

# Seed Bomb Innovation As A Solution To Improve The Green Economy In Indonesia

Wiwin Rosmawati<sup>1</sup>, Muhammad Syah Fibrika Ramadhan<sup>1</sup>

Jenderal Soedirman University, Purwokerto, Indonesia

\*corresponding author : [muhammad.syah@unsoed.ac.id](mailto:muhammad.syah@unsoed.ac.id)

---

## ABSTRACT

As societal pressure increases as the global effects of climate change increase, the transformation agenda and related investments in a green economy are likely to accelerate. The concept of a Green Economy with Green GDP indicators can provide a new, better hope in the implementation of sustainable development because there is a goal to internalize environmental aspects into economic activities. Indonesia also emphasizes the importance of an inclusive green economy. The seed bomb is an innovation in the form of a ball of land which includes soil, fertilizer, plant seeds and water. Boom Seed is here to provide solutions for people who want to grow crops in a practical way, saving time and effort. This study aims to provide an understanding of the green economy and seed bombs as innovative solutions in sustainable development. The methods used in this study were questionnaires and literature searches in the form of international and national journals. Questionnaire respondents were agrotechnology and agribusiness students with a total sample of 40 people. The research results obtained show that understanding of the green economy is still low among students and seed bombs are present as a solution to improve the green economy in Indonesia.

**Keywords:** Green Economy, Seed bombs, Innovation, Green economy development.

---

## 1. Introduction

Although the transformation toward a global green economy is still in its early stages, there is little doubt that a major disruption in the capitalist world economy is under way. As popular pressure increases in line with the mounting global effects of climate change, the transformation agenda and associated investments in the green economy are likely to accelerate (Mazzucato and Perez, 2015; Roberts and Geels, 2019; Schmitz and Scoones, 2019). Climate change is the crisis of our time affecting every country on every continent. The 2030 Agenda for Sustainable Development (including its 17 sustainable development goals, SDGs), adopted by the United Nations General Assembly in 2015, provides a shared blueprint 'plan of action for people, planet, and prosperity' to guide all countries' policies towards sustainable development until 2030.

Until recently, the idea of green growth was limited to the advanced economies, with developing countries reluctant to take up the challenge of sustainability. Today, the dichotomic relationship between green transformation and latecomer development, inherent in the environmental Kuznets curve (Stern, 2004), has been turned on its head. The "clean up later" model where developing countries wait for the environmental Kuznets curve to set in (Altenburg and Pegels, 2020) is being replaced by a leapfrog strategy, which offers an alternative way to bypass the high pollution models of growth. Countries such as China, India, Brazil, and South Africa, are not only reacting to the paradigm change but also actively contributing to the green transformation, adopting environmental transformation policies and supporting the emergence of domestic sustainability-oriented industries (Mathews, 2013; Harrison et al., 2017).

In Indonesia, the concept of sustainable development has been started since 1970s, but until now it still tends to focus on development economy, even on economic growth which tends to be futures short. As a result, the quality of economic growth worsened, especially with the limitations of the state budget and resources that we have so it is not surprising that policy makers prefer shortcuts, which seems to produce fast results, pays little attention to its sustainability (Sri Adiningsih, 2017).

The description above shows that the model of economic development developed only drives economic development that tends extractive and short term. Without denying the quality improvement resources and the environment, but in general it can be said that efforts to maintain environmental functions and utilization of natural resources sustainability is still far from what was expected. Meanwhile, the indicator signals economic growth such as Gross Domestic Product/Domestic Product Regional Gross (GDP/GDP) and inflation rates are not accompanied by information about the value of depletion of natural resources (depletion) and damage as well environmental contamination (degradation).

Green Economy concept with Green GDP indicators can provide new better hope on development implementation sustainable because there is a purpose to internalize environmental aspects into in economic activity. In Law no.32 of 2009 concerning protection and environmental management mentioned that green GDP is one economic instrument to prevent environmental damage. Implementation can be realized in the form of reforestation funds, reclamation, revegetation, land rejuvenation critical, repair water system, funds conservation, CSR funds (Corporate Social Responsibility), research funds and environment-based development, etc with the aim of maintaining availability natural resources in the long run long.

Reflecting on the above conditions, a Green Economy approach is now being developed. This Green Economy is a model of an economic development approach that no longer relies on economic development based on excessive exploitation of natural resources and the environment. The green economy is a big leap away from economic practices that emphasize short-term gains which have left a number of pressing issues to be addressed including driving a low-carbon economy (Pearce et al, 1992). Therefore, through the innovative *design "Seed bomb innovation as a solution to improve the green economy in Indonesia"*, the authors develop and create innovative tools that are in line with the 9th goal of SDGs (Sustainable Development Goals), namely Industry, Innovation and Infrastructure for improve a better life for the people of the world.

