



**FRIEDRICH NAUMANN  
FOUNDATION** For Freedom.

# **GREEN TECH IN GEORGIA:**

**A PATH TOWARDS SUSTAINABLE  
DEVELOPMENT**

Guri Koiava

ANALYSIS

## Imprint

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## Executive Summary :

Green technology has become increasingly important in the face of climate change and environmental degradation. Georgia, a country located in the Caucasus region, has the potential to become a regional leader in green tech, given its abundance of natural resources and strategic location. This paper presents an in-depth analysis of the current situation of green tech in Georgia and globally, including its challenges and opportunities.

Additionally, the paper puts forth policy recommendations to promote the growth of the green tech sector in Georgia and highlights the importance of green tech as a key driver of sustainable development in the country based on World Bank Group sources.

In the current global climate crisis, urgent action is needed to promote sustainability and reduce carbon emissions. Clean technology, also known as a green technology, is emerging as a key solution to this problem.

One significant area of growth in green technology is the development of electric vehicles, which are powered by electricity

instead of fossil fuels, making them more sustainable and environmentally- friendly.

The market for electric vehicles has grown rapidly, and major automakers such as Tesla, Ford, and General Motors are investing heavily in this technology. Another key area of growth in green technology is the development of renewable energy sources, such as solar and wind power.

These sources produce electricity without greenhouse gas emissions, making them a crucial component in efforts to reduce carbon emissions and promote sustainability. Smart grids are another example of how green technology is being used to promote sustainability and reduce carbon emissions. These grids use advanced technologies such as sensors and communication networks to better manage the production and distribution of electricity, leading to a more efficient and reliable electricity grid that reduces the need for fossil fuels.

The city of Amsterdam serves as an excellent example of how smart grid technology is being used to optimize the use of renewable energy sources, such as wind and solar power.

Green buildings are also an example of how green technology is being used to promote sustainability and reduce carbon emissions. These buildings are designed to be more energy-efficient, reducing the amount of energy needed for heating, cooling, and lighting.

They often incorporate renewable energy sources such as solar panels to further reduce their carbon footprint.

The Bullitt Center in Seattle is a six-story office building that is considered one of the greenest buildings in the world, featuring a rooftop solar panel array, rainwater harvesting system, and geothermal heating and cooling, among other sustainable features.

To achieve meaningful progress in reducing carbon emissions and promoting sustainability, continued innovation and investment in these technologies are necessary. Innovations in clean transportation, smart cities, and renