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DISCLOSURES OF THE CIRCULAR ECONOMY IN THE 2022 ASRRAT PLATINUM RATING COMPANY'S SUSTAINABILITY REPORT

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Abstract

This study explores how a Circular Economy (CE) disclosure appears in a company's Sustainability Report. In particular, the existence of CE is analyzed using the 5R approach, namely: reduce, reuse, recycle, recover, and repair. The research uses qualitative and quantitative content analysis methods, with the 2021 Sustainability Report of 10 companies achieving the 2022 Asia Sustainability Reporting Rating Platinum rankings. The ten companies in question are four engaged in the banking sector, three chemical manufacturers, two energy, and one pharmacy. The research results show that the commitment to a circular economy has given rise to many innovations in reducing generation and reusing waste in companies operating in the energy and chemical industries, two business sectors that use non-renewable natural resources as the main raw material. In the pharmaceutical industry, encourage the use of incinerators as a means of burning B3 waste so that it is safe for the environment. Meanwhile, in the banking sector, commitment to a circular economy can be seen in efforts to reduce paper use, which is in line with the trend of digitalization of banking services, which tends to be paperless. The keywords reduce, reuse, and recycle (3R) are the most common in corporate sustainability reports. While the keywords recovery and repair only appear in 2 reports.

Keywords : *Circular Economy, Disclosure, Sustainability Reporting.*

1. INTRODUCTION

The world is facing severe environmental problems. Piles of rubbish and waste produced by industry and households are not only a problem in developing countries, but also in developed countries such as Europe and the United States. 90% of plastic waste that fills the ocean comes from 10 rivers, of which 8 are rivers in Asia. However, this does not mean that developing countries are the biggest contributors to waste because it turns out that developed countries such as the United States, Canada, England, and Australia have long been exporting plastic waste to Asian countries (National Geographic Indonesia, 2019).

The waste problem does not come from the actions of a group of individuals but is a product of a socio-economic system that contributes to the generation of waste and encourages waste (National Geographic Indonesia, 2019). Based on this statement, consumerism and the maximization of production by industry have played a major role in producing rubbish and waste.

In January 2023, a multinational company from France that holds the Bottled Drinking Water (AMDK) brand in Indonesia faced serious legal action. The company has been accused of failing to deal with the problem

of waste produced during its years of operation worldwide. According to the results of the Break Free from Plastic agency's latest brand audit throughout 2018-2022, the company is in the top 10 largest polluters of plastic waste in the world. ClientEarth says the company uses plastics that weigh more than 74 times the weight of the Eiffel Tower annually. The company's financial report also revealed that within 2021 it had used 750,000 tons of plastic, more than in 2020, namely 716,500 tons of plastic (detiknews, 2023).

The massive use of plastic by industry has made individual efforts to reduce waste by avoiding plastic straws and single-use plastic bag usage, or only using long-lasting items and sustainably produced, an ineffective solution (National Geographic Indonesia, 2019). There must be a comprehensive solution that stops the generation of waste and waste from the start, namely from industrial production activities.

In 2022, the National Center Sustainability Report (NCSR) released a ranking of Asian sustainability reports (Asia Sustainability Reporting Rating/ASRRAT) by highlighting the circular economy as the main theme, entitled Pathway to Circular Economy. ASRRAT 2022 was attended by 50 companies/organizations. Ten companies achieved a Platinum ranking. The companies are PT. Pupuk Indonesia (Persero), PT. Bank Mandiri (Persero) Tbk, PT. Bank BTPN Tbk, PT. Indonesia Power, PT. Bio Farma (Persero), PT. Petrokimia Gresik, PHE ONWJ (Pertamina Hulu Energi Offshore North West Java), PT. Bank Rakyat Indonesia (Persero) Tbk, PT. Bank Pembangunan Daerah Jawa Barat dan Banten Tbk (Bank BJB), and PT. Pupuk Kalimantan Timur (NCCR, 2022).

