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Development of Growth Pole Areas through Blue Economy-Based Fisheries Sector in Gunungkidul Regency

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ABSTRACT

Poverty is still a crucial phenomenon that must be overcome in Gunungkidul Regency. The aim of this research is to plan the development of the fisheries sector as an effort to reduce poverty. The analysis techniques used in this research are Shift Share analysis, Location Quotient (LQ), Klassen Typology, Scalogram analysis, and supported by literature studies. The results showed that the fisheries sector is a potential sector to be developed. The sub-sector that becomes the leading sector in the fisheries sector is marine fisheries. Then, the sub-sector of inland water, brackish water pond, and freshwater pond becomes a potential sub-sector. Meanwhile, cages and floating cage net are the underdeveloped sub-sector in the fisheries sector. Each district has different potential in the fisheries sector. Girisubo District can be developed as a production center. Meanwhile, Wonosari District can be developed as a processing industry center. In its management, a blue economy concept approach is recommended in this research.

Keywords: Blue Economy, Development, Fisheries Sector, Growth Pole

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INTRODUCTION

Poverty is a multidimensional phenomenon and a complex problem because it does not only concern the economic field, but also the education, health, social, and cultural fields, and even the political field (Larantika, Zauhar, Makmur, & Setyowati, 2017). Although poverty is a multidimensional phenomenon, poverty levels are often measured using the economic dimension, which is based on income and consumption (World Bank, 2015). In line with this, Fombad (2018) argues that there is no single definition of poverty that can be generally accepted. In addition, poverty has a complex meaning and varies from context to context and from country to country. Then according to Alkire and Kanagaratnam (2021), and the World Bank (2017) argued that poverty is one of the main threats to global development, besides that eradicating poverty and all its dimensions is the first sustainable development goal and the main goal in national and international development. Poor families are generally concentrated in rural areas and have low education (Aziz, Royani, & Syukriati, 2021). Gunungkidul Regency is one of the regions that is still dealing with the phenomenon of extreme poverty. In fact, Gunungkidul is one of the districts that has a major contribution to the high poverty rate in the Special Region of Yogyakarta Province.

Table 1. Percentage of Poor Population by Regency/City 2020-2022

Regency/Municipality	Poverty Percentage		
	2020	2021	2022
Special Region of Yogyakarta Province	12.28	12.80	11.34
Kulonprogo	18.01	18.38	16.39
Bantul	13.50	14.04	12.27
Gunungkidul	17.07	17.69	15.86
Sleman	8.12	8.64	7.74
Yogyakarta	7.27	7.64	6.62

Source: BPS, Processed, 2023.

Table 2 shows the distribution of poverty percentages in 5 (five) regencies/cities in the Special Region of Yogyakarta. Of the five regencies/cities, Gunungkidul Regency still has a high percentage of poverty. In 2022, the percentage of poor people in Gunungkidul Regency reached 15.86 percent. This figure is higher than the average poverty rate of the Special Region of Yogyakarta Province and about twice that of Sleman Regency and the City of Yogyakarta. The high percentage of poverty in Gunungkidul indicates that it is one of the pockets of poverty in the Special Region of Yogyakarta Province. Located in the southern coastal region, the area has potential in the marine and fisheries sectors. However, the economy still relies on the primary and secondary sectors, making the population's income relatively low and uncertain. This phenomenon shows that the potential of the area has not been optimally utilized in poverty alleviation efforts.

One of the efforts that can be made in overcoming these problems is through integrated regional development, namely by determining the growth pole area based on the local potential of the region. According to the growth pole theory that in order to grow rapidly, a region needs to choose one or more regional growth centers that have the strongest potential (Rusdarti & Fafurida, 2016). Regional development is an integral part of national development (Samiun, 2022). Basically, the key to successful regional development is proper planning. The planning must be based on the problems, basic

needs, and local potential of the region so that the development carried out is in accordance with the target and is able to improve the economy of a region (Arifien, Fafurida, & Noekent, 2012). In relation to planning the development of sustainable growth pole areas in coastal areas, environmental factors need to be a concern. Basically, besides having an economic function, namely increasing income through tourism and marine commodities, coastal areas also have a major function, namely ecological functions. According to Sukendar (2013), pollution and degradation of environmental quality are generally caused by an increase in economic activity. The application of economic concepts oriented towards environmental and natural resource conservation is one option to overcome these problems. One of the efforts that the government can make in the development of sustainable growth poles is by applying the concept of blue economy. The blue economy concept is applied as one of the strategies in protecting the world's oceans and water resources, as well as addressing the inherent conflict between the two discourses of growth and development, and the protection of marine resources (Lee, Noh, & Khim, 2022). The focus of this research is to develop a plan for the development of growth pole areas through the fisheries sector based on the blue economy.

