

The role of green startups in the transition to a circular economy (international experiences)

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Abstract

With the emergence of environmental disasters such as global warming. Various organizations begin to look for solutions to these phenomena, and with the increasing temperature of the earth and the problems associated with it, which opened the way for creators and innovators in this field and in order to achieve the sustainable development goals through its three dimensions socio-environmental and economic, which helped the emergence of sustainable companies or green companies, even though these companies still have not yet seen the light of day, especially in the Arab countries, especially in Algeria, this is due to the lack of funding of such institutions due to the fear of investors to finance them and the legal vacuum of such green startups .

Keywords: global warming, green startups, sustainable development

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1. Introduction:

Planet Earth is exposed to numerous man-made environmental phenomena. These phenomena negatively affect health and the economy. The cause of these environmental phenomena is economic corporations. In the past, planet Earth was exposed to an environmental phenomenon known as the ozone hole, which was caused by the production by some economic corporations of a non-toxic substance for humans called Chlorofluorocarbons or what is known by the trade name Freon. It was , used in many applications such as refrigerators, paint spray, insecticides,

and hair conditioner. As this substance breaks down in the atmosphere, it affects the three oxygen atoms that make up ozone, causing the ozone hole. However, the ozone hole is shrinking continuously, and it is possible that by 2040 the ozone layer will rebuild itself automatically. Thanks be to God Almighty, this is due to the Montreal Protocol. The year 1987, which aimed to gradually eliminate the production of these materials

Often, when an environmental disaster looms on the horizon and its validity is supported by a set of scientific studies and research, there is a confrontation between giant corporations and the scientific community, due to the profits that these corporations reap from producing various goods by following the linear (grey) economic method, which has proven to cause a new environmental disaster represented by global warming through carbon emissions resulting from the factories of large corporations. Naturally, the large ice sheets melt due to the rise in the Earth's temperature, which leads to a rise in sea levels and then the disappearance of coastal areas and causes major economic problems

In order to move from a linear economy to a circular (green) economy, while preserving natural and environmental resources, social development, and achieving economic growth, all of which are areas of sustainable development, this has helped to give rise to sustainable or green companies with a positive impact on the environment. This has been noted in several meetings of developed countries, such as the G20, which called for the need for industrial companies to move to the green economy and to encourage entrepreneurs and innovators

Companies active in this field continue to struggle to prove themselves, and this is due to the lack of funding for startups in general and green startups in particular. Moreover, banks and investors do not fund such companies until they prove their effectiveness in the market. The startup at the end of the seed stage has exhausted all its capital and remains in constant search for funding in order to continue the journey.

1.1 The main problem addressed in the study:

What is the role of green startups in the transition from a gray economy to a green economy?

This problem leads to the following questions

- ?What is the contribution of the gray economy to global warming
- ?How can we move from a linear economy to a circular economy
- ?What are the requirements of a green economy
- How can startups consisting of one to ten workers contribute to the green economy?
- What are the funding stages that green startups must go through?

1.2 Study hypothese :

- The linear (grey) economy has contributed significantly to environmental disasters since the first industrial revolution
- The transition to a circular economy is achieved through recycling waste and carbon emissions
- Social responsibility towards the environment plays a role in the circular economy
- Large industrial companies helped green startups realize their ideas and innovations
- There are green startups that cannot withstand the demands of continuing due to their inability to raise funding
- The Algerian legislator, in defining startups, overlooked the stage entrusted to them towards the environment and society

1.3 Importance of the study:

The importance of the study stems from the importance of the topic itself. Global warming and environmental problems are no longer the sole domain of environmental and atmospheric scientists, but have extended to politicians and decision-makers. Therefore, its importance is further enhanced by the fact that it has become a public issue that everyone must confront. Thus, the importance of the study lies in the following

- Identifying the causes of global warming;
- The importance of the circular economy in human life and the role that green startups play in achieving it;

– Highlighting the inability of linear economics to find environmental solutions through green startups.