Accounting and finance are catalysts for circular businesses to succeed and are critical to driving sustainable development. In a newly released report by the Coalition Circular Accounting (CCA), financial accounting in a circular economy means redefining value, impact, and risk to accelerate the circular transition. However, current challenges related to accounting and finance for circular businesses are the main obstacles preventing their widespread and successful implementation. So, there must be efforts to overcome these challenges and capture circular business value. Disclosure is a good way to demonstrate progress towards a circular economy and to provide reassurance to various stakeholders (Coalition Circular Accounting, 2022). The key to obtaining the benefits of a circular economy for businesses is measuring a company's social and environmental impact, not just its financials. In this way, the true positive impact of circular business will be captured. Circular reporting means collecting and presenting data on circularity performance, creating increased accountability, and pressure to act on circularity (Coalition Circular Accounting, 2022).

Nowadays, sustainability information is not only included in stand-alone sustainability reports but can also be included in the company's financial or annual reports. In addition, now the sustainability reporting framework is not only based on the Global Reporting Initiatives (GRI) but has also been developed by the International Financial Reporting Standard (IFRS) with the publication of IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information in June 2023 and coming into effect on January 1, 2024 (IFRS, 2024). In Indonesia, sustainability reports are mandatory for Financial Services Institutions (LJK), issuers, and public companies based on Financial Services Authority Regulation (POJK) Number 51 of 2017, gradually from January 1 2019 to December 31 2025.

This research aims to analyze circular economy disclosures in sustainability reports for 10 platinum-ranked companies in the Asia Sustainability Reporting Rating 2022. A more specific aim is to analyze the emergence of the circular economy terms, namely reduce, reuse, recycle, recovery, repair, and circular economy in the corporate sustainability reports. The results of this analysis will be useful in assessing the company's commitment to implementing a circular economy, which is an important aspect of corporate sustainability. The choice of companies to be included in the sustainability reporting rankings in Asia is to be a good example for other companies who want to implement the same thing. So, this research will provide broad benefits, including 1) For academics, getting data on the implementation of circular economy in companies already committed to preparing sustainable reports. This data can be used as a basis for designing further research; 2) For the public, the results of this research can be used to criticize public companies' commitment to the environment by implementing a circular economy. 3) For business actors, get a good example of implementing a circular economy by platinum-ranked companies in the Asia Sustainability Reporting Rating 2022.

2. LITERATURE REVIEW

Circular Economy

The Ellen MacArthur Foundation (2021) in its glossary, defines the circular economy as a systems solution framework that addresses global challenges such as climate change, biodiversity loss, waste, and pollution. It is based on three principles, driven by design: eliminating waste and pollution, circulating products and materials (of the highest value), and regenerating nature. Meanwhile, Nobre and Tavares (2021) offer a more comprehensive definition, describing the circular economy as an economic system that aims to eliminate waste and pollution throughout the life cycle of materials, from environmental extraction to industrial and end-user transformation, which is applied to all ecosystems involved. At the end of its useful life, the material is returned to the industrial process, or, in the case of treated organic residues, safely returned to the environment in a natural regeneration cycle. The company creates value at the macro, meso, and micro levels and utilizes existing sustainability concepts. The energy sources used are clean and renewable. Efficient use and consumption of resources. Government authorities and responsible consumers play an active role in ensuring the proper operation of the system in the long term.

Circularity, as defined by the United Nations Environment Program (UNEP), is a concept supported by a series of processes (refuse, reduce, redesign, reuse, remanufacture, repair, renew, and recycle) that contribute to transforming the economic model in a more environmentally friendly direction towards a sustainable future (Principles for Responsible Investment (PRI), 2022).

Minister of National Development Planning/Head of Bappenas, Suharso Monoarfa stated, that the circular economy is a closed circular economic system approach, by maximizing the use and value of raw materials, components, and products to reduce the number of leftover materials that are not reused and thrown into final landfills (Bappenas, 2021). A circular economy aims to generate economic growth by preserving the value of products, materials, and economic resources for as long as possible, thereby minimizing the social and environmental damage caused by the linear economic approach. Not just better waste management with more recycling, the circular economy includes a broad set of interventions across all economic sectors, such as resource efficiency and reduced carbon emissions.