## 2. Literature Review

### 2.1. Green economy

The term Green Economy itself has recently emerged surface after 2008. Now Green Economy occupies a leading position in policy discourse and economic institutions international development. World Bank, together with five multilateral development banks others, have committed to this end (Bank World 2012a, 2012b). Several countries have adopting the concept of green economy and green growth as an explicit policy objective (OECD 2012a). In addition, Green Economy is also the main focus from the UN 'Rio + 20' Summit in June 2012 (UNCSD 2012).

Definition developed by UNEP which defines green economy as "One that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient and social inclusive" (UNEP, 2011). UNEP's definition emphasizes its importance efficiency in the use of natural

resources, reduced ecological risk, low economy carbon and reduce poverty. In Indonesian context, Indonesian delegation at the meeting Global Ministerial Forum in Bali proposes relatively the same meaning, but emphasized on poverty reduction and cost internalization environment. The definition of a green economy according to Indonesia is: “a development paradigm that based on resource efficiency approach with strong emphasizes on internalizing cost of natural resource depletion on environmental degradation, efforts on alleviate the poverty, creating decent jobs, and ensuring sustainable Economic growth” (Indonesian Delegation/DELRI, UNEP 11th G SS, February, 2010).

Indonesia's position is related to the green economy also emphasizes the aspect of internalization of costs environment because in accordance with Law no 32 of 2009 concerning Management and Protection Environment, and Indonesia has instruments to control the environment through use economic instruments such as fiscal instruments and other planning instruments for internalize environmental costs. Indonesian too emphasizing the importance of an inclusive green economy taking into account the mitigation aspect poverty. Thus, the green economy is not positioned to put the brakes on the pace of growth economy, but how economic growth is in line with environmental protection and can create new growth through the utilization of natural resources and environment that can create a field jobs and reduce poverty.

Related to the idea of the concept of "green economy" there are two things to be achieved. First, try to create a green economy economic concept that is not just considering macroeconomic issues, especially investment in sectors that produce environmentally friendly products production of goods and services that are more environmentally friendly (“green investment/green investment”), but also focused on how green investment contributes to the production of goods and services as well as and employment growth in the sector associated with environmentally friendly (green jobs). Second, modern in this perspective the Green Economy is not only emphasizes various policies standards, such as how to assess the environment on an equal basis the economy and imposing sanctions on activities dangerous and potentially destructive activities environment; but what is more important is how the green economy concept is capable encourage economic actors to produce goods, trade, and consume those things environmentally friendly products or goods and services more environmentally friendly. Income and field jobs generated from the Green Economy on turn is expected to be able to make the actors economy becomes more motivated to perform environmentally friendly activities.

## **2.2. Seed boom**

Seed is an important input for increasing production and productivity, if all farmers use quality seeds then it can increase crop yields, maintain the availability of food stocks, and can increase farmer income from the sale of production (Alabi, 2019). The use of quality seeds can increase the productivity of a commodity accompanied by the application of good agronomic principles. Besides that quality seeds will increase the effectiveness and efficiency of plant cultivation, because quality seeds have a clear identity or are already certified with a label accompanied by a complete description of the seed initials includes the viability and purity of the seed so that the need for seeds is planted and the number of embroidered seeds can be estimated. According to Lexono (2019) seed produced by breeders is a valuable investment and expensive so that it requires proper handling so that the quality of the seeds, good physical quality, physiological, and genetic quality is guaranteed.

Seeds are the largest part of the seed, so seed science needs to be studied. With seed, the independence of the next generation of a plant begins. Seed contains miniature plants, which are equipped with a structure and physiology to suit its role as a unit of dispersal or propagation. In addition it has been equipped perfectly with food reserves, to support young plants until he is able to provide for himself as an autotrophic organism.

Seed bombs are an innovation in the form of earthen balls which include soil, fertilizer, plant seeds and water. Seed bombs are here to provide solutions for people who want to plant practically, saving time and energy.