LITERATURE REVIEW

Growth Pole Theory

Perroux's theory (1970), known as the growth center, is the basis of the regional industrial development policy strategy that is widely applied in various countries today. Perroux (1970) says growth does not appear in different areas at the same time. Growth only occurs in a few places called growth centers. The essence of the Growth Center theory is as follows, first, in the development process there will be a leading industry which is the main driving industry in regional economic development. Second, the concentration of industry in a region will accelerate economic growth, because the concentration of industry will create different consumption patterns between regions so that industrial development in the region will affect the development of other regions. Third, the economy is a combination of a relatively active industrial system (leading industries) with relatively passive industries, namely industries that depend on leading industries or growth centers. The relatively developed or active regions will affect the relatively passive regions (Rusdarti & Fafurida, 2016). Growth poles are also cities with strong socio-economic links to surrounding areas, which have a role as growth centers, and have the ability to spread development throughout the region (Jumino, 2019). Moreover, in theory, growth poles can act as an effective instrument to reduce the level of differentiation between regions (Suvorova, 2019).

Economics Base Theory

This theory states that the growth of a region is highly dependent on its ability to export goods or services (Arifien, Fafurida, & Noekent, 2012). According to Hoover and Giarratani (1984), the growth of several basic sectors will determine the overall regional development, while non-basic sectors are only the consequences of regional development (Rusdarti & Fafurida, 2016). Furthermore, Priyarsono (2017) defines the Economic Base Theory as economic activities in a region can be sorted into two, namely (1) non-base components that serve the consumption needs of local residents, and (2) base components that produce goods and services for consumption outside the region. The Economic Base Theory predicts that development occurs through the expansion of the base sector of the economy because such development has a multiplier effect. The use of this theory in a study is intended to identify development sectors that are included in the basic and non-basic sectors in a region.

Blue Economy Concept

Blue economy is a new approach that encourages the sustainability of the ocean and coastal areas for economic growth (World Bank, 2017). According to the Indonesian Maritime Council, the blue economy concept provides opportunities for environmentally sound investment and business, utilizes natural resources more efficiently and environmentally friendly, produces a more efficient and cleaner system, produces greater products and economic value, increases employment, and provides fairer benefits for each actor (Tegar & Gurning, 2018). Furthermore, according to the World Bank (2017), it defines the blue economy as the sustainable use of marine resources for economic growth, livelihood improvement, with attention to and maintaining marine ecosystems. In line with this definition, Nurhayati (2015) defines the blue economy as the sustainable use of marine resources for economic growth, improved livelihoods, with attention to and maintaining marine ecosystems. Lee, Noh, and Khim (2020) suggest that an important component of the definition is the need for cross-sector collaboration through various partnerships and stakeholders. Then according to Patil et al (2018) the blue economy is defined as activities that are directly or indirectly related to the sea, oceans and coasts by using or utilizing marine resources and will ultimately contribute to inclusive and sustainable economic growth, creating jobs and prosperity, while maintaining the health of marine ecosystems. This includes activities such as exploration and development of marine resources, appropriate use of marine and coastal spaces, utilization of marine products, provision of goods and services to support marine activities and protection of the marine environment. Furthermore, the blue economy approach emphasizes that blue economy ideas, principles, norms make a significant contribution to poverty alleviation, contribute to food security and nutrition, climate change mitigation and adaptation, and the creation of sustainable and inclusive livelihoods.