The main principles in the circular economy concept are reduce, reuse, recycle, recovery, and repair, well known as 5R. The 5R principle can be implemented by reducing the use of raw materials from nature (reduce), optimizing the use of materials that can be reused (reuse), and materials resulting from the recycling process (recycle) or from the recovery process (recovery) or by carrying out repairs (repairs).

Disclosure

The Circular Accounting Coalition (CCA) (2022) introduced the term circular accounting to describe the practice of measuring and analyzing financial and non-financial performance in companies, to truly reflect and count the value and impact of circular business. This goes beyond corporate financial accounting and has far-reaching impacts on the environment, society, and the economy. Several proposed new additions to the field of accounting, such as integrated income statements and multi-capital balance sheets, may help achieve this goal, although their widespread implementation depends on further development. Circular accounting is about making the intangible impacts of the circular economy tangible and measurable so that they can be expressed.

Regarding disclosure in sustainability reports and company annual reports, CCA calls it the best way to demonstrate progress toward a circular economy. Provide guarantees to stakeholders. Additionally, more importantly, to create internal momentum and focus on circularity, by forcing everyone in the organization to consider circularity in design, processes, and operations (Coalition Circular Accounting, 2022).

Sustainability Report

A sustainability Report is a report containing information on company performance in economic, environmental, and social aspects carried out over one year. Apart from shareholders, this report is also aimed at the public as a form of corporate responsibility that is conveyed transparently. The preparation of this Sustainability Report also aims to communicate the company's commitment to running a sustainable business. The Sustainability Report can also provide a broader and more open picture to all stakeholders regarding the sustainable development activities that have been carried out by the company.

POJK Number 51 of 2017 article 1 number 13 states that the definition of a Sustainability Report is a report announced to the public containing the economic, financial, social, and environmental performance of a Financial Services Institution (LJK), Issuer and Public Company in carrying out sustainable business.

Previous Research

(Opferkuch, 2022) analyzed circular economy disclosures in the sustainability reports of companies included in sustainability rankings in Europe. The research examined 138 reports from 94 European companies. As a result, only 7% of them have integrated the 5 circular economy elements in their Sustainability Report. Less than a third of companies include circular economy targets and indicators, indicating that circular economy content in sustainability reports is largely superficial and inconsistent.

Krishnanda and Ludigdo (2015) have conducted a qualitative descriptive study on the 2009-2013 sustainability report published by PT. Kaltim Prima Coal (KPC) and PT. Aneka Tambang, Tbk (ANTAM), two companies that are the most consistent participants in the Indonesia Sustainability Reporting Awards (ISRA). The results show that KPC's main focus is on economic and social performance, with 100% fulfillment of indicators. Meanwhile, ANTAM's main focus is on environmental performance with indicator fulfillment of 95.6%.

Hjalber and Karlson (2019) concluded that there are three circular economy activities, namely "waste reduction", "recycling", and "renewable resources" that can be considered common to be reported by companies in all industries in the research sample. Based on research during 2014-2018, circular economy reporting has developed over time and it can be concluded that there has been an increase in the quality and quantity of disclosure. While there was some fluctuation in the quality and quantity of reporting over the period, there was an improvement compared to 2014 to 2018 in most subcategories.

The difference between this research and the previous one is in the selection of 10 companies that received platinum ratings in the 2022 Asia Sustainability Reporting Rating/ASRRAT. Otherwise, the research analysis unit is the 2021 Sustainability Report, after the OJK issued Regulation (POJK) Number 51 of 2017 which requires LJKs, issuers, and public companies to implement Sustainable Finance (article 2 paragraph 1), prepare Sustainable Financial Action Plans (article 4 paragraph 1) and Sustainability Reports (article 10 paragraph 1).

