of the Yogyakarta City Government together with the Forum Masyarakat Peduli Kali Code which has been held since 2000.

The preservation of the river environment in "Merti Code" is seen from the mythological, philosophical aspects of a series of ceremonies that are sacred and very effective in protecting the ecological elements of the river from the threat of damage or degradation of water quality so that its sustainability is maintained from the movement of community awareness through the local wisdom of the people who care about the aspects of beliefs and myths towards the balance of the river ecosystem. Local wisdom towards the

preservation and maintenance of the river environment preserved in "Merti Code" has a positive and effective impact as a social control so that people treat natural elements more wisely. "Merti Code" can be a two-way positive movement, namely maintaining the traditional values of local communities as well as a movement to preserve the river environment.

2. Methodology

The approach method used in this research is empirical juridical, which is a method or procedure used to solve research problems by examining secondary data first and then continuing by examining primary data in the field. Primary data is data obtained directly from the community. The juridical aspect is used as a reference in assessing or analysing the problem based on aspects of the applicable law, namely by reviewing legal regulations on copyright and related regulations under it that have a correlation with this research. While the empirical approach is to conduct research that aims to obtain empirical knowledge by going directly to the field about everything related to the implementation of legal protection of local culture Merti Code. So the empirical juridical approach is a study that examines legal regulations which are then linked to data and behaviour that lives in the midst of society directly.

This type of research is descriptive analytical, meaning that the results of this study seek to provide a comprehensive, in-depth description of a situation or symptom under study. This research seeks to describe in full the characteristics of a situation, personal or group behaviour, or describe/paint social reality in such a way, utilising, or creating scientific concepts, as well as describing social reality.

3. Results and Discussion

3.1. Merti Code for Sustainable Development Goals (SDG's) of the River Environment

Waste is one of the problems faced seriously by an area, where the number of people is very dense, especially in urban areas. The problem of waste continues to increase with the increase in the activities of urban communities that are not matched by an adequate number of landfills, until finally people choose to throw garbage into the river. Rivers full of rubbish have become one of the most common urban problems. The various impacts caused by the problem of waste disposed of in rivers include, among others, causing flooding, reduced availability of clean water, rivers become smelly and dirty, decreased oxygen levels from river water which causes many biota around the river to die and of course the worst impact is making the river a source of disease that will endanger the surrounding community. Freshwater sources in the form of rivers are considered a fundamental for the wellbeing of a hale and healthy society. Rivers are important in human civilisation. There are many stories or legends of kingdoms in Indonesia that tell of rivers. In many inland areas, communities around rivers are still very dependent on rivers. The river is an illustration of the values, customs, wisdom, and conservation system of the surrounding community. Even for some communities, rivers or water are sacred and purifying areas. River water is believed to purify the impurities carried by humans with various ritual bathing ceremonies in the river. This is in line with the policy direction of the sustainable development goals in the environment sector. There are six SDG's goals, including sanitation and clean water, although the goals are still one in the same.

This is in line with the policy direction of the sustainable development goals in the environment sector. There are 17 SDG's goals, including sanitation and clean water, although these goals are still one unit, which must be achieved by 2030. There is even a specific target to protect and restore ecosystems related to water resources, including mountains, forests, wetlands, rivers, groundwater and lakes. Actions in favour of one objective may affect progress on another, either positively (synergies) or negatively (trade-offs). Effectively managing synergies and trade-offs is a prerequisite for ensuring policy coherence. This is particularly relevant at the watershed scale where the implementation of national policies can create inequalities at the sub-watershed level, such as upstream and downstream. The SDGs are an urgent call to action by all countries developed and developing by 2015, in a global partnership for a sustainable world. A holistic approach must be taken and many synergies can be found in the SDGs, including the issue of river environmental stewardship, to achieve sustainable development. The timeframe for achieving these goals is 2030.

Indicators determined by Bappenas in 2017 on the number of river areas that have community participation in river basin management from planning, implementation, monitoring, evaluation, utilisation to efforts to control the destructive power of water. In this "Merti Code" Local Wisdom, it is clear that the role of the community is very large in managing the river environment. The existence of people who have lived for a long time on the banks of the Code River and even from generation to generation feel obliged to manage and protect the environment around the river for the sake of the survival of their children and grandchildren. The habit of not throwing garbage, flowing waste directly into the river that will pollute the river, taking fish and marine life, even disposing both defecation and urination, has been passed down from generation to generation, then the emergence of religiomagish beliefs related to the preservation of the river environment in the community, which is called the Local Wisdom "Merti Code". The community around the Code River has taken the initiative to carry out activities in order to manage the river environment sustainably through the 'Merti Code' ceremony. During this time, the community has also endeavoured to make the Code River a socio-cultural continuum that is integrated with various other aspects of life and cannot be decapitated: Code River as a water treatment laboratory, Code River as a water tourism village, and Code village area painted with murals to add tourist attraction. The Code River area requires cultural change that takes time and requires evidence of success, namely the achievement of a better life in a sustainable manner. Therefore, balancing the interaction between humans and the environment, especially changes in land and water use and other ecosystem services, is important to ensure the sustainability of the river environment.



Figure 2. Colourful Settlements Around the Code River and

Development of the Code Riverbank Based on Ecotourism

The Code River area has positive potential in the form of a strategic location in its orientation with other locations, environmental exoticism that has the potential for ecotourism development, as well as interesting socio-cultural potential. One of the most important requirements in order to implement an optimal river area arrangement requires the involvement of stakeholder roles (community-based development), from planning to operationalisation and evaluation. Local community participation is a strategic key in order to preserve and maintain the river environment comprehensively in involving various parties. As stated in the SDG targets, the 2030 Agenda framework establishes a clear link between water use efficiency and sustainability of water resources.

This framework for the sustainable maintenance of the river environment sets the task of improving the sustainability of the water resource base. Code Village is characterised as a settlement area that has successfully developed in harmony with its surroundings. The settlements that stand in this area are lined up with good architectural arrangements, bright colours, the environment is well arranged, illustrating the planning and maturity of the managers and the community, and most of the people use their yards as green spaces.

3.2. Local Wisdom Procession of "Merti Code" Ritual Ceremony

"Merti Code" comes from the word 'Merti' or 'Memetri' (Javanese) which means to keep and maintain. The traditional ceremony that has become an annual tourist agenda by the Yogyakarta Tourism Office is intended to make people always remember the meaning of 'Merti', so that the mindset of maintaining the river environment is always maintained in the form of culture / traditional ceremonies. Indigenous peoples, or those communities that claim a historical continuity with their traditional territories, have been governing the waters and lands within their territories since time immemorial. Local wisdom or traditional culture can be defined as cultural knowledge owned or believed by a certain local community that contains a description of the behaviour of the community concerned in the area, among others, relating to attitudes among local people, the structure of the environment that must be achieved, certain environmental functions, natural reactions to human actions, and the relationships that should be created between humans and their environment. Local wisdom makes people live in harmony with the environment. Some

forms of local wisdom in the community include: values, norms, beliefs, and special rules, which produce various functions: ¹⁸

1. Local wisdom functions for conservation and concervation of natural resources ;
2. Local wisdom serves to develop human resources
3. 3. Serves as the development of culture and science ;
4. Serves as advice, trust, literature and taboos.

The universal values that are trying to be built (revitalised) in the implementation of the "Merti Code" event are:

1. Gratitude for the gift of water and rivers from God, which have important functions to support the livelihood of the community, especially those living in riverbank areas;
2. Awareness of the importance of maintaining and preserving water and rivers in supporting human life;
3. Awareness of sharing space for all living things in the river (plants, insects, birds, reptiles, and various types of fish) because they have the same right to live as humans, as part of the river ecosystem;
4. Togetherness, a joint effort is needed between elements of society to preserve the Code river, because this task is heavy, requires sacrifice, and because of the complexity of the problems that exist.