1.4 Study objectives

The study objectives can contribute to finding and identifying possible mechanisms for transitioning to a circular economy, which would help a country like Algeria to look for alternatives for economic diversification instead of relying on hydrocarbon revenues in light of fluctuating oil prices. The role of green companies in creating economic diversification:

- The role of green companies in achieving sustainable development goals; Highlighting the role of startups in achieving the dimensions of social responsibility;
- ; Encouraging and marketing green innovations

1.5 Study methodology:

The methodology of the study requires reliance on the descriptive approach and then the analytical approach. We tried to describe the environmental disasters that planet Earth has been exposed to in the past, while reviewing some data specific to some foreign companies that have contributed to the circular economy.

2. Previous studies:

- 1) **Kaki Abdelkrim's study**, "The Serious Triad: Green Innovation, Green Economy, and Small and Medium Enterprises and the Problem of Sustainable Development," Faculty of Economics, Ziane Achour University of Djelfa, Algeria, published article, 2020, states that solving the dilemma of the problem of sustainable development depends on green innovation, the green economy, and various other factors. Directing small and medium enterprises to invest in the circular economy and rely on renewable energies is necessary to achieve the duality of growth and sustainable development.
- 2) **Ben Fadel Wassila's study**, "Green Startups as a Form of Sustainable Innovation Between Environmental Challenges and the Opportunity to Enter the Field of Sustainable Business: A Case Study of the Aquyqte Startup in the State of Bechar," published article, Journal of Economic Integration, Abou Bekr Belkaid University, Tlemcen, Algeria, Volume 09,

Issue 04, 2021 , concluded that green startups are a major driver of the move towards a sustainable economic system, and that startups face unique challenges in attracting suitable investors. The biggest challenge these startups face is that they are green, as most banks and companies see this .type of startup as risky

- 3) **Sarah Madhi**, Green Startups as a New Trend Towards Sustainable Entrepreneurship: The German Experience, published article, Journal of Legal and Economic Studies, Volume 4, Issue 3, Faculty of Economics, University of 08 May 1945, Guelma, Algeria. The most important results of this study are that green startups are more innovative than others, startups in Germany are greener and more oriented towards sustainable environmental impact, and they are more linked to the production and development of .technology

3. The transition from a linear economy to a circular economy:

Human beings, whether as organizations or individuals, have always relied on the linear economy or the gray economy, i.e. mining and extraction, then manufacturing and benefiting from it, then waste and refuse and dumping it in nature. This has led to the depletion of natural resources despite their scarcity, which has led to climate change through carbon emissions with the pace of the industrial revolutions that humanity has witnessed, which has led to the impact on the natural warming process, .such as a rise in temperature and a change in the times of seasonal rainfall

3.1 Definition of the green economy:

In 2008, the United Nations Environment Programme launched the Green Economy InitiativeGEIa global research program designed to , encourage policymakers to support environmental investments, and in 2015 the United Nations Environment Programme published "Unveiling .\"Pathways to an Inclusive Green Economy

The United Nations Environment Programme defined it as follows: The economy Green Comprehensive he Economy that improves luxury " man And he builds Justice social with Limit from Risks environmental And scarcity . Economy Green Comprehensive For everyone he substitute For

the model Economic Prevailing today, Which leads to worsening Faces non Equality, And encourages on Waste, And he performs to scarcity Resources, And he is born threats wide range For the environment health

¹ "Man"

3.2 Reasons for the transition from a linear economy to a circular :economy

The rise in the temperature of the atmosphere surrounding the Earth is due to the increase in greenhouse gases beyond their natural levels due to pollution resulting from industry, which has affected global warming, leading to an increase in the Earth's temperature by one degree. This .increase is considered significant for planet Earth

:Definition of global warming

It is the atmosphere's retention of some of the sun's energy to warm the Earth, and this is essential for maintaining a moderate climate. The average temperature of the Earth is 14 degrees Celsius, and without the greenhouse effect, the average temperature would be 19 degrees Celsius below zero. Therefore, global warming is necessary in order to keep the .average temperature of the planet Earth more moderate

Global warming is caused by sunlight containing ultraviolet rays. When these rays reach the Earth, the Earth absorbs them and then returns them to the atmosphere, or what is known as infrared radiation, to be trapped inside the atmosphere. The elements that cause this warming are some gases, or what are called greenhouse gases, the most important of .which is carbon dioxide emitted from factories

