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Research Article

DEVELOPMENT OF LOCAL SUPERIOR PRODUCT INDUSTRY CLUSTERS TOWARDS STRONG AND INDEPENDENT NATIONAL INDEPENDENCE WITH A SUSTAINABLE CIRCULAR ECONOMY APPROACH

***Edy Syamsuddin, Vionita Lukitari, Dadi Soedjati, Dharmawan, Sudiono, M. and Adim Hadi**

National Research and Innovation Agency, Indonesia

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Abstract

One of the factors causing the increase in Greenhouse Gases will interfere with the sustainability of life in all fields from time to time. Indonesia is committed to climate resilience schemes, and most recently the SDGs (Sustainable Development Goals) scheme, including economic achievements and the sustainability of equitable community life. It is necessary to develop an industrial model of local superior products through the principle of industrial clusters and circular economy so that local superior products are produced that are sustainable and have competitiveness of goods and services products and improve the ability of independent Indonesian human resources. The success of a sustainable local superior product set data, the model can be implemented in various districts / cities in Indonesia, so that each region / region can contribute to efforts to realize Indonesia's commitment to reduce carbon emissions and achieve the net zero emission target by 2060

Keywords: Additional industrial activities, scarcity of resources, environmental pollution, superior product industries, industrial clusters, superior product data sets and circular economy through the green economy.

INTRODUCTION

The phenomenon of global warming and climate change has become more serious in various regions of the world in recent times, and caused natural disasters. One of the contributing factors to this phenomenon is the increase in Greenhouse Gases in the earth's atmosphere due to deforesation, an increase in industrial activity. The increase in industrial activity around the world not only triggers the rate of GRK release, but also causes an increase in the rate of environmental pollution and scarcity of resources, so that it will disrupt the sustainability of life in all areas of life. Indonesia is committed to supporting various mitigation and adaptation schemes (climate resilience), and the latest is the Sustainable Development Goals (SDGs) scheme, which is a scheme that raises multi-achievements including economic achievements and the sustainability of people's lives in addition to reducing the optimal GHG emission rate in its implementation. Development with a low-carbon approach is also an effort to realize Indonesia's commitment to reduce carbon emissions by setting a Net Zero Emission target by 2060 or sooner if it receives international support (COP 26). The implementation of these reserves is creatively manifested in an economic concept that prioritizes saving resources, environmentally friendly products, the implementation of economic activities from the local – regional – national and global levels, community empowerment, equitable access to resources and encouraging innovation from upstream to downstream, called the Circular Economic Concept. Indonesia has 514 districts and cities. If each district and city has only one local superior product, then at least Indonesia has more than 500 local superior products.

Corresponding Author:** ***Edy Syamsuddin,
Badan Pengkajian dan Penerapan Teknologi, Indonesia

The potential of these local superior commodities or products needs to be known and developed optimally through the development of industrial clusters to create regional/regional competitiveness, which in turn will increase the potential for national competitiveness. The application of a circular economy can also be an answer to the problem of resource scarcity. The Center for Sustainable Production Systems Research and Life Cycle Assessment at the Energy and Manufacturing Research Organization – National Research and Innovation Agency, has a focus on Sustainable Economic Development, and the Sustainable Industry Cluster Research Group and TKDN contribute to the implementation of their main tasks by conducting research, development and application of sustainable industrial clusters and circular economy. Our circular economy concept keeps resources in use for as long as possible, extracts the maximum value of its goods and services as it is used, then recovers and regenerates products and materials at the final level of each service life cycle. The main thing that distinguishes the concept of a circular economy is from the utilization of resources, where in a circular economy the source of raw materials from their products comes from recyclable materials.

The circular economy targets to minimize the social and environmental impact of its business processes. There are several things that support the realization of a circular economy. Circular economy-based businesses must be able to extend the value of products. Another no less important pillar is that the product has a long service life. This can be realized by a design that makes the product durable and can be repaired if damaged. Not only that, businesses that uphold the concept of a circular economy must prevent consumers from the nature of consumerism. Subsequently, the value of the product resources was also increased.

Figure 1. Circular Economic Concept

The circular economy follows the concept and design of natural patterns of make, take, use, and recycle. "the waste will be an input for the next industrial process, there will not be much exploitation of natural resources b Pollution resulting from the process of human production and consumption has a negative impact on the environment. Therefore, the government has now launched a new circular economy concept of sustainable local superior products and the compilation of sustainable local superior product dataset data through the development of local superior product industry clusters. ecause it will also be limited,".

Purpose

The objectives of the Sustainable Local Superior Product Development Activity until 2025 are to develop a circular economy model and compile a sustainable local superior product data set, as well as implement it in several pilot areas/regions through the development of local superior product industry clusters, to improve the competitiveness of sustainable local superior product industries by paying attention to the environment and surrounding communities.