Another explanation, Bennett, Blythe, White, and Campero (2020) suggest that the blue economy agenda is not only focused on increasing the monetary contribution of marine resources. Aspects of sustainability of marine resources and justice also need attention. Bennett, Blythe, White, and Campero (2020) also describe 10 injustices at sea that can occur if aspects of justice are not considered in the blue economy agenda, namely: deprivation, displacement and ocean grabbing, environmental injustice from pollution and waste, environmental degradation and reduced availability of ecosystem services, livelihood impacts for small-scale fishers, loss of access to marine resources needed for food security and welfare, unequal distribution of economic benefits, social and cultural impacts of ocean development, marginalization of women, human rights violations, and exclusion from decision-making and governance.

RESEARCH METHOD

The type of data used in this research is secondary data. Secondary data was obtained from various sources, namely BPS Gunungkidul Regency, BPS Special Region of Yogyakarta Province, Website of the Marine and Fisheries Service of Special Region of Yogyakarta Province and secondary data from other related institution. The analytical tools used in this research are Shift Share analysis, Location Quotient (LQ), Typology Klassen, and Scalogram analysis. Shift Share analysis is used to determine the fisheries subsector that has a competitive advantage in Gunungkidul Regency.

Meanwhile, the Location Quotient (LQ) analysis results can be known fisheries subsectors that have comparative advantage in Gunungkidul Regency. From the results of Shift Share and Location Quotient (LQ) analysis, it will be known which fisheries subsectors can be developed in each district. Meanwhile, Scalogram analysis is used to determine the hierarchy of service centers which will also be used as a guideline for the establishment of processing industries. In addition, this research is also supported by literature studies. The results of Location Quotient (LQ), Shift Share, and Scalogram analysis will be used as considerations in developing blue economy-based growth pole area development planning.

RESULTS

Performance of the Fisheries Sector in Gunungkidul Regency

Gunungkidul Regency is one of the regencies in the Special Region of Yogyakarta Province, which is located in the South Coastal Region. Gunungkidul Regency has a large coastal area located in the south, bordering the Indian Ocean, stretching for about 65 km from Purwosari District to Girisubo District. This causes the potential of fisheries and marine sector commodities to be very large and open to development. In terms of production, the fisheries sector is one of the potential sectors that can be developed.

Table 2. Production of Fisheries Sectors by Sub-Sector in Gunungkidul Regency (ton), 2021-2022

Fisheries Sector Production (*ton*)		
Sub-Sectors	**Year**	
	2021	**2022**
Marine fisheris	3,797.15	3,706.69
Inland water	186.57	234.60
Brackish water pond	4.55	16.22
Fresh water pond	12,173.43	11,861.54
Cage	1.79	-
Floating cage net	-	-
Pady mina	2.02	83.11
Lake	-	387.07

Source: BPS, Processed, 2023.

From these fisheries sub-sectors, the one with the largest contribution to the economy of Gunungkidul Regency is the marine fisheries sub-sector. In 2021, marine fisheries production reached 3,797.15 tons, while in 2022 it reached 3,706.69 tons. Marine fisheries are the sub-sector with the highest production compared to other sub-sectors. This is due to the location of Gunungkidul Regency, which is located in the southern coastal area and has a fairly wide coastal length.

To identify potential leading fisheries sub-sector commodities that can be developed in Gunungkidul Regency is based on commodities that have competitive and comparative advantages, or have the advantage of one of them. sectors or commodities are said to have comparative advantage if the production of a sector in a region can meet the needs in the region and the rest can still be exported outside the region. Meanwhile, what is meant by competitive advantage is a commodity that is able to compete with the same commodity in other regions.

In this research, fisheries sub-sectors that will be developed in supporting the development of growth pole areas in Gunungkidul Regency are sub-sectors that are superior sub-sectors and potential sub-sectors. It is called a leading sub-sector if the sub-sector in an area has competitive and comparative advantages. Meanwhile, it is called a potential sub-sector if it has a competitive advantage or comparative advantage only.

Fisheries Sub-Sectors with Competitive Advantage

Competitive advantage can be seen from the results of the Shift Share analysis. What is meant by competitive advantage is a commodity that is able to compete with the same commodity in other regions, this can be measured by looking at the value of the Cij component (competitive advantage component) in the Shift Share analysis. If the value of Cij in the Shift Share analysis is positive, then the commodity has a competitive advantage.

