

RESEARCH ARTICLE

## Towards a sustainable green policing: A Delphi-based forecast of sustainability indicators for law enforcers

Alvin Q. Romualdo<sup>1</sup>, Ava Clare Marie O. Robles<sup>2\*</sup>

<sup>1</sup>Philippine Public Safety College-National Police College Davao, Philippines

<sup>2</sup>Mindanao State University-School of Graduate Studies, Philippines

Corresponding Author: Alvin Q. Romualdo, MPSA: aqr031891@gmail.com

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### Abstract

The environment holds a vital position within the framework of sustainable development, serving as the foundation upon which social and economic progress relies. However, its vulnerability and the market failures resulting from its degradation pose significant challenges to achieving sustainability. This study was conducted to gain valuable insights into the present and future performance of police officers concerning their role in advancing environmental sustainability. As a result of the consensus among the experts, a total of thirty (30) forecasted sustainability indicators for Green Policing were generated. These indicators represent the combined perspectives and agreements of the experts regarding the essential elements and factors involved in the implementation of Green Policing practices. The indicators are categorized into four themes that emerged from the analysis: Green Police Operations, Green Behavior and Awareness, Environmental Law Enforcement, and Community Partnerships and Engagement. These themes provide a comprehensive framework for guiding and assessing the implementation of Green Policing initiatives in various contexts. In light of these findings, it is strongly recommended that law enforcement agencies operating in the SOCCSKSARGEN region integrate these identified sustainability indicators into their Green Policing strategies and operations. By doing so, they can effectively align their practices with the principles of environmental sustainability and contribute to the overall advancement of Green Policing initiatives. Recognizing the interdependencies and taking concerted actions to address these issues, societies, with the law enforcers as stewards, can pave the way for a more resilient and harmonious relationship with the environment, fostering a sustainable future for generations to come.

**Keywords:** green police operations; green behavior and awareness; environmental law enforcement; community partnerships and engagement

### Introduction

The environment serves as a fundamental pillar of sustainable development, playing a pivotal role in supporting and influencing the social and economic dimensions. Over time, societies have recognized the significance of maintaining a harmonious relationship with the environment to ensure a balanced and sustainable way of life (Mensah, 2019). However, the environment faces continuous pressures and threats, making it highly vulnerable and prone to deterioration. In fact, it has become

a prominent source of market failures worldwide, as its degradation undermines the well-being of individuals and societies at large.

The interdependence between the environment and other dimensions of sustainable development is evident. Social and economic progress relies heavily on the availability of natural resources, the functioning of ecosystems, and the stability of ecological processes Chapin III et al., (2009); Harris & Roach (2013). From providing essential resources and ecosystem services to supporting livelihoods and

economic activities, the environment acts as a foundation for human well-being and development.

Nevertheless, the relentless exploitation of natural resources, pollution, habitat destruction, climate change, and other anthropogenic factors have severely impacted the environment. These pressures have led to various market failures, where the true value and costs associated with environmental degradation are not adequately accounted for (UNEPIRP, 2011). As a result, society faces adverse consequences, such as resource depletion, biodiversity loss, environmental disasters, health risks, and socio-economic imbalances.

Recognizing the fragility and importance of the environment is crucial for addressing these challenges. Efforts must be directed towards sustainable practices, policies, and initiatives that aim to conserve and restore the environment while promoting socio-economic well-being. This necessitates a shift in mindset and behavior, as well as the adoption of innovative approaches that embrace the principles of sustainability, including conservation, resource efficiency, pollution prevention, and climate resilience. By acknowledging the integral role of the environment and addressing the market failures associated with its degradation, societies can strive towards a more sustainable future (Dean & McMullen, 2007). This entails promoting responsible consumption and production patterns, investing in renewable energy and green technologies, preserving ecosystems and biodiversity, implementing effective environmental regulations, fostering public awareness and participation, and encouraging collaboration between stakeholders at local, national, and global levels.

Environmental law enforcement plays a crucial role in driving the pursuit of environmental, social, and economic sustainability. Within this context, the public safety sector holds significant responsibility for enforcing environmental laws and policies, thereby contributing to the establishment of green communities. Recognizing the importance of this role, the present study aimed to forecast the sustainability indicators of police officers in the field of Green Policing (Konyk, 2018; Romualdo 2022).