"Merti Code" is held every June because this month is the month of the environment, in addition to the reasons mentioned above if taking the month of Java there is a concern that it is still the rainy season, so that because of the weather situation it can hamper the course of the ceremony. The "Merti Code" ceremony is a local wisdom owned by the Code River community, so the implementation of activities is entirely carried out with the involvement of the surrounding community and also elements of the government. The villages that support this activity (from upstream to downstream) are Turgo (Pakem), Kalireso, Plemburan, Blunyahgede, Blimbingsari, Terban, Jetisharjo, Pasiraman, Cokrokusuman and Gondolayu. The city government, in this case the Yogyakarta Culture and Tourism Office, helps stimulate funds for the organisation of this event every year. Cultural arts groups in Yogyakarta also support this event. In its development, many parties are then involved, especially in supporting events such as workshops, river cleaning, competitions and others.

The "Merti Code" ritual begins with a clean-up of the village and the Code River, followed by a ceremonial procession that begins with the collection of spring water from the 'Seven Sources' located on the slopes of Mount Merapi, Boyong River, and Code River. This water is then deposited in the Village Hall to be prayed for and blessed. The next day, the water from the seven sources is put together in an 'enceh' (a kind of pot), then the 'enceh' is paraded (travelling in rows, in procession) along with Gunung Boga and Tumbak Kyai Ranumurti (The gift of King Hamengkubuwono the 10th) from Terban Village through the Tugu protocol road to the east, until it returns to Terban Village. In the "Merti Code" ritual, a king is carried by a number of soldiers across the banks of the Code River which has calm water. The king is then brought to the throne to meet his people. Then the king gave advice to his people to preserve the Code River which

has provided many benefits. After giving advice, the King ordered a soldier to spread some fish in the Code River so that it could grow and benefit the people around the riverbank.



Figure 3. One of the "Merti Code" Ritual Processions

"Merti Code" is a local tradition/culture derived from the local wisdom of the people of Yogyakarta which is classified as Ecotourism. Ecotourism is currently a fairly important strategy, because in addition to conservation it also responds to ecology and socioeconomic culture. Eco-tourism is not only tourism that involves nature, but is interpreted as an effort that includes cultural conservation. The success of ecotourism management in addition to providing added value to the community, will also protect natural resources, and preserve socio-cultural values, including historical places. Therefore, it is important to return to the local wisdom that has been taught by the ancestors for generations in fertilising and caring for the environment in a sustainable manner for the benefit of the community and future generations.

3.3. The impact of Code river environmental management through "Merti Code"

River management and restoration cannot be but a holistic process, which tackles multiple problems simultaneously. River environmental management as part of environmental management has a very basic challenge, namely how to manage river resources as well as manage environmental carrying capacity that has benefits for humans optimally and sustainably. The natural resources and environmental carrying capacity of the river area need to be developed, so that economically and socially it provides benefits to the community. The management must pay attention to various conflicts of interest that may occur between several parties and traditional communities. In Law Number 32 of 2009 concerning Protection and Management of the Environment, specifically in Article 1 Point 2, the meaning of environmental management is a systematic and integrated effort carried out to preserve environmental functions and prevent pollution and / or environmental damage which includes planning, utilisation, control, maintenance, supervision, and law enforcement. While the meaning of environmental conservation is explained in Article 1 Point 6 which reads preservation of environmental functions is a series of efforts to maintain the sustainability of the carrying capacity and capacity of the environment.