3. RESEARCH METHODS

This research uses a population (without sampling) of 10 companies that received a platinum rating in the 2022 Asia Sustainability Reporting Rating, with a 2021 Sustainability Report analysis unit. Data was collected by accessing each company's website, to download the Sustainability Report published online. The following is a list of these companies:

Table 2. Population List

No.	Companies
1.	PT. Pupuk Indonesia (Persero)
2.	PT. Bank Mandiri (Persero) Tbk
3.	PT. Bank BTPN Tbk
4.	PT. Indonesia Power
5.	PT. Bio Farma (Persero)
6.	PT. Petrokimia Gresik
7.	Pertamina Hulu Energi Offshore North West Java (PHE ONWJ)
8.	PT. Bank Rakyat Indonesia (Persero) Tbk
9.	PT. Regional Development Bank West Java and Banten Tbk (Bank BJB)
10.	PT. Pupuk Kalimantan Timur

Source: *Press Release Asia Sustainability Reporting Rating 2022* (NCCR, 2022)

The research uses the content analysis method. According to Krippendorff, content analysis is a research technique for drawing valid and replicable conclusions from text (or other meaningful material) based on the context of its use (Krippendorff, 2004). In other references, content analysis is an approach to document and text analysis to measure content in predetermined categories, in a systematic and replicable way. This term is also sometimes used for qualitative research (Bryman, 2012).

As stated above, content analysis research techniques are used to draw replicable and valid conclusions, by interpreting and coding textual material. By systematically evaluating texts (e.g. documents,

oral communications, and graphics), qualitative data can be converted into quantitative data. Data obtained from the results of interpretation and coding are then processed quantitatively (frequency, percentage).

Content analysis is a research tool used to determine the presence of certain words or concepts within a text or set of texts. Next, we measure and analyze the existence, meaning, and relationships of words and concepts, then make conclusions about the message in the text, the author, the audience, and even the culture and time of which it is a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertisements, theater, informal conversation, or any actual emergence of communicative language. In this research, the document in question is a sustainability report published by the company.

The quantitative and qualitative approaches are used to 1) measure the content in textual information to observe patterns and trends in a systematic and replicable way; and 2) understand and interpret the use of content contextually, through repeated examination and comparison (Bryman, 2012). This flexible approach allows the reduction of large amounts of data and the inference of meaning, making it suitable for achieving this research aim. The overall methodological approach was developed based on six components of content analysis: (i) sampling; (ii) unitizing; (iii) recording; (iv) data simplification (reducing); (v) drawing conclusions, which relies on construct analysis based on the chosen context (abductively inferring); and (vi) narrating, as explained by Krippendorff (2004).

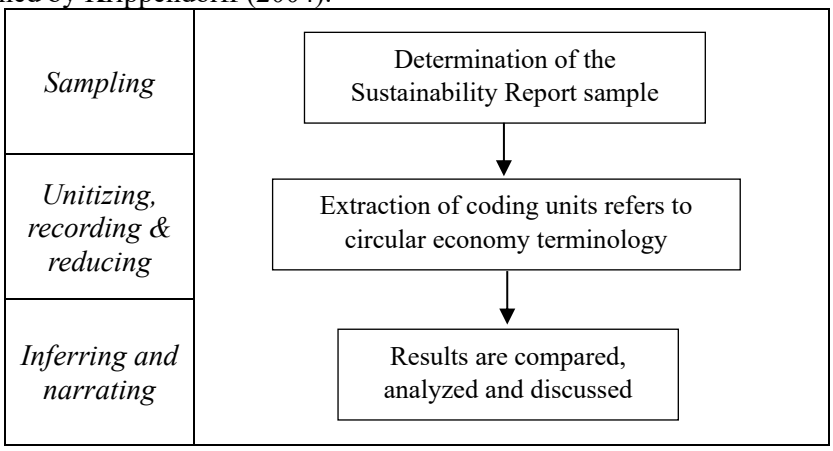


Figure 1. Research stages based on the conceptual framework (Krippendorff, 2004)

Below are the results of deductive unit coding extraction by referring to circular economic terminology with the 5R approach and the use of circular terms in the unit of analysis directly.

Table 1. Deductive Coding Framework

No.	Category	Circular Economy	Description
1.	Smarter product use and creation	*Reduce*	Reducing the use of raw materials from nature
2.	Extends the life of the product and its parts	*Reuse*	Optimize the use of reusable materials
		Repair	Make improvements
3.	Use of useful materials	*Recycle*	Use of materials resulting from the recycling process
		Recovery	The activity of recovering important materials from the waste stream for reuse in processes or utilized for other processes or purposes.
4.	Circular value creation	Development of circular business models	Investment in or quantity of new circular business models created by the company
		Income from circular	Revenue obtained from selling products with a circular strategy

Source: (Opferkuch, 2022) adjusted

4. RESULT AND DISCUSSION

The following is a division of company categories based on sector or type of company.