Based on the results of the Shift Share analysis, the fisheries sub-sectors that have a competitive advantage in Gunungkidul Regency are marine fisheries, inland water, brackish water pond, and fresh water pond. The marine fisheries sub-sector is spread across 6 districts, namely Girisubo, Panggang, Purwosari, Saptosari, Tanjungsari, and Tepus. The inland water sub-sector is spread in almost all districts, while the brackish water pond sub-sector is only in Tanjungsari District. Then fresh water pond sub-sector is also spread across all districts, and the cage sub-sector is only in Semanu and Tepus Districts.

Fisheries Sub-Sectors with Comparative Advantage

Comparative advantage can be determined from the results of the LQ (Location Quotient) analysis. The sector is said to have a comparative advantage if the LQ value > 1. This means that a sector or commodity is said to have a comparative advantage if the production of a sector in a region can meet the needs of the region and the rest can still be exported outside the region. However, if the LQ value < 1, then the commodity or sector does not have a comparative advantage.

Table 3. Results of LQ Analysis Based on Productivity of Each Fisheries Sub-Sector in Gunungkidul Regency in 2022

Fisheries Sub-Sector	LQ
Marine Fisheris	4.97
Inland Water	0.71
Brackish Water Pond	0.02
Fresh Water Pond	0.84
Cage	0.00
Floating Cage Net	0.00
Pady Mina	0.01
Lake	-

Source: Data Processed, 2023.

Based on the results of the LQ analysis, it shows that the fisheries sub-sector in Gunungkidul Regency that has a comparative advantage is the marine fisheries sub-sector. Girisubo District is the sub-district with the largest production level of marine fisheries sub-sector in Gunungkidul Regency.

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Leading Fisheries Sub-Sectors in Gunungkidul Regency

The leading fisheries sub-sectors that can be developed in Gunungkidul Regency can be shown based on the results of the LQ and Shift Share analysis through Klassen typology. This means that the leading sub-sectors are sectors that have competitive and comparative advantages. To see the leading sectors that can be developed in Gunungkidul Regency, it can be seen in the results of the Klassen Typology analysis in Table 4.

Table 4. Klassen Typology Analysis

SS / LQ	LQ > 1	LQ < 1
SS (+)	Marine Fisheris	Inland Water, Brackish Water Pond, Fresh Water Pond
SS (-)	-	Cage, Floating Cage Net

Source: Data Processed, 2023.

The quadrant above shows that the fisheries sub-sector that is the leading sub-sector in Gunungkidul Regency is the marine fisheries sub-sector. This means that the marine fisheries sub-sector has comparative advantage and competitive advantage. Meanwhile, potential fisheries sub-sectors in Gunungkidul Regency are inland water, brackish water pond, fresh water pond, which only have competitive advantages. Then, Cage and Floating Cage Net sub-sectors are underdeveloped sectors, meaning that the sector has neither comparative advantage nor competitive advantage.

Growth Pole Regional Development Planning through Blue Economy-Based Fisheries Sector

Based on the results of the Shift Share and Location Quotient (LQ) analysis, it shows that the leading fisheries sector in Gunungkidul Regency is the marine fisheries sub-sector. Girisubo District is the district with the largest production in the fisheries sector, especially the marine fisheries sub-sector. These results indicate that Girisubo District can be developed as a central production center in the fisheries sector with a leading sector in the marine fisheries sub-sector. Meanwhile, other districts can be used as supporting areas (hinterland) that will function as input providers to the processing industry. According to Arifien, Fafurida, and Noekent (2012), the processing industry needs to be built in each leading sector to accommodate the production of each sub-sector produced. The direction of growth pole area development planning through the fisheries sector can be outlined in Table 5.

Table 5. Development Direction of Fisheries Sector

No.	District	Scalogram Rank	Production Rank	Commodity (Fisheries Sub-Sector)	Development Direction
1	Gedangsari	13	16	Fresh Water Pond	Hinterland
2	Girisubo	17	1	Marine Fisheries, Inland Water, Fresh Water Pond	Production Center
3	Karangmojo	5	3	Fresh Water Pond, Inland Water, Pady Mina	Hinterland
4	Ngawen	10	8	Fresh Water Pond	Hinterland
5	Nglipar	15	12	Fresh Water Pond	Hinterland