Sustainable environmental management has ecological, economic and social dimensions, where the ecological dimension emphasises the importance of efforts in order to prevent disruption of the basic functions of the river ecosystem so that it will not reduce the function of ecological services, while the

economic dimension emphasises that growth and efficiency in the use of natural resources must be pursued continuously and sustainably, and the social dimension includes issues related to the distribution of wealth / equitable distribution and the elimination of poverty.. Environmental water governance is a highly contested space in which the legitimacy of institutional and legal models for water managing relies heavily, but indirectly, upon the effectiveness of community engagement. One approach to realising a sustainable and protected river environment is the use of the concept of community-based development. In this concept, it can be interpreted as co-management, namely development carried out by the community in collaboration with the local government, which has the aim of actively involving local communities in every activity of preserving the river environment, both planning and implementation activities and management. In essence, the instrument used in community development is empowerment. High participation in the preservation of the river environment will lead to a sense of belonging from the community to the resources of the river environment.

This approach is necessary because local communities are the ones who know best about local conditions and circumstances. Every development activity must take into account the socio-cultural values of development. Every step of the planning decision should reflect the active involvement of the local community. Involving the community from the beginning will ensure that the development programme is aligned with the aspirations of the community due to a strong sense of ownership. The concept of this approach will allow for a high degree of continuity in the long term. Local community development should be based on the following criteria.

Water is a chemical compound whose function is very important for the lives of human beings and other living things. In Indonesia, access to clean water is still a problem. Most of the freshwater used comes from rivers, lakes, reservoirs and wells. The importance of river water for the community and the low quality of river water in Indonesia should encourage the government to develop policies and programmes to improve river water quality as part of environmental maintenance and conservation. Policy evaluation is the final stage in the public policy process to see how far the policies that have implemented have produced the desired or not impact. Environmental water' encompasses all water legally available to the environment through the array of possible allocation and legislative mechanisms. Each year, the precise volume of environmental water actually allocated or remaining under these legal mechanisms may vary depending on overall water availability, demands, and priorities.

The lack of clean water availability in general can be caused by various actors, one of which is the level of public awareness of the knowledge of the importance of maintaining the river environment. The large number of residential locations in the population located in locations around riverbanks is a problem in itself that requires efforts to overcome it. With the large number of settlements along the riverbanks, a sociological approach is needed in an effort to directly involve the community around the riverbanks in an effort to preserve the river, one of which is by conducting a routine « Merti Code » ceremony which has a high philosophy towards efforts to maintain the river environment in Yogyakarta. The following table

presents the water quality along the Code River which has implications for the implementation of the annual « Merti Code » agenda in managing, maintaining and preserving the Code River.

Table 4. Water Quality of Code River from 2019-2022

River Code	2019	2020	2021	2022	Unit
Hulu					
BOD	3,67	2,54	1,07	1,57	mg/m3
COD	20,80	23,09	8,23	9,31	mg/m3
TSS	70,00	10,85	30,00	133,07	mg/m3
DO	3,31	7,20	7,31	5,31	mg/m3
Total Fosfat	0,37	0,25	0,42	0,43	mg/m3
Koli Tinja	180,00	315,00	1.346,67	1.223,33	MPN/100ml
Koli Total	930,00	555,00	3.103,33	2.186,67	MPN/100ml
Tengah					
BOD	5,51	28,04	3,38	2,27	mg/m3
COD	16,80	78,49	14,87	15,41	mg/m3
TSS	85,00	15,38	14,41	9,13	mg/m3

DO	2,94	8,14	6,91	7,17	mg/m3
Total Fosfat	0,81	0,66	0,72	0,66	mg/m3
Koli Tinja	40.000,00	70.000,00	32.606,67	186.000,00	MPN/100ml
Koli Total	430.000,00	150.500,00	62.666,67	366.666,67	MPN/100ml
Hilir					
BOD	5,51	37,85	4,26	2,00	mg/m3
COD	20,40	95,29	17,20	6,00	mg/m3
TSS	80,00	3,65	3,00	5,00	mg/m3
DO	2,94	7,41	6,84	7,00	mg/m3
Total Fosfat	1,78	0,72	0,67	0,00	mg/m3
Koli Tinja	14.000,00	47.000,00	314.666,67	186,00	MPN/100ml
Koli Total	35.000,00	280.000,00	314.666,67	366,67	MPN/100ml