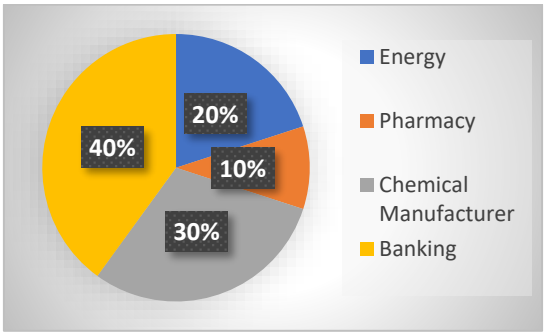
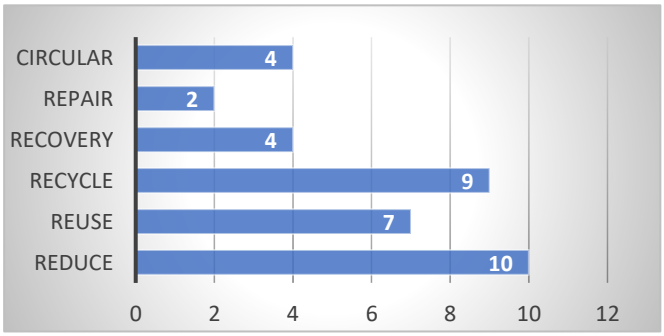


Figure 1. Company Categories by Sector

Data Analysis and Discussion

Below are presented the results of content analysis with 6 keywords, namely: reduce, reuse, recycle, recovery, repair, and circular. Analysis was carried out on the appearance of these 6 keywords in the



sustainability report, either directly stating the keywords or using other terms that have the same meaning. All Sustainability Reports include an Independent Assurance Report, with the sustainability report verification standard AA1000 Assurance Standard 2018, or ISAE3000 'Assurance Engagements other than Audits or Reviews of Historical Financial Information' published by the International Auditing and Assurance Standards Board (IAASB).

Figure 2. Circular Economy Terminology Extraction with the 5R Approach in Sustainability Reports

Figure 2 shows that the keyword that always appears is reduce, which means reducing the use of raw materials from nature. All companies are committed to reducing the use of raw materials from nature, especially water and paper. Usually, the use of this material is considered to cause damage to nature, in the form of reduced supplies of clean water and fewer trees as suppliers of raw materials for paper. Apart from water and paper, several companies have also committed to reducing non-renewable energy, such as saving electricity and fuel oil. This finding is in line with research results (Hjalber & Karlsson, 2019) that "waste reduction", "recycling" and "renewable resources" are the terms most widely used by companies, so it can be said that these terms are relatively commonly used and known in various business sectors.

The keyword in second place is recycle, usually water that is recycled and then reused. Several companies use Reversed Osmosis (RO) technology to recycle water until it is suitable for drinking. Some other companies use recovered wastewater pollutants as washing water, especially in the chemical fertilizer industry.

PT. Indonesia Power utilizes fly ash and bottom ash (FABA) waste into products that have sales value, such as paving blocks, bricks, and concrete blocks. In this process, 3 keywords were collected, namely reuse, recycle, and recovery. Pertamina Hulu Energi Offshore North West Java (PHE ONWJ) also has a fairly good commitment to zero-waste efforts, with the slogan 5 RTDs (Reduce, Reuse, Recycle, Replace, Return to Supplier, Treatment and Disposal). The term replace also appears in PT. Indonesia Power, PT. Petrokimia Gresik, and PT. East Kalimantan Fertilizer. Each of them explained the use of used cooking oil as a substitute

for diesel fuel for diesel engines, the use of purge gas as a fuel substitute, and the replacement of TL lamps with LED lamps which have a longer service life to reduce the generation of B3 waste.

The term repair only appears in PT Indonesia Power and PHE ONWJ's sustainability report, representing machine repair activities to reduce waste spills and improve the completion process for good drilling to reduce the generation of oily sand waste.