6	Paliyan	14	14	Fresh Water Pond	Hinterland
7	Panggang	10	9	Marine Fhiseries, Inland Water, Fresh Water Pond	Hinterland
8	Patuk	9	7	Inland Water, Fresh Water Pond	Hinterland
9	Playen	3	4	Inland Water, Fresh Water Pond	Hinterland
10	Ponjong	4	2	Inland Water, Fresh Water Pond, Pady Mina	Hinterland
11	Purwosari	18	18	Marine Fisheries, Inland, Fresh Water Pond	Hinterland
12	Rongkap	16	17	Inland Water, Fresh Water Pond	Hinterland
13	Saptosari	12	15	Marine Fisheries, Inland Water, Fresh Water Pond	Hinterland
14	Semanu	8	6	Inland Water, Fresh Water Pond	Hinterland
15	Semin	7	10	Fresh Water Pond, Inland Water	Hinterland
16	Tajungsari	2	11	Marine Fisheries, Inland Water, Brackish Water Pond, Fresh Water Pond	Hinterland
17	Tepus	6	13	Marine Fisheries,Inland Water, Fresh Water Pond, Cage	Hinterland
18	Wonosari	1	5	Inland Water, Fresh Water Pond, Pady Mina	Processing Industry

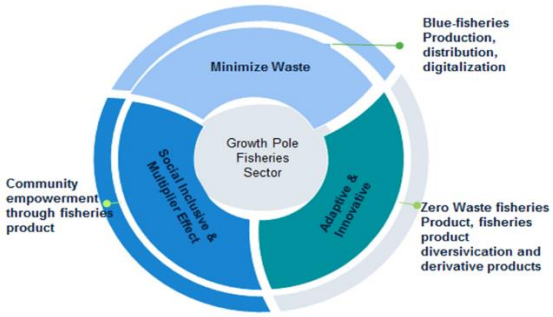
Source: Data Processed, 2023.

Based on Table 5, it can be seen that fisheries sub-sector commodities are spread across each district in Gunungkidul Regency. As an effort to develop the growth pole region, the direction of fisheries sector development in each district is necessary. In its development, Girisubo District can be developed as a production center, because Girisubo District is the district with the highest fisheries production in Gunungkidul Regency, especially in the marine fisheries sub-sector which is the leading fisheries sub-sector in Gunungkidul Regency.

Each district has a different distribution of fisheries sub-sectors. Each fisheries sub-sector needs to be processed into derivative products that will provide a higher selling value than being sold in an unprocessed state. In this study, Wonosari District can be developed as a processing industry. The selection of the location of the fisheries processing industry is based on the consideration that investors will enter an area if the infrastructure in the area is good. This is supported by the results of the scalogram value of each district, where Wonosari District is the district with the highest scalogram value. The, other areas are developed as supporting areas (hinterland) which will function as input providers for the processing industry.

In its implementation, the development of the growth pole region through the fisheries sector will cause environmental problems if it is not managed sustainably and oriented towards environmental conservation. Being in the southern coastal area, in addition to providing economic benefits, coastal areas also have environmental conservation functions. Therefore, the blue economy model is needed in the development of the growth pole region through the fisheries sector. Blue economy is a model of economic development approach that no longer relies on economic development based on excessive exploitation of natural resources and the environment. This is a big leap in development by abandoning economic practices that are concerned with short-term profits and driving a low carbon economy (Wiratma, 2019).

Figure 1. **Blue Economy-Based Fisheries Sector Development Model**



Source: Data Processed, 2023.

According to Griggs et al (2013) the context of the blue economy in the Sustainable Development Goals (SDGs), implies that economic development should be inclusive and environmentally sound, and pay attention to future needs as an effort to balance the economic, social and environmental dimensions of sustainable development in relation to the oceans. In developing the growth pole region through the fisheries sector, using three principles in the blue economy model, namely minimizing waste, social inclusive and multiplier effect, and adaptive & innovative. The strategies that can be applied are through the creation of blueprints in regional development, mapping of fisheries-based areas, creating a blue economy curriculum, and empowering coastal communities with the approach of blue economy principles.

The role of multi-actors is needed in the success of the planning. The government can work together with multi-actors through the quadruple helix approach. Quadruple helix collaboration itself is a form of collaboration between four actors, namely government, business, academia and civil society (Efendi & Suharsih, 2023). The development of blue economy-based regions requires advanced technology and a new collaboration model between stakeholders. The quadruple helix model is important to implement. Because according to Afonso et al in Efendi, Putra, and Sofwan (2023), the previous collaboration model, namely the triple helix, is not the right model to use in the long term. Thus, to encourage innovation and creativity, the role of civil society as the fourth helix is needed in the quadruple helix model.