:The most important greenhouse gases affecting global warming

The term global warming is relatively recent, as it first appeared two hundred years ago with the advent of the Industrial Revolution. There are five main greenhouse gases that increase the Earth's temperature. They absorb the sun's heat during its second journey after the Earth absorbs part

¹ : United Nations website <https://www.unep.org/>

of it and returns the rest to space. During the return journey, these greenhouse gases absorb these rays, which leads to this heat remaining inside the atmosphere and thus increasing the Earth's temperature above its normal average. There are several greenhouse gases, the most important of which are: (carbon dioxide, water vapor, ozone, nitrogen, and methane)

chemical symbol	Its source	the name	Number
<i>H2O</i>	Its behavior is fundamentally different from other greenhouse gases because it is a climate response	water vapor	01
<i>H2O</i>	Burning organic materials such as (coal, oil, gas, wood and solid waste)	Carbon dioxide	02
<i>CH 4</i>	Landfills, natural gas, petroleum industries, agricultural areas (digestive system of grazing animals)	Methane	03
<i>N2O</i>	Agriculture, livestock, fertilizers, agricultural waste and fuel combustion	nitrous oxide	04
<i>O 3</i>	Air pollution	ozone gas	05

Prepared by the researcher based on the previous definition

In addition, there are industrial gases. Like various fluorine compounds, these gases have a capacity thousands of times greater than carbon dioxide, remain in the atmosphere for hundreds of thousands of years, and represent about 2% of greenhouse gases.³

:The effects of global warming on planet Earth

These gases help to warm the planet Earth, and therefore any increase in these gases leads to

² Abdul-Moneim Mustafa Al-Muqamar , Population Explosion and Global Warming, Alam Al-Ma'rifah, Kuwait, 2012, p. 65

³ :Website<https://www.britannica.com/science/greenhouse-gas/Methane>

- ;Impact on sea waters through rising water levels
- ;Melting of ice masses due to rising temperatures
- ;Impact on drinking water supplies
- Impact on agriculture, decline in soil fertility, and changes in rainfall patterns
- Creating the conditions conducive to the emergence of diseases and epidemics, and this is through these conditions that help the emergence of disease-causing mosquitoes such as malaria
- .⁴ Climate disasters (hurricanes, floods)

International efforts to address the phenomenon of global warming

Countries have sought to avoid this phenomenon, which is caused by various economic companies and human contribution to it, such as the impact and damage to organisms and forests, from the melting of ice sheets, which has led to a rise in sea levels, threatening several coastal population centers and their agriculture, which leads to migration and economic troubles.

:The Paris Agreement on Climate Change 2015

Climate change is a global catastrophe, calling for collective action towards a low-carbon economy. A climate agreement involving 197 countries was reached on December 12, 2015, and entered into force less than a year later. Its objectives are

- Addressing the challenge of climate change is a shared responsibility, but it varies according to each country's capabilities, and industrialized countries should facilitate technology transfer and adaptation to a carbon-free economy
- Containing the rise in average temperatures below 2 degrees Celsius and continuing to implement steps aimed at limiting the temperature rise to degrees Celsius 1.5

⁴ slave The Benefactor Mustafa Al-Muqamar, previous reference, p. 85

•The 195 countries committed to developing strategies that would
. ⁵ result in only minimal greenhouse gas emissions in the long term

Among the most important recommendations and suggestions of the Paris Agreement is the commitment of countries in general to reduce greenhouse gases and transfer technology with a carbon-free economy by transitioning to a green economy. This is done by encouraging economic .companies to reduce carbon emissions and move to a circular economy

The 2020 :G20 Summit in Saudi Arabia

The G20, or the Global Forum for Economic Cooperation, comprises the twenty most important countries and largest economic entities in the world, which are the largest developed and emerging economies, consisting .of nineteen countries in addition to the European Union

Its members represent about 90% of economic activity and 80% of global trade. The group also includes the world's two largest economies: the United States of America, with a GDP exceeding \$20 trillion, and China, with a GDP of about \$13 trillion. The G20 was established in 1999 with the .aim of promoting international financial stability