PHE ONWJ is the only company that directly states a circular economy as one of its visions. Meanwhile PT. Indonesia Power, PT. Petrokimia Gresik, and PT. Pupuk Kalimantan Timur creates circular economic value by investing in research activities and developing waste into recycled and environmentally friendly materials. This finding is following the results of previous research (Opferkuch, 2022) where the majority of companies are aware of the concept of circular economy and include references to circular economy explicitly in their sustainability reports. However, upon further analysis of this content, it became clear that less than a fifth of companies not only mentioned the circular economy but also integrated the concept into key elements of sustainability reporting.

Table 3. Results of Circular Economy Content Analysis using the 5R Approach

No.	Companies	*R1*	*R2*	*R3*	*R4*	*R5*	*CE*	Total
1.	PT. Pupuk Indonesia (Persero)	1	1	1	0	0	0	3
2.	PT. Bank Mandiri (Persero) Tbk	1	1	1	0	0	0	3
3.	PT. Bank BTPN Tbk	1	0	1	0	0	0	2
4.	PT. Indonesia Power	1	1	1	1	1	1	6
5.	PT. Bio Farma (Persero)	1	1	1	1	0	0	4
6.	PT. Petrokimia Gresik	1	1	1	1	0	1	5
7.	Pertamina Hulu Energi Offshore North West Java (PHE ONWJ)	1	1	1	1	1	1	6
8.	PT. Bank Rakyat Indonesia (Persero) Tbk	1	0	0	0	0	0	1
9.	PT. Regional Development Bank West Java and Banten Tbk (Bank BJB)	1	0	1	0	0	0	2
10.	PT. Pupuk Kalimantan Timur	1	1	1	0	0	1	4

Information:
R1 = *Reduce* R4 = *Recovery*
R2 = *Reuse* R5 = *Repair*
R3 = *Recycle* CE = *Circular Economy*

Source: processed data, 2023

From the table above, appears that there is not much the financial (banking) industry can do to directly commit to a circular economy. The most common thing that banks do is reduce the use of paper (paperless) in line with the banking digitalization trend. Apart from that, banking is trying to reduce the use of water and plastic by establishing a culture of using refillable containers for its employees. The spotlight on banking lies in its support for environmentally friendly businesses, with selective distribution of funds, known as green banking.

There are inconsistencies between efforts to reduce paper and water use at PT. BJB with the realization of paper and water usage in 2021 which experienced an increase of 17% respectively and in 2020 8%, as a result of the normalization of post-pandemic activities.

One of the interesting things is the reduced cost of Rp. 3,699,696,000.00 from process water savings of 305,760 m3 with advanced washing system innovation at PT. Petrokimia Gresik. Next is the reduction in wastewater processing costs, as a positive impact of water saving, recycling, and reuse activities (reduce, recycle, and reuse). This information is good news for companies and business actors in general, who view the circular economy as an additional burden on company finances.

Below is a tabulation of circular economy good practices for the 10 companies studied:

Table 4. Tabulation of Circular Economy Good Practices with the 5R Approach

Company Name	Circular Economy	Disclosures
PT. Pupuk Indonesia (Persero)	*Reduce*	Reducing waste generation and reducing consumption of natural gas as an energy source (p. 47); Energy efficiency of 19,350,989 GJ and reduction of greenhouse gas emissions of 1,042,711 tonnes CO2eq (p. 49); Reducing Air Conditioner use (p. 99)
	Reuse	Wastewater treatment and reuse as a planting medium by local communities (p. 105); Reuse of dominantly Toxic Hazardous Materials (B3) waste as raw materials for side products and auxiliary materials for main products (p. 108)
	Recycle	Utilization of recycled materials in the NPK fertilizer production process (p. 97); Processing organic waste into compost and organic fertilizer (p. 109); Recycling paper waste and other non-organic waste (p. 109)
PT. Bank Mandiri (Persero) Tbk	*Reduce*	Reducing the use of paper and plastic (p. 57) by developing digital banking and paperless administration (p. 140); Reducing solar radiation entering the building with low Overall Thermal Transfer Value (OTTV) glass so that the need for air conditioning can be reduced (p. 146)
	Reuse	Waste paper utilization for internal purposes (p. 140)
	Recycle	Recycling of waste paper by third parties (p. 143); Wastewater processing with Reverse Osmosis System so that it can be used for watering plants and chillers in air conditioning systems (p. 146)
PT. Bank BTPN Tbk	*Reduce*	Implementing digital services and operations to reduce paper use (p. 25); Paper use decreased by 6% from the previous year (p. 85); Reduce electricity usage by managing natural lighting, and not using window blinders. Save electricity by using energy-saving LED lights, and using motion sensors to turn off the lights automatically (p. 84)
	Recycle	the reverse osmosis system drinking water provided in the office, and no longer use plastic gallons (p. 87)
PT. Indonesia Power	*Reduce*	increase in energy efficiency worth 9.88% through the implementation of the Energy Efficiency Management Improvement and Cultivation Program (PPME) (p. 33); Successfully reduced the number of emissions released by 88.30% (p. 33); Utilization of online applications to replace printing needs (reducing paper waste) (p. 241)
	Reuse	Utilizing liquid waste using a Reverse Osmosis (RO) system and reusing Coal Power Plant liquid waste for stockpile watering (p. 226); Reuse of generating engine lubricating oil by filtering and re-purifying (p. 233)
	Recycle	A total of 91,306.41 tons of Fly Ash & Bottom Ash (FABA) waste (or 10.25% of the total B3 waste) was successfully utilized to make bricks and paving blocks (p. 33); Increase water recycling for utilization/reuse by 698,479.73 m3 (p. 33)

Company Name	Circular Economy	Disclosures
	Recovery	Re-filtration of lubricants (oil purifier) in plant operations and maintenance (p. 234); Refilling printer cartridges to prevent cartridge waste (p. 234)
	Repair	Inspection and repair of the MOV Extraction Steam HP Heater at PLTU Sanggau OMU with an energy efficiency value in 2021 of 3,891.17 gigajoules (p. 206); Repair of waterside ejector B tube leaks and repair of leaking condenser inlet line B side at Holtekamp OMU with an energy efficiency value in 2021 of 199.26 gigajoules (p. 207)
	Circular Economy	Throughout 2021, Co-firing of PLTUs with biomass will continue to be intensified by Indonesia Power because it contributes greatly to increasing the energy mix, reducing carbon emissions, as well as having a positive impact on growing the community's economy with a circular economy (p. 180)
PT. Bio Farma (Persero)	*Reduce*	Efficient use of water and energy, reduction of waste generation, liquid waste and emissions, as well as conservation efforts (p. 46); Applying the 4R principles in water use, namely reduce, reuse, recycle, and recovery (p. 149); Reducing packaging waste (p. 151); Making energy savings at production utility facilities (p. 158); Making the Pentabio combination vaccine reduces waste generation by 26% compared to if the vaccines were made separately (p. 172)
	Reuse	Utilization of condensate water (p. 158)
	Recycle	Waste management method by recycling 9,607 tons of B3 waste and 33.10 tons of non-B3 waste in 2021 (p. 171)
	Recovery	Exhaust energy recovery from several production rooms (p. 158)
PT. Petrokimia Gresik	*Reduce*	Energy savings and carbon emission reduction by implementing Green Port in the port environment (p. 35); Reducing the use of raw water as phosphogypsum washing water, and reducing process water consumption by 305,760 m3 (p. 186)
	Reuse	The total wastewater recycled in 2021 amounted to 4,828,526 m3 which was reused as a water scrubber at the urea 1 factory and PF 1 factory; Utilization of water from Neutralized Water Effluent Treatment I for the Purified Gypsum I and II processes; Utilization of water from UBB's Recycle Blowdown Demin Plant for Research and Development activities; Utilization of water resulting from water conservation and efficiency activities for Fish Village, Karangturi Gresik Village (p. 187)
	Recycle	Optimizing the use of recycled water from the filtration system to minimize wastewater (p. 186)
	Recovery	Installation of a purge gas recovery unit to recover gas resources (p. 191)
	Circular Economy	In 2021, companies producing Methyl Ester Sulfonate (MES), developed together with the Surfactant