By focusing on Green Policing, the study sought to understand and predict the extent to which police officers contribute to sustainable practices and outcomes. Green Policing entails the integration of environmental

considerations into law enforcement practices, encompassing initiatives such as promoting environmental awareness, enforcing environmental regulations, fostering community engagement, and implementing sustainable approaches within police operations.

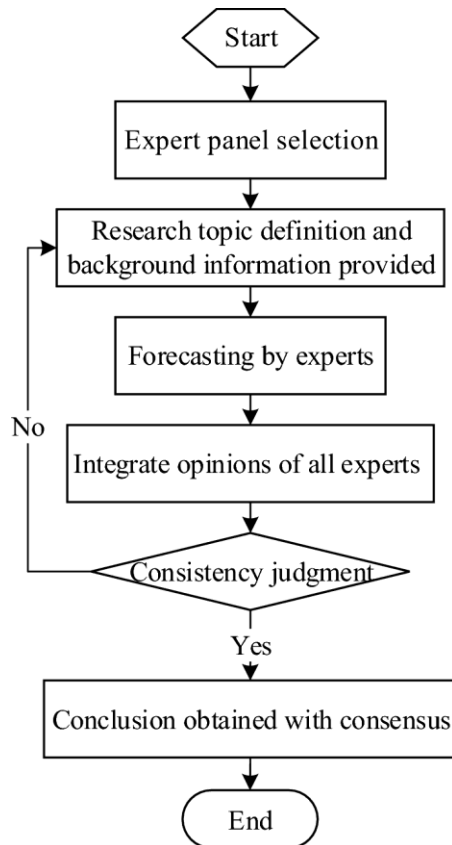
Through forecasting the Green Policing sustainability indicators, the study aimed to provide insights into the current and future performance of police officers in terms of their contributions to environmental sustainability. This forecasting process involved analyzing various factors, such as the level of green behavior and awareness among police officers, the degree of environmental law enforcement, the level of community partnership and engagement, and other relevant dimensions identified within the Green Policing framework.

Ultimately, the study aimed to contribute to the advancement of Green Policing as a holistic approach within the public safety sector, integrating environmental considerations into law enforcement practices. By forecasting the sustainability indicators of police officers, the research aimed to provide valuable insights and recommendations to support the ongoing efforts towards creating environmentally, socially, and economically sustainable communities.

## **Methodology**

This study utilized a qualitative research design to gather and analyze data. The research approach involved conducting a thorough literature review to examine existing knowledge and insights on the subject of interest. This review helped establish a foundation for the study and identify key themes, concepts, and theories relevant to the research topic.

In addition to the literature review, the study also employed the Delphi technique as a panel review method. The Delphi technique is a structured communication process that seeks to gather expert opinions and insights on a particular topic. It involves multiple rounds of surveys or questionnaires administered to a panel of experts in the field (Hsu, & Sandford 2007). Through these iterative rounds, the experts provide their perspectives, rate the importance or relevance of specific factors, and share their expert opinions.



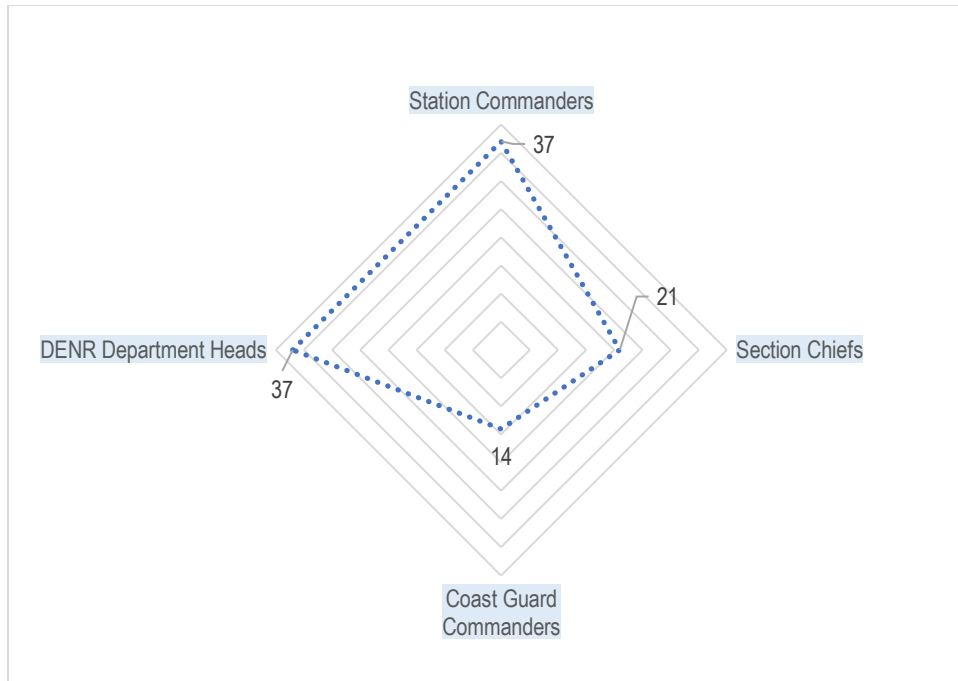
**Figure 1.** Delphi Processes by Zhang et al., (2022)