The most prominent thing this group called for at its meeting held in the Kingdom of Saudi Arabia from 2020 to net zero emissions through what is known as the four Rs)4R :which are as follows ,(

- Reducing carbon emissions: renewable energy, energy efficiency, clean fuels such as green hydrogen

- Carbon capture: This involves capturing as much carbon as possible instead of letting it escape into the atmosphere, and then reinjecting it into .oil and gas reservoirs to increase productivity

- Carbon recycling: Re-integrating carbon into some materials used in ;car manufacturing

⁵ ,Website: Paris Agreement, United Nations<https://www.un.org/ar/climatechange/paris-agreement>

•Carbon removal: by removing carbon dioxide from the atmosphere. Saudi Aramco has planted more than two million mangrove trees to remove carbon dioxide

:The 2022 G20 meetings discussed several key items, including

•Providing opportunities for everyone, especially young people, women, and small and medium enterprises, and activating technology to promote financial inclusion

•Activating the role of emerging technologies to serve the digital economy, and improving the mechanisms of global economic systems

:The role of Saudi Aramco in the circular economy

Countries have realized that the phenomenon of global warming is not limited to climate and nature scientists only, but this concept has gone beyond to include all segments of society, from politicians to the general public. Therefore, some companies have taken the initiative to contribute to addressing this phenomenon as a matter of their social responsibility towards the country to which they belong, on the one hand, and on the other hand, considering that these companies are responsible for those carbon emissions

Saudi Aramco took the initiative to adopt the initiatives that emerged from the G20 meeting held in Saudi Arabia in 2020. Among the most important actions taken by Aramco to address carbon emissions are

the goal	The initiative	Number
The company has stopped routine gas flaring in flares and has commitments to stop it completely by 2030	Reducing emissions	R1
The construction of a special gas processing plant in the container, which extracts 45 million cubic meters and pumps carbon for a distance of 85 km to inject oil in the Uthmaniyah area, is the largest project in the Middle East	Reuse	R2
Carbon is used to produce polymers, which are used to manufacture adhesives, food packaging materials, and insulation materials	Recycling	R3

⁶ ,Website: The Saudi National Platform for Government Serviceswww.my.gov.sa

⁷ ,Website: Saudi Aramcohttps://www.aramco.com/ar

Planting mangrove trees, which are a hundred times faster than terrestrial forests at absorbing carbon from the atmosphere	Carbon removal	R4
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In 2021, the G20 met in Rome, Italy, but via remote dialogue due to the Coronavirus pandemic. They praised what had been agreed upon in the previous meeting in Saudi Arabia, and this was an attempt to benefit from carbon emissions by using them in some industries or getting rid of them completely

Various economic companies have contributed to reducing global warming by reducing their carbon emissions, in recognition of their contribution to the green economy and the extent of their social responsibility. This responsibility is not limited to the economic dimension only, but also the environmental and social dimensions, which has helped entrepreneurs to strive for innovation and always search for new ideas to solve problems. These entrepreneurs have contributed to creating a model that can be effectively developed, which has paved the way for the emergence of startups in the past few years

:Definition of startups

Innovation is simply an idea to solve a specific problem. Therefore, many innovators, creators, and entrepreneurs seek out a problem, whether it is an economic or social problem, and try to find a solution for it and present this solution to the community, with the possibility of developing this solution. Thus, the idea of establishing startups came about due to the investment importance of these companies and the role assigned to them in the field of sustainable development

1): Definition of startups for entrepreneurs

The most common definition of a startup is that of Eric Ries, the creator of the lean startup methodology

" A startup is a human enterprise designed to create a new product or service under conditions of extreme uncertainty"

As Wil Schroter knows it " A startup is the living embodiment of the founder's dream. It represents the journey from concept to reality. It's one

of the few times you can take something that is just a dream and make it a reality, not just for yourself, but for the whole world"

ب) :Definition of startups in Algerian legislation

The Algerian legislator issued an executive decree under number dated September 15, 2020. This decree aimed to grant a label to 254/20 each of (start-up company, innovative project, business incubator), with the formation of a national committee headed by the minister in charge of start-ups.⁸

The concept of emerging institutions remains in its early stages for the Algerian legislator, and this is due to the tendency of various companies of this type to move towards consumer fields such as the transport of goods and merchandise.