Company Name	Circular Economy	Disclosures
		Bioenergy Research Center, Bogor Agricultural Institute (SBRC IPB). MES is a bio-degradable surfactant used in old oil field production via EOR (Enhanced Oil Recovery) technology. Which is an important breakthrough for the oil and gas sector in Indonesia (p. 148)
Pertamina Hulu Energi Offshore North West Java (PHE ONWJ)	*Reduce*	*reduce* (Solar PV, EV, LNG Bunkering) (p. 110)
	Reuse	*Reuse* (CO_2 for EOR and Metanol) (p. 110); *Waste reused* (p. 117)
	Recycle	*recycle (Biomass, Biogas)* (p. 110), *waste recycled* (p. 117)
	Recovery	Enhanced oil recovery and enhanced gas recovery (EOR/EGR) mechanism (p. 99); Waste heat recovery unit (p. 106)
	Repair	Improvement of the final completion (completion) process of well drilling to reduce the generation of oily sand waste (p. 118)
	Circular Economy	*Circular carbon economy* (p. 37)
PT. Bank Rakyat Indonesia (Persero) Tbk	*Reduce*	Reducing plastic use (p. 20); reducing consumption of plastic bottled drinking water (p. 20); efficiency of using air conditioner (p. 102); reducing the use of paper receipts (p. 103)
PT. Regional Development Bank West Java and Banten Tbk (Bank BJB)	*Reduce*	Reducing paper use (p. 132)
	Recycle	Collaboration with third parties to recycle bank paper waste (p. 133)
PT. Pupuk Kalimantan Timur	*Reduce*	Reduction of energy consumption (p. 82); water efficiency (p. 104); reducing the generation of used oil and the use of Light Emitting Diode (LED) lamps (p. 109); paperless (p. 114)
	Reuse	Utilization of wastewater for boiler feed (p. 107); Utilization of B3 waste (used catalyst, used oil, used batteries, and coal ash) (p. 109); utilization of waste for making bricks (p. 109)
	Recycle	Recycled water optimization (p. 2); Recycling non-organic waste (paper, cardboard, plastic, etc.) (p. 112); recycling organic waste into biogas (p. 112); management of used plastic sacks sent to third parties to be recycled into processed plastic ore products (p. 112); management of used plastic sacks into green asphalt (p. 112); recycle rejected urea is returned to the production process (p. 113)
	Circular Economy	Collaboration with the Waste Bank to achieve the zero-waste target, developing the 3R drop point into a waste bank unit in the city of Bontang (p. 113)

Source: processed data, 2023

5. CONCLUSION

The research results show that the commitment to a circular economy has given rise to many innovations in reducing generation, reusing waste, and transforming energy towards renewable energy in companies

operating in the energy sector and the chemical industry, as two business sectors that use non-renewable natural resources as the main raw material. In the pharmaceutical industry, the use of incinerators as a means of burning B3 waste so that it is safe for the environment. Meanwhile, in the banking sector, commitment to a circular economy can be seen in efforts to reduce paper use, which is in line with the trend of digitalization of banking services, which tends to be paperless. All companies have a good commitment to reducing water use, and some of them have made efforts to recycle and reuse. The keywords reduce, reuse, and recycle (3R) are the ones that most commonly appear in company sustainability reports. Meanwhile, the keywords recovery and repair only appear in 2 reports, either directly or in conjunction with them.

This research is limited to companies that have achieved platinum ranking in the 2022 Asia Sustainability Reporting Rating, so, naturally, their commitment is good. Further research needs to be done on other companies that have achieved a gold rating, or research can also be done based on industrial sectors. Further research needs to be carried out regarding economic calculations regarding the impact of implementing a circular economy on companies as can be seen in the sustainability report of PT. Petrokimia Gresik.

For the wider community, the results of this research can be an illustration of the company's commitment to the circular economy. The community has a role as observers in the field so that it can be proven that this sustainability report is being put into practice and the benefits are being felt by the local community.

For business actors and company management, various forms of implementing circular economy in these 10 companies can become best practices that can be imitated and modified according to the needs and sustainability benefits that the company wants to achieve. So, it is hoped that the commitment to environmental sustainability can be widely practiced, and have an impact on improving the earth on which humans live.

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