The sustainability indicators related to green policing were forecasted based on a constructed scenario and were subsequently validated through a Delphi approach involving a panel of environmental experts. The panel consisted of twelve (12) participants, including five Station Commanders, two Police Section Chiefs, two Coast Guard Commanders, and three Section Chiefs from the Department of Environment and Natural Resources in SOCCSKSARGEN.

**Results and Discussion**

In the initial round of data collection, a significant number of item responses were obtained from the selected group of

experts, amounting to a total of 109 (Figure 2). These responses were carefully transcribed and analyzed to identify key trends and patterns related to green policing. Through a process of coding, the responses were organized and categorized based on their relevance to the overarching themes and concepts of green policing. This restructuring of the data was done to ensure coherence and congruency in the analysis and interpretation of the findings.

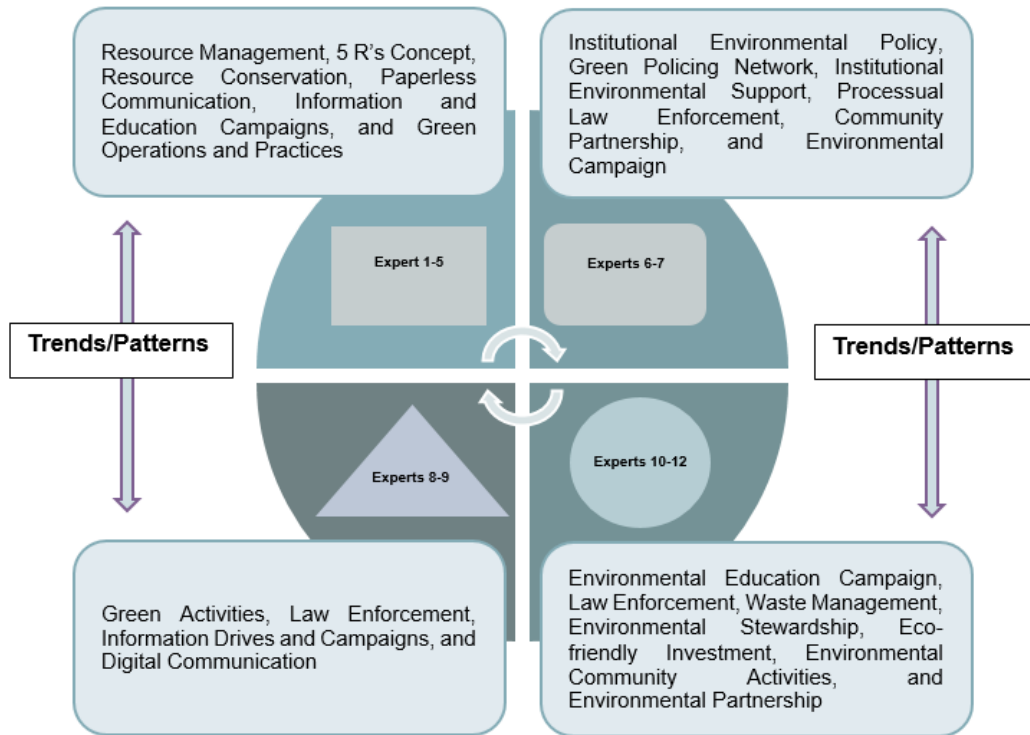


**Figure 2.** Radar Chart of the Responses of Experts

By transcribing and coding the item responses, common themes, recurring patterns, and important insights regarding green policing were determined. This process allowed for a comprehensive understanding of the expert opinions and perspectives on the topic. The large number of item responses generated in the first round of data collection signifies the richness and depth of the experts' input. It demonstrates the thoroughness and comprehensiveness of the study in capturing diverse perspectives and insights related to green policing.