Goal

The targets of Sustainable Local Superior Product Development Activities until 2025 are:

- The formation of a circular economic model of sustainable local superior products;
- The compilation of continuous local superior product set data; and
- Implementing a sustainable circular model of the local superior product economy through the development of local superior product industry clusters.
- The deterioration of the mindset of Sustainable Local Superior Product Development activities; and
- The preparation of detailed stages of Sustainable Local Superior Product Development activities.

The data collection methodology in this study, namely using a mixed method (a combination of quantitative and qualitative methods). Quantitative data collection is carried out through secondary data, waste generation measurement surveys, and questionnaire surveys. As for qualitative data collection, the data collection methods carried out are literature studies, in-depth interviews, and focus group discussions in stakeholder meetings. Development of a local superior product industrial model that applies the principles of industrial clusters and circular economy so that local superior products are produced that are sustainable and have competitiveness to substitute imported products and increase the Domestic Component Level (TKDN). With the preparation of a circular model of the economy of a region or region in Indonesia and the sustainable management of local superior product data sets, it is hoped that the model can be implemented in various districts/cities in Indonesia, so that each region / region can contribute to efforts to realize Indonesia's commitment to reduce carbon emissions and achieve the net zero emission target by 2060.

RESULTS AND DISCUSSION

Sustainable Development of Local Superior Products can be known through 5 analytical methods such as asas the following:

Location Quotient (LQ) Analysis Methods

Location Quotient (LQ) analysis is used to identify the sectoral competitiveness of the economy of an area (city). The analysis is carried out using the LQ index, where the greater the value of the LQ index for a particular sector in an area, the higher the competitiveness of the sector against other regions. This analysis divides two systems, namely: Static Location Quotient (SLQ) and Dynamic Location Quotient (DLQ). And the merger of SLQ and DLQ.

a) Static Location Quotient (SLQ). LQ's analysis is based on the idea that the base industry produces goods and services both for markets in the regions and for markets outside the regions.
b) Dynamic Location Quotient (DLQ). Is a modification of the SLQ, accommodating the growth rate factors of the economic sector's output over time.
c) Combined Matrix SLQ and DLQ. The combined matrix between SLQ and DLQ values can be used as a criterion in determining whether the economic sector is classified as superior, prospective, mainstay, and less prospective or lagging behind.

Kriteria	SLQ ≥ 1	SLQ < 1
DLQ ≥ 1	Leading Sectors	Mainstay Sector
DLQ < 1	Prospective Sector	Less Prospective/ Lagging Sectors

Figure 2. Combined matrix of SLQ and DLQ

Industrial Cluster Environmental Analysis Method (Four Diamond Porter)

This theory of analysis is known as Michael Porter's The Four Diamond Framework. Identifying positive/driving factors and negative factors/obstacles that exist in the industrial cluster environment, then used to formulate an action plan to increase the competitiveness of the industrial cluster and have an impact on increasing regional competitiveness.

Industrial cluster development

A series of meetings that can be used as milestones during the initiation initiative process to increase regional competitiveness.