### **3. Research Methodology**

#### **3.1. Approach and Type of Research**

This research is quantitative descriptive. Sugiyono (2016:13) said descriptive research, namely research conducted for know the value of the independent variable, either one variable or more (independent) without make comparisons, or relate to other variables. Meanwhile, according to Ali Maksum (2012: 68), descriptive research is research carried out to describe certain symptoms, phenomena or events. This research was carried out by conducting a survey of agricultural students, especially majoring in agribusiness and agrotechnology regarding knowledge of the green economy, seed boom and green bubble application with the results in the form of a numerical description then quantitatively analyzed.

#### **3.2. Population and Sample**

When the respondents experience difficulties in answering, the researcher provides contact and guides them one by one to provide understaing. The population of this study were agricultural students with a sample of 40 agribusiness students and agrotechnology students

#### **3.3. Source Data**

This research contains one element of the nature of quantitative research. According to Sugiyono, quantitative research methods can be interpreted as research methods based on the philosophy of positivism, are used to examine a particular population or sample.

Data quality is determined by the quality of the tool data collector or measuring device. If the data retrieval tool is sufficient reliable and valid, then the data will also be quite reliable and valid. By therefore the instrument has been tested for its validity and reliability, not yet of course it can produce valid and reliable data, if the instrument were not used appropriately in data collection. Data collection can use primary sources, and secondary sources. This study uses primary and secondary data in the form of: (Suryabrata, 2010, p. 38).

##### **1. Primer Data**

Primary sources are data sources that directly provide data to data collectors (Sugiyono, 2012, p. 25). Primary data is used in this study is a questionnaire.

##### **2. Secondary data**

Secondary sources are sources that do not directly provide data to data collectors, for example through other people or through documents (Sugiyono, 2012, p. 26). Secondary data obtained by researchers indirectly directly like the method of searching for books or existing library materials with their relevance to the discussion This. Then the data is reviewed and analyzed to find a basis suitable solution.

#### **3.4. Data collection technique**

The data collection method used was distributing questionnaires and also literature study. According to Sugiyono (2012, p. 82), The questionnaire is a data collection technique that is carried out in a way member a set of questions or a written statement to the respondent to answer. The data collection method used in this study is to use :

1. Questionnaire

The questionnaire is a data collection technique that is carried out by giving a set of questions or written questions to respondents to answer (Sugiyono, 2012). According to (Subiyanto, 1998, p. 62) Questionnaire or questionnaire is done by requesting information from the respondent regarding a problem submitted voluntarily. The questionnaire used was closed question.

2. Literature review

This study draws from several journals, literature relevant to the topic of discussion so that it can be used to strengthen the theory as well as to obtain a valid conclusion, the authors use a way of clarifying data to produce conclusions. As for the method of reasoning that used is the deductive method. The deductive method is the way analyze the problem by displaying statements that are general then draw a specific conclusion.

**4. Results**

**4.1. Seed Bomb research for agricultural students**

**4.1.1. Questionnaire Test**

Researchers conducted research by distributing questionnaires to agricultural students from the department of agrotechnology and agribusiness at Jenderal Soedirman University with a total sample of 40 people to find out the extent of their knowledge regarding the green economy. The following are the results of the agricultural student questionnaire:

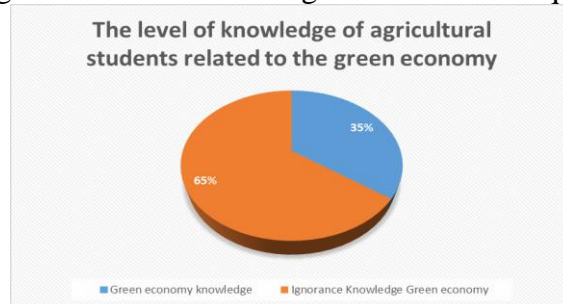


Figure 1. Level of knowledge of agricultural students regarding the green economy

Based on the above data, it can be concluded that out of a sample of 40 agricultural students, only 14 people know green economy knowledge. Meanwhile, the remaining 26 people do not know about the green economy knowledge that is being implemented in Indonesia

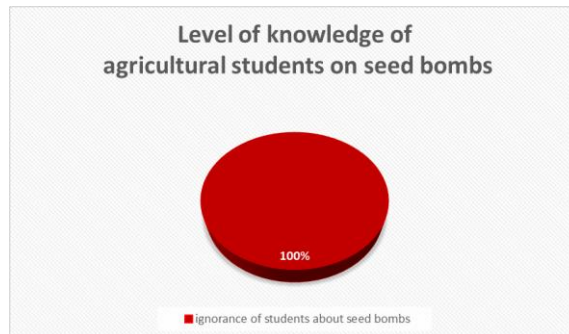


Figure 2.. Level of knowledge of agricultural students on seed bombs

The data obtained above shows that a sample of 40 agricultural students answered that they did not know about seed bombs. In this regard, the concept of green economy in Indonesia is being developed by the government for sustainable development. .