During the subsequent round of the study (Round 2), the experts were presented with the restructured responses for further review and analysis. The facilitator's objective was to extract more precise and detailed indicators from the experts' initial responses, refining the understanding of the key themes and patterns identified in the data. Out of the original 109 responses, a subset of forty-five (45) responses was selected for further examination and consideration. These refined responses would contribute to a more focused and comprehensive understanding of the indicators associated with green policing. Through the careful transcription, coding, and restructuring of the

responses as seen in Figure 3, the researchers were able to extract valuable information and lay the foundation for further analysis and interpretation through codes.



**Figure 3.** Patterns, Trends, and Indicators in Round 2 of Delphi

After conducting a meticulous examination and comprehensive review of the responses provided by the experts, a total of thirty-five (35) indicators were identified as relevant indicators of Green Policing. These indicators were carefully transcribed by the researcher and further categorized into distinct themes based on the observed trends and patterns within the data. The resulting themes

associated with the indicators are as follows: Green Police Operations, Green Behavior and Awareness, Environmental Law Enforcement, and Community Partnerships and Engagement. This categorization allows for a clearer understanding of the different aspects and dimensions encompassed by the concept of Green Policing.



**Figure 4.** Themes of Sustainable Green Policing

During the final round (Round 3), the experts were engaged in a more focused and constructive manner, leading to the generation of concise and succinct responses. This iterative process aimed to involve the experts in the decision-making process, allowing them to actively participate in the analysis and design of the final research instrument. By incorporating the expertise and insights of the experts, the researcher sought to enhance the instrument's effectiveness and relevance. This approach aligns with the principles outlined by Keeney et al. (2011), emphasizing the importance of engaging experts in the decision-making process to ensure a comprehensive and well-informed outcome.

In the final round, which marked final round, consensus was achieved among the experts. Through a process of discussion and deliberation, a state of homogeneity and consistency in their responses was attained, as highlighted by Graham et al. (2003). This collective agreement among the experts led to the generation of thirty (30) forecasted sustainability indicators of Green Policing. These forecasted indicators represent the shared perspectives and expert consensus on the key aspects and considerations of implementing Green Policing practices (Romualdo, 2022).



**Figure 5.** Forecasted Sustainability Indicators of Green Policing

**Conclusion and Recommendation**

The findings of this study have identified a comprehensive set of sustainability indicators for Green Policing in the SOCCSKSARGEN region. These forecasted indicators reflect the measures and initiatives that police officers can undertake to promote environmental sustainability within their operations and communities. The Green Policing sustainability indicators encompass various aspects such as resource conservation, waste management, renewable energy utilization, collaboration with stakeholders,

environmental law enforcement, and community engagement.

Based on these findings, it is recommended that law enforcement agencies in the SOCCSKSARGEN region incorporate these sustainability indicators into their Green Policing strategies. This can be achieved through the development and implementation of specific policies, guidelines, and training programs that align with the identified indicators. Additionally, close collaboration with relevant agencies, organizations, and stakeholders should

be fostered to ensure the effective implementation of these initiatives.

Furthermore, regular monitoring and evaluation of the progress made in implementing the sustainability indicators are crucial to assess the effectiveness of Green Policing efforts. This will help identify areas for improvement, refine strategies, and ensure the long-term sustainability of environmental initiatives within the public safety sector.

Public awareness campaigns and community engagement activities should also be prioritized to promote a culture of environmental responsibility among both police officers and the wider community. Partnerships with organizations such as the Philippine Coast Guard and market organizations can be established to facilitate recycling programs and income-generating activities that contribute to environmental sustainability.

By adopting and implementing these sustainability indicators of Green Policing, police officers in SOCCSKSARGEN can pave the way for fostering greener and safer communities, thus contributing significantly to forging a sustainable future.

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**Contribution/Originality:** This research contributes to the breadth of knowledge by providing a forecast of the indicators of environmental sustainability in public safety through a Delphi technique. As an outcome of this independent and original work, we duly acknowledge all the sources from which the ideas have been derived.

**Declaration of Conflicting Interest.** The authors declare no conflicts of interest in the development of this research work.

**Availability of Data:** The authors confirm that the data supporting the findings of this study are available within the article and its Supplementary material. Raw data that support the findings of this study are available from the corresponding author, upon reasonable request.

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