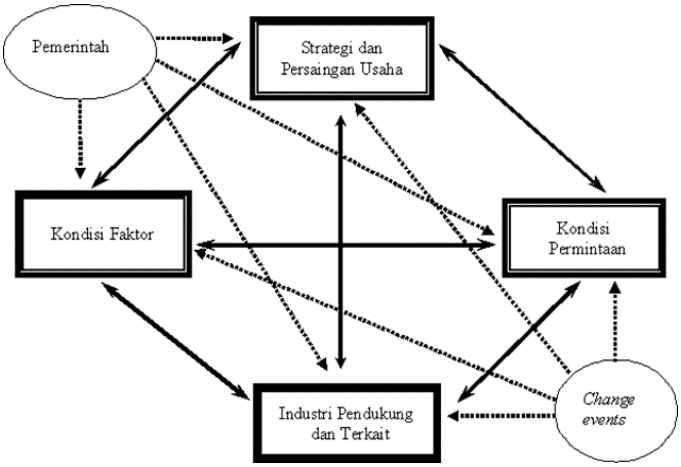

Figure 3. Factors Affecting the Competitiveness of Industrial Clusters

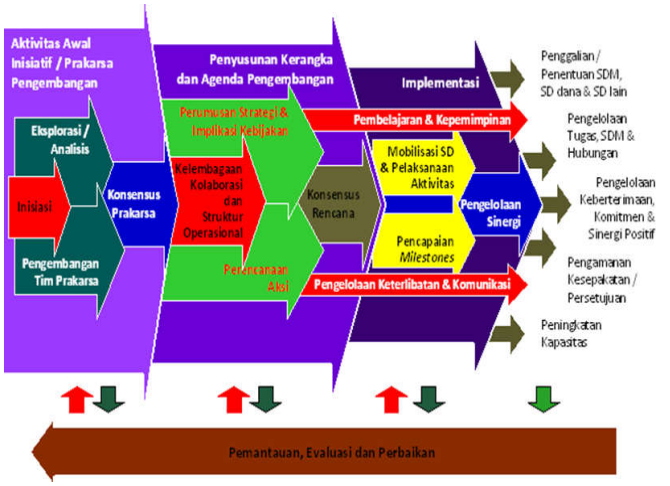

Figure 4. Industrial Cluster development model

Appoint initiators collecting regional and communication data. Examples: Bappeda, large private sector, associations and others. Key Stakeholders (PKK) towards regional development. Create a contact. And Create a schedule.

Determination of regional stakeholders and small group discussions with the theme "increasing regional competitiveness". Furthermore, it determines the goal of understanding the competitiveness of the region and the foundation of the industrial cluster as well as the determination of specific cluster themes. Review. Sketch. Create an execution strategy. Prepare a template. Prepare supporting materials. The number of klisters and their initiators is entirely up to a specific cluster group. Have successive and systematic discussions. Development of innovative information; sharpening of the intervention agenda and the Competitiveness Development Council. In addition, it is necessary to grow awareness of increasing the capacity of innovation, be it innovations of a general nature and those related to specific clusters. Competitiveness Development Council. Innovative data. And the Cluster Working Group. Appointment of members of the Competitiveness Development Council and Formalization of the Competitiveness Development Council. DPDS document. Finalization. Inauguration. and Publications. Have intensive and measurable discussions. Preparation of DPDS proposals on regional policies. DPDS working meetings with all specific industry cluster working groups Synchronization. Database. And Capacity building. Repair. \. Adoption. Dissemination and Monitoring.

TKDN Calculation Method

TKDN is the magnitude of the domestic component contained in goods, services and a combination of goods and services. The domestic component of the goods is the use of raw materials, design and engineering containing elements of manufacturing, fabrication, assembly, and final completion of work derived from and carried out domestically.

The procedures for calculating TKDN Sucofindo which are the reference in this study are as follows:

$$\%\ \text{TKDN Barang} = \frac{\text{Biaya Produksi Total} - \text{Biaya Produksi KLN}}{\text{Biaya Produksi Total}} \times 100\%$$

$$\%\ \text{TKDN Jasa} = \frac{\text{Biaya Jasa Total} - \text{Biaya Jasa KLN}}{\text{Biaya Total Jasa}} \times 100\%$$

$$\%\ \text{TKDN Gabungan} = \text{Gabungan antara TKDN Barang dan TKDN Jasa}$$

The assessment of service TKDN will be calculated or traced to the third layer, If the value of the product < 3% of the value of the first layer product and is produced domestically, then the KDN = 100% is assessed and the costs are calculated after arriving at the job site.

Circular Economic Concept

A circular economy is an industrial system that is restorative and regenerative with a design that replaces the traditional linear economic concept. The concept of a circular economist is take, make, use, and recycle. Thus, economic actors keep resources usable for as long as possible, extract maximum value from use, then recover and regenerate products and materials at the end of each product's life. Development with a low-carbon approach is also an effort to realize Indonesia's commitment to reduce carbon emissions by setting a Net Zero Emission target by 2060 or sooner if it receives international support (COP 26). The implementation of these canangans is creatively realized in an economic concept that prioritizes saving resources, environmentally friendly products, the implementation of economic activities from the local – regional – national level and globally, community empowerment, equitable access to resources and encouraging innovation from upstream to downstream, called the Circular Economic Concept. The development of the five analytical methods of Sustainable Local Superior Product Development is well interconnected and consistent with the objectives of the research carried out with a substance approach so that the uniformity of sustainable development of local superior products can be adopted from the determination of regional superior components with the role and firmness of decision-making that is beneficial to the continuous economic development that will be carried out in a sustainable manner in a continuous manner so that superior local product regions / cities are obtained to build welfare and forward-based partnerships**.**

Implementation of COOPERATION OF PT Inalum, North Sumatra

The five approach methods that have been delivered in front of and implemented these methods are interconnected and commitment to support them in the form of cooperation of

economic, social and sustainability approaches to the development of superior products that are sustainable in the region with a global context in accordance with the development of a green circular economy development. Cooperation with stakeholders by carrying out a methodology approach delivered with a collaborative approach to the implementation of all research and sustainability approaches is an encouragement of cooperation with the largest aluminum smelting company in Indonesia PT Inalum (Persero) with research institutions and development of the National Research and Innovation Agency encourage the achievement of the target of the study of sustainable superior product industry clusters ranging from government elements, large companies, other stakeholders and all related elements that are more stable and measurable.