**4.1.2. Research journal review results**

The following presents reviews from several national and international research journals related to green economy innovation :

*Tabel 1 : Analysis of optimizing green economy journals*

No	Source/ journal	Journal Review	Information
1.	Journal of Masharif al-Syariah: Journal of Sharia Economics and Banking, Volume 8, No. 2, 2023 (995-1007)	<p><i>Title :</i> Application green economy in effort community economic improvement through empty land utilization the household: Literature study review</p> <p><i>Writer :</i> Firqotus Sa'idah, Nasruddin, Madnasir, Muhammad Iqbal Fasa</p> <p><i>Journal Results :</i> Green economy or green economy is a concept of economic behavior attention to economic growth along with the concept of prevention damage to the natural environment and a decrease in environmental quality.</p> <p><i>Review Results :</i> Use of yard land for green economy.</p>	Utilizing the yard of the house for planting as a form of optimizing green economy development in Indonesia
2.	Journal of Social Community, Vol.8 No.1 Juni 2023, (374-380)	<p><i>Title :</i> Integration of family medicinal plant and dayak kanayatn traditional community medicine in supporting the green economy concept</p> <p><i>Writer:</i> Dwi Gusmalawati, Rita Kurnia Apindiati</p> <p><i>Journal Results :</i> Traditional medicine for the Dayak Kanayatn people of West Kalimantan, utilizing native</p>	Medicinal plants planted in front of the house also support the use of the green economy concept

		<p>Indonesian plants which are easy to find in the yard of the house as family medicinal plants that can be cultivated. the integration between the two strongly supports the green economy concept</p> <p><i>Review Results:</i> Cultivating traditional medicine supports the green economy concept.</p>	
3.	<p>Journal Ecological Indicators, 153 (2023) 110371, (1-13)</p>	<p><i>Title :</i> The intermediary and threshold effect of green innovation in the impact of environmental regulation on economic Growth: Evidence from China</p> <p><i>Writer :</i> Fang Wang</p> <p><i>Journal Results:</i> Research results can provide a reference for the government to formulate reasonable policies to balance the environment and the economy.</p> <p><i>Review Results :</i> The government provides policy references for a green economy.</p>	<p>Provide a reference for the government to formulate appropriate policies to balance the environment and the economy in accordance with innovations that help to increase the green economy in Indonesia.</p>

## 5. Discussion

Based on the data above, it shows that students themselves do not fully know about the existence of a green economy and do not know at all about the seed boom as an innovation from the green economy. If we look at developed countries like Japan, they have realized the seed bomb first. Taken literally, seed bombs have several key sites of origin. In Japan, seed bombs are known as Tsuchi Dango, meaning 'Earth Dumpling'; they have ancient origins and were popularized in the now classic book One Straw Revolution by Masanobu Fukuoka (2009). Fukuoka incorporated their use into his revolutionary farming methods, as Dunlap (2020) reviews. But seed bombing also has important origins in the 1970s and with the guerilla gardening movement (Lamborn and Weinberg, 1999). This includes efforts to reclaim abandoned private lots and land in urban centers like New York City by 'bombing' these spaces with balls made of seeds – most commonly native wildflower and or prairie grass seeds mixed with some combination of clay and compost. Seed bombs are commonly thrown into privately enclosed spaces, and in coming into contact with sufficient water and light, can help to spontaneously produce gardens in spaces of dispossession, slumlording, and structural neglect. Seed bombs can be hurled over chain link fences protecting vacant lots in various states of deterioration due to the woeful neglect of predatory landlords. They can be chucked into the

ruins of post-industrial toxic spaces, and they can return important ecological hope to spaces diligently abandoned through the constant shifting of capital. The act of throwing seed bombs is a direct action intended to disrupt unjust property relations.

As of 2019, the green economy market in the US has grown 20% from the previous three years. Of course, this is also increasingly becoming a concern in Indonesia. The proof is, in April 2022, Indonesia has shown its commitment and involvement in tackling climate change through the signing of the Paris Agreement. Currently, the age of the earth has reached thousands of billions. All the resources that exist on earth are used continuously for human life. So that in this modern era the natural resources on earth continue to erode more and more, because there is no renewal anymore. Therefore, the attention of the global elite has arisen to find ways to prevent the natural resources on earth from running out quickly, or to find renewable resources.