Source: River Water Quality Monitoring, Bappeda Provinsi DI Yogyakarta, 2023

The quality of clean water in Indonesia is influenced by the quality of the environment. The main cause of the decline in clean water quality in Indonesia is Coliform bacterial contamination, both fecal and non-fecal

groups. One of the efforts to implement the clean river programme from the government with a community-based development approach is the Local Wisdom of the Code Community in carrying out the "Merti Code" ceremony every year. The Merti Code ceremony is a cultural activity intended to build public awareness in preserving the Code River environment. Through the organisation of "Merti Code" cultural activities, the community is invited to participate in efforts to conserve the Code River environment. With the collaboration between the Yogyakarta City Government, in this case the Tourism Office, and the community around the banks of the Code River, in managing the river environment, the synergistic role needs to be appreciated because it will automatically provide sustainable awareness for the community to protect the river environment with its local wisdom.

The implementation of the clean river programme through policies carried out by the government has not had a significant impact on the management and efforts to protect a clean and healthy river environment, this is shown by the poor quality of rivers in several major cities in Indonesia. For example, several rivers in Jakarta, based on data obtained from the DKI Jakarta Provincial Environment Office in 2021, a number of rivers in Jakarta show a decrease in water quality from year to year and are the main source of the cause of floods that often hit Jakarta during the rainy season. For example, Krukut River, which is located in the centre of Jakarta, has a high population density around the river and a lack of river management, the water turns blackish and full of rubbish, and overflows during floods.

The Sekretaris River, located in West Jakarta, has illegal housing on its banks and the attitude of local residents who do not pay attention to cleanliness makes it unable to drain water properly and smells bad. As the rainy season approaches, the volume of rubbish in the Sekretaris River increases by up to 3 collections per day. Moreover, the Ciliwung River, which is the largest river in Jakarta, also often contributes to Jakarta's complex problems, namely annual flooding in its downstream areas.

The above shows weaknesses in law enforcement of various policies and regulations from the central government and local governments in Jakarta regarding river environmental management from year to year. Although the regulations are quite complete and adequate, it turns out that in reality it requires the role of the community around the river in terms of managing the river environment. Thus, a real role is needed from the surrounding community towards sustainable management of the river environment as found in the role of the community along the Code River with its local wisdom, namely "Merti Code". So that the responsibility for managing the river environment is not only the responsibility of the local government, but the surrounding community also needs to play a real role and have responsibility for the management and maintenance of the river environment for the survival of their children and grandchildren in the future.

4. Conclusion

Based on the analysis and discussion that has been presented above, it can be concluded that the preservation of the river environment plays an important role because the function of the river is very large for human life, both to meet their basic needs and also other functions such as for power generation

and transportation, in addition to a well-maintained river environment will also bring benefits in the form of economic benefits. The role of the community by applying their traditional culture through Local Wisdom "Merti Code" has an effective impact on efforts to preserve and manage clean rivers. This can be analysed from the results of research on the impact of the quality of the Code River water quality which is relatively clean after the annual Merti Code agenda. . By conducting the "Merti Code" ceremony by the community on the banks of the Code River, the community is invited to be directly involved in the management and maintenance of river environmental conservation through the local wisdom of the local community, where high participation in the preservation of the river environment from the surrounding community will create a sense of ownership of the river environmental resources. This is in line with the SDG's target relating to the maintenance of a sustainable river environment which is targeted to be achieved by 2030. The author realises the limitations in this research, but it can be a way to open up future research to perfect this research. The limitations of this research use qualitative data with empirical juridical methods which can cause argument bias, although we use some secondary data to strengthen primary data, such as the Code river water environmental health table. Thus, future research can investigate the direct influence on actions in order to save and manage the river environment by using a series of data on local wisdom motives for saving the river environment in other areas that can be combined with the results of previous research, so that there is a strong argument for the results of this study.

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