Running an integrated Aluminum Smelting Operation that is profitable, safe and environmentally friendly to increase value for stakeholders. Contributing to regional and national economic growth through operational activities and sustainable business development. Participate in empowering the surrounding community through proper Corporate Social Responsibility (CSR), and Partnership and Community Development Program (PCDP/ "PKBL"). Improving hr competence in a planned and sustainable manner for the smooth operation and development of the aluminum industry. PT INALUM (Persero) is committed to contributing to the care and preservation of the Lake Toba conservation area. Synergy, collaboration, and cooperation among all elements of the community in all components of the community so that this step is successful in order to maintain and increase the ecological and economic value of the Lake Toba Area,"

The Regent of Karo Regency also said that the surrounding nature conservation program should not only build infrastructure, but must be more sustainable and boil down to the welfare of the community and the sustainability can be passed on to the next generation. "The preservation of Lake Toba and the Development of Tourist Destinations for the Lake Toba Area requires active participation from various parties, both from the central and regional governments, community groups, to business entities. PT INALUM (Persero) and MIND ID Mining Industry Holding said that PT INALUM (Persero) has a commitment to make the realization of the national program a success, namely making the Lake Toba Area a Super Priority Tourist Destination Area so that the Lake Toba Area is economically developed and ecologically maintained cross-sectoral support from the central government, corporate entities, to community elements so that it can benefit the community. A total of 308,148 tree seedlings will be planted in the Lake Toba Area and the program collaborates with various parties. Conservation of the Lake Toba Catchment Area (DTA) by INALUM alone 130,000 trees with an area of about 260 Ha and the Natural Resources Management Services program with PJT1 as many as 178,148 trees with an area of around 445.37 Ha. The Lake Toba area has allocated 50,000 Macademia seedlings. A total of 28,000 seeds have been distributed to 7 regencies/ cities, including Toba Regency, Simalungun Regency, HumbangHasundutan Regency, Dairi Regency, Samosir, Karo Regency, and North Tapanuli Regency. Meanwhile, the remaining 28,000 will be distributed by community groups in the 7 districts/cities. MIND ID Mining Industry Holding has a passion for realizing noble purposes, namely: For Civilization, For Prosperity, and a Brighter Future. The Lake Toba area will then match the national vision through the Ministry of SOEs related to TJSL / CSR BUMN, which focuses on MSME Development, Environmental Preservation, and Human Resources Improvement. The Lake Toba area will be more advanced in terms of economy due to the increase in class of MSMEs, the increasing quality of local human resources, and the preservation of the Lake Toba area with tree preservation and good waste management. The stakeholders of the Lake Toba Area range from government elements, TNI-Polri, NGOs, to indigenous peoples.

Conclusion

Several concepts of industrial cluster development with the utilization of synerjity and balance of competitiveness and innovation to various independent and sustainable regions can be a pilot for the development of regions that perform in groups to build synerjity and regional wealth towards achieving a sustainable circular economy. The success of a sustainable local superior product data set, the model can be implemented in various districts / cities in Indonesia, so that each region / region can contribute to efforts to realize Indonesia's commitment to reduce carbon emissions and achieve the net zero emission target by 2060. The growth of creativity-innovation at the regional level where the development of local superior products is an integral part of strengthening the national research-innovation ecosystem and to build an ecosystem for the development of innovation and business. To develop the best potential and increase industrial competitiveness through the development of local superior-based industrial clusters. Linkages and partnerships between research-innovation ecosystem actors, as well as dynamizing the flow of knowledge, innovation, diffusion and learning from innovation producers (universities, R&D institutions, business entities) to innovation users (business entities, government officials, and the community) are needed to strengthen innovation networks. As a vehicle for business / economic and social modernization, as well as cultural development, technoprener development is needed. Indonesia is a large country that must be able to meet basic needs independently and provide jobs for its people in a sustainable manner. For this reason, Indonesia must build a solid industry based on the competitive advantages of human resources and the comparative advantages of natural resources. The industry will only grow and develop if its products are used, both to achieve economies of scale, and to improve product quality. TKDN in Indonesia is implemented as a statutory mandate and in accordance with Government policy as a form of partiality to the domestic industry. This alignment is in line with efforts to attract foreign investment into the country through industrial relocation programs. So far, there have been quite a lot of regulations, but the implementation is still inadequate. For this reason, the Government will require Ministries, Institutions, Business Entities to use products that can already be made domestically.

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preparations towards sustainable development for the progress of the Indonesian nation. Hopefully, our input about Development of local superior product industry clusters towards strong and independent national independence with a sustainable circular economy approach can be a part desired by all employees who are professional and the best for the progress of the Indonesian nation of Success for the whole.

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