Returning to the seed bomb, we also want to express some necessary caution and care. Without care and intent, seed bombs can be co-opted by the processes they wish to respond to. urban “greening” projects, for example, are intended to respond to blight and neglect and plant growth the community, can also help accelerate divestment/abandonment/reinvestment which is so central to the core the process of development and gentrification is uneven (Smith, 2010). In addition, besides seed bombs being a solution to the problem of climate change itself, it can be a livelihood for the community to help the economy and at the same time encourage sustainable development in Indonesia.

## **6. Conclusion**

Based on the results of the findings and discussion that the author examined under the title seed bomb Innovation as a Solution to Improve the green economy in Indonesia, that the green economy can increase income and employment driven by public and private investments that reduce carbon emissions and pollution, improve energy and resource efficiency, and prevent loss of biodiversity and ecosystem services. The following findings show that understanding of the green economy is still low among university students and seed bombs are present as a solution to increase the green economy in Indonesia.

## **Acknowledgements**

Researchers would like to thank students majoring in agribusiness and students majoring in agrotechnology who have supported and assisted in providing data and information for the purposes of this research.

## **References**

- Adrian C. Newton, E. C. (2014). *An Introduction to the Green Economy Science, Systems and Sustainability*. New York: Taylor & Francis .
- Aoife K. Pitts, B. T. (2022). Learning with the seed bomb: on a classroom encounter with abolition ecology. *Journal of Political Ecology*, Vol 29, 2022, 303-310.
- Chunyu, X. (2021). The Impact Of Dubai's World Green Economy Summit On China's New Thinking Of Green Economy Economy. *Journal of Innovative Technologies in Economy*, 1-6.



- Firqotus Sa'idah, N. M. (2019). Application Green Economy in Implementing Green Economy Efforts to Increase Community Economy Through Utilization of Empty Land in Home Yards: Literature Study. *Journal of Masharif al-Syariah: Journal of Sharia Economics and Banking, Volume 8, No. 2, 2023*, 995-1007.
- Hansheng Zhao, Y. H. (2022). The Global Atlas of Bamboo and Rattan (GABR) Phase II: new resources for sustainable development. *Journal GigaScience*, 1-3.
- Herjuna Praba W, D. H. (2018). Application of Micro and Complete Nutrients Through the Leaves of Several Chinese Hybrid Rice Varieties. *Jurnal Agribusiness*, 7-12.
- Inggit Kentjonowaty, A. B. (2022). Education on Raising BoerPE Goats with the Green Economy Concept through the Implementation of Smart Cages at the Dian Santosa Sleman Farmer Group, Yogyakarta. *Journal Indonesian Service Access, Volume 7, Nomor 3, Desember 2022*, 217-223.
- Kristianto, A. H. (2020). Sustainable Development Goals (SDGs) Dalam Konsep. *Journal Business Economics and Entrepreneurship, Volume 2, No 1, 2020*, 31-36, 27-38.
- Malinauskaite, J. (2022). Competition Law and Sustainability: EU and National Perspectives. *Journal of European Competition Law & Practice, Vol. 13, No. 5, 8-9, 1-13*.
- Muafi. (2021). The Influence of Green Culture and Green Strategy on the Circular Economy Implementation: The Moderating Role of Green Intellectual Capital. *Journal of Sustainable Development and Planning, Vol. 16, No. 6, October, 2021*, 1101-1119.
- N. Droste, B. H. (2018). Steering innovations towards a green economy: understanding government intervention. *Journal of Cleaner Production*, 1-18.
- Pandey, G. (2018). Nanotechnology For Achieving Green-Economy Through Sustainable Energy. *Rasayan Journal of Chemistry, Vol. 11, no 3 2018*, 943-950.
- Quan Guo, M. Z. (2019). Spatial Effects of Environmental Regulation and Green Credits on Green Technology Innovation under Low-Carbon Economy Background Conditions. *Journal of Environmental Research and Public Health*, 1-16.
- Rasmus Lema, X. F. (2020). Green windows of opportunity: latecomer development in the age of transformation toward sustainability. *Journal Industrial and Corporate Change, Vol. 29, No. 5, 1193-1209, 10, 1-18*.
- Semieniuk, M. M. (2017). Public financing of innovation: new questions. *Journal Oxford Review of Economic Policy, Volume 33, Number 1, 2017*, 42-43, 24-48.
- Wang, F. (2023). The intermediary and threshold effect of green innovation in the impact of environmental regulation on economic growth: Evidence from China. *Journal Ecological Indicators*, 1-13.