DISCUSSION

The results of the analysis reveal valuable insights into the performance of the fisheries sector in Gunungkidul Regency. Gunungkidul's extensive coastal area, stretching approximately 65 km along the Indian Ocean, presents significant potential for the development of fisheries and marine-related activities. The marine fisheries sub-sector stands out as the most prominent contributor to the local economy, given the regency's strategic location in the southern coastal area. Key findings from the analysis highlight that the marine fisheries sub-sector exhibits both competitive and comparative advantages. This implies that Gunungkidul Regency has the capacity to not only meet local demands but also export marine fisheries products to other regions. The presence of competitive advantages, as evidenced by positive Cij values in the Shift Share analysis, further emphasizes the sector's ability to compete with similar commodities in other regions.

Additionally, the Location Quotient (LQ) analysis identifies Girisubo District as the focal point for marine fisheries production, indicating a comparative advantage in meeting local needs and potential for export. This positions Girisubo as a potential growth pole and central production center within the fisheries sector. The identification of competitive and comparative advantages categorizes the marine fisheries sub-sector as a leading sub-sector in Gunungkidul Regency.

To leverage this advantage, the analysis recommends developing Girisubo District as a production center, with other districts serving as supporting hinterland areas. The growth pole development strategy involves establishing processing industries in leading sectors to accommodate sub-sector production. Wonosari District, with the highest scalogram value, is identified as a suitable location for fisheries processing industries. However, the study recognizes the importance of sustainable development practices and environmental conservation, particularly in coastal areas. The implementation of a blue economy model is suggested, emphasizing inclusive and environmentally sound economic development. This approach aligns with the principles of the Sustainable Development Goals (SDGs) and emphasizes minimizing waste, social inclusivity, and adaptive and innovative strategies.

Collaborative efforts involving government, business, academia, and civil society, as proposed by the quadruple helix approach, are deemed crucial for successful regional development. The model encourages innovation and creativity, with civil society playing a pivotal role in ensuring the longevity and effectiveness of the development initiatives. In conclusion, the findings underscore the potential for Gunungkidul Regency to become a growth pole in the fisheries sector, particularly in marine fisheries. Through strategic planning, collaboration, and the adoption of sustainable practices, the region can capitalize on its competitive and comparative advantages, contributing to economic growth and environmental conservation.

CONCLUSION

Located in the southern coastal region, the fisheries sector has become a potential sector in Gunungkidul Regency. The leading fisheries sub-sector is marine fisheries. Then, inland water, brackish water pond, and freshwater pond become potential sectors. Meanwhile, the cage and floating cage net sub-sector is the underdeveloped sub-sector.

Each district has different fisheries sub-sector commodities. The marine fisheries sub-sector is spread across 6 districts, namely Girisubo, Panggang, Purwosari, Saptosari, Tanjungsari, and Tepus. The inland water sub-sector is spread in almost all districts, while the brackish water pond sub-sector is only in Tanjungsari district. Then fresh water pond sub-sector is also spread across all districts, and the cage sub-sector is only in Semanu and Tepus districts. In its development, Girisubo district can be developed as an industrial center because it has the largest production of fisheries sector, especially marine fisheries sub-sector which is the leading sub-sector in Gunungkidul Regency. Furthermore, Wonosari District can be developed as a processing industry. This is supported by the results of the scalogram value of each district, where Wonosari District has the highest scalogram value. Meanwhile, other districts are supporting areas (hinterland).

The blue economy model needs to be applied in planning the development of the growth pole area through the fisheries sector, as an effort to conserve the marine environment. In its implementation, multi-actor collaboration, namely government, business, academia and civil society through the quadruple helix model is recommended in this study.

LIMITATION

This research is still limited to secondary data and the analysis methods used are also limited. Therefore, researchers suggest that further researchers can deepen the scope of research by using additional primary data and different analytical methods.

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DECLARATION OF CONFLICTING INTERESTS

This article is the author's original work, has not received prior publication and is not under consideration for publication elsewhere.

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