Despite the Algerian government's interest in the role of emerging institutions in supporting economic development, it created a delegated ministry in charge of the knowledge economy and emerging institutions, and established the National Committee for Granting the Label of an emerging institution, an innovative project and a business incubator under Executive Decree No. 20-254, and launched a fund to finance emerging institutions without clarifying how this fund works.⁹

ت) :Green startups

The spirit of social initiatives contributes to the green industry, helping to solve the world's biggest environmental problems by providing innovative solutions. Therefore, green companies go either to reduce environmental damage or to gain consumer support.

These are institutions that adopt sustainable operating procedures, aiming to help the environment; they are environmentally friendly. Their tasks include

⁸ Official Gazette of the People's Democratic Republic of Algeria, Issue No. 55, dated 3 Safar AH, corresponding to 21 September 2020 AD, p. 10 1422

⁹ Mafroum Broudi, Startups in Algeria: Reality and Aspirations, published article, Annals of the University of Bechar in Economic Sciences, Volume 07, Issue 03, 2020, p. 355

- Integrating sustainability principles into all of its operations
;and decisions
- Providing green, environmentally friendly products or
;services that replace the demand for non-green products or services
- A constant commitment to environmental principles in its
.¹⁰ operations and a positive impact on it

:Stages of funding startups

A startup begins with a problem to be solved, or a great idea, and this is not enough to create a startup. It requires a lot of time, discipline, dedication, and most importantly, funding. Most startups need external funding, and this funding varies according to the stages of the company .itself

A. :Pre-establishment funding phase

The early stage is called the "start-up phase," which is the period when a startup begins its operations from scratch. Investors are unlikely to invest in exchange for shares, so at this stage the company tries to grow itself on its own before obtaining pre-series funding quickly. This depends on the .nature of the startup

The most important potential investors at this stage, called the pre-:seed or pre-seed stage, are

Startup owners, friends, family, early-stage venture capital funds
The company at this stage needs between \$10,000 ¹¹ .(small venture capital)
and \$1,000,000 wherever it is located

B. :First funding phase

After the pre-seed stage comes the time for planting the seeds. This stage is characterized by most startups exhausting their capital during the pre-seed stage. The most important feature of this stage is that funding

¹⁰ Ben Fadel Wassila, "Green Startups as a Form of Sustainable Innovation Between Environmental Challenges and the Opportunity to Enter the Field of Sustainable Business: A Case Study of the Aquyqte Startup in the Wilaya of Bechar," published article, *Journal of Economic Integration*, Abou Bekr Belkaid University, Tlemcen, Algeria, Volume 9, Issue 4, p. 450, 2021

¹¹ : Website <https://www.cloudways.com/blog/startup-funding-stages/>

covers the costs of launching the product and obtaining early traction through marketing. This is the most important time in the startup's life cycle because it coincides with the product's marketing plan. The product launch plan consists of strategies and procedures that the company may use to develop communication channels for its target audience, and it consists of the following

- Identifying the potential audience and getting to know the competitors
- Conducting at-home (market) tests
- Creating and perfecting the company's presentation surface (preparing promotional sessions for investors)
- Identifying platforms to announce the startup product launch and promote it through advertising sites and press releases
- Defining marketing strategies through (social media, intranet, search engine optimization and link building, blog strategy)

C. A financing phase

This stage is the first phase of venture capital funding, and the startup is in the product development phase and has a customer base with a steady revenue stream, which helps the company expand across different markets. Potential investors are accelerators and venture capitalists. What characterizes this stage is

- Create a plan that will generate long-term profits
- Early contact with angel investors and venture capitalists
- Applying the 30-10-2 rule, which states that 30 investors should be found willing to invest, and 10 of these investors may show interest in the company's proposals, and 2 of them will invest in the company

D. SeriesB financing phase

The investors occupying SeriesB are venture capitalists, and startups at this stage have an income-generating model, are valued at between \$30 million and \$60 million, and are able to raise approximately \$30 million during the SeriesB funding phase This phase appears similar to the .

previous funding phase in terms of operations and key players, with minor differences such as

- Increasing its market share, marketing, and business development
- Increased growth enables the company to meet the diverse requirements of its customers and compete in the markets
- Adding a new wave of venture capital firms in the later stages, which specialize in investing in established startups

E. Series financing phase

In order to build new products, the startup at this stage is looking for more funding in order to reach new markets and also to acquire other underperforming startups in a similar industry

Investors at this stage of funding (C) hope to get more profit from the money they invest, so they seek to fund the company more. A startup whose startup operations have become less risky attracts more funders such as hedge funds, investment banks, and private equity firms

Startups with good business growth of \$100 million to \$120 million are able to raise approximately \$50 million during this stage of funding

D funding phase and beyond

Many startups do not like the need to go to this stage; they prefer independence to merging with another startup, or merging with a competitor on acceptable terms

financing provides startups with the most viable solutions, and the most important potential investors for this series are late-stage venture capital, private equity firms, hedge funds, and banks

The startup is valued at approximately \$150 million to \$300 million at this stage and is capable of raising nearly \$100 million

Initial Public Offering (IPO) Phase

An initial public offering (IPO) is the process of offering a company's shares to the general public for the first time. Growing startups that need funding often use this process to generate money, while established organizations use it to allow owners of previously merged startups to exit so

that each has their own ownership by offering and selling shares to the public

When a startup decides to go public, a series of events take place during this process, including the following

- Forming an external underwriting team consisting of underwriters, lawyers, chartered accountants, and experts from the Securities and Exchange Commission
- Gathering information about the startup, including its financial performance as well as its expected future operations
- Auditing the startup's financial data generates an opinion about its public offering
- The startup submits its prospectus to the Securities and Exchange Commission and sets a later date for its initial public offering

:International green startups

The active role that green startups have come to play in the development and prosperity of a number of Western and East Asian countries, and their role in preserving the environment, has attracted attention in any economic development map, as the role of entrepreneurs has become more important in economic development and sustainability

A. :Startups in Germany

German companies have one of the best ecosystems in the world to work in, with a large number of venture capital firms, investors and innovative companies. Most startups are located in both Berlin and Munich. The number of startups in Germany is estimated at around 70,000. The average investment in Germany depends largely on the location of the company. For example, the average initial funding in Berlin is \$1,000,000 and in Frankfurt it is \$882,000. The average investment in key technology systems in Germany is also much higher than the global averages¹²

¹² :Website<https://startupstash.com/german-startups/>

Also, during the international lockdown due to the Corona pandemic, the German government announced a \$2 billion government aid plan for startups, and provided a 100% guarantee on loans up to certain financial amounts. These factors help create the best startups in the country

➤ **German company PlanetaryPanetly :**

Source	Funding value	City	Year of establishment	Company Name
6 investors	5.7\$ million	Berlin	2019	Panetly

The founder of this company is Benedict Frank, and the size of this startup company is from 1 to 10 workers. This company has distinguished itself in creating a software solution that allows for an analysis of their ,carbon footprintwhich is an indicator that measures the rates of carbon dioxide emissions at various levels such as individuals, factories, and .products, and is expressed in tons per year of carbon emissions

Planetly can also provide solutions on how to reduce emissions. The company is environmentally friendly and is looking to save the world from .¹³ global warming

➤ **German company Criplus**

Source	Funding value	City	Year of establishment	Company Name
investors 6	million 3.7\$	Hamburg	2018	Criplus

Founded by Christian Schiller and Volkan Bilici, this company operates a global marketplace for recycled materials and raw materials from waste. The company combinesblockchain technology and artificial intelligence to ensure the effective management of plastics and to help alleviate the current problem of plastic waste. Every aspect of obtaining .these recycled materials is done on its platform
:Green startups in Brazil

¹³ : Website<https://de.planetly.com/>

Source	Funding value	City	Year of establishment	Company Name
investors 6	million 3.7\$	Sao Paulo	2020	Moss.Earth

Moss Earth Company , Louis Philip Adayem Tajni Company Her money from during buying Sale balances carbon on Its platform , To . stimulate companies on Move about Alternatives more Green

credits are a modern term that emerged following the Paris Climate Conference. It involves countries with higher carbon emissions purchasing the right to emit more carbon from countries with lower emissions. The principle behind this trade is to pay for pollution. Its establishment Passed Company Three Tours from finance companies The emerging ones . And they I was fortunate Tours Finance This is amazing With support what group six Investors . They were able to Company from collection number . Its value is 13.4 million Dollars from these three rounds

B. :Italian green startups

Italy is one of the most popular holiday destinations on Earth, and it also boasts a burgeoning startup ecosystem. Capitalizing on its strengths, Italy is home to a global fashion industry. With approximately 12,000 startups, the average investment in Italian startups varies by location, with the average seed round at \$433,500 and the average SeriesA round at ¹⁴.both figures lower than the global average – 950,000\$

➤ **Green startupExo lab italia**

Source	Funding value	City	Year of establishment	Company Name
single round	500,000 euros	L'Aquila	2020	Exo lab italia

Company founder Lorenzo Celi , the company utilizes plant nanovesicles made from organic fruits and vegetables to create a line of sustainable and organic products based on nanovesicles, which is a

¹⁴ :Website<https://startupstash.com/italian-startups/>

nanotechnology that studies the manipulation of matter at the atomic and molecular scale and relies on the innovation of new technologies and liquids¹⁵ whose dimensions are measured in parts per million of a millimeter

Conclusion:

The linear economy has proven its inability to continue, and this is due to the environmental disasters it caused, which in turn led to natural disasters such as floods, to climate change, which has become one of the existential challenges of the twenty-first century. This has resulted in the emergence of pioneers and innovators interested in protecting the climate. In recent decades, climate research has provided clear evidence of human emissions into the atmosphere that have led to environmental disasters and will lead to more of them in the coming decades

Climate change has serious and multiple consequences for humanity and the economy, so some parties are seeking measures to protect the climate by providing individual solutions and also reducing some products that contribute to climate change

I helped Revolution Industrial Fourth Creators and innovators are encouraged to showcase their ideas, which It was formed Her features in means Technology For example (block) Shin) and intelligence artificial and Internet things and nano Technology , All of them Contributed in recovery number big from Sectors Economic like Track Minerals from . mines and analysis Data For use in re Manufacturing and Recycling

At the Arab level, there are startups, but they are not specialized and do not contribute to the green economy. These startups in the Arab world can invest in many fields such as e-commerce and the fitness industry. Startups also provide an intranet environment for students to learn English and invest in the American stock market in an affordable and simple way for ordinary people

The term “green startup” in Algeria is still relatively new, as it has not been addressed by the Algerian legislator. There are also no green

¹⁵ :Websiteexolab company /<https://exolabitalia.com>

innovations that would help it emerge, and on the other hand, the prices of its products and equipment are high, and the risks are high, in addition to the time factor, as it requires time to establish it.

:Study results

- Global warming is an environmental phenomenon caused by industrial companies, and it has a significant impact on the economies of nations due to the problems it creates and the resulting economic and health issues affecting people
- The transition to a green economy is an inevitable consequence of the shortcomings of the gray economy, which has proven incapable of serving humanity due to carbon emissions that have affected the atmosphere over time
- There are global companies such as Saudi Aramco that have contributed significantly to the circular economy through carbon recycling, a modern technology that has had positive environmental results in the Kingdom of Saudi Arabia
- Startups in developed countries aim to save the environment and their goal is more social than economic and profit-driven
- Startups in Arab countries, especially Algeria, are newly established, and if any startups exist, they are not green, and this is due to investors fleeing from funding such startups
- Startups in Algeria and Arab countries are limited to a specific type of investment, such as transportation

:Recommendations

- Encouraging green startups within a special legal framework with funding for green innovators through interest-free loans or partnerships between innovators and banks
- The government's adoption of such companies contributes to entering into economic diversification and not relying on the hydrocarbon economy

- Algerian companies should adopt modern technologies to recycle carbon emitted from burning natural gas and use it in the manufacture of certain materials
- Algerian startups should apply the 30-10-2 principle and utilize the intranet to market their innovations, especially in the field of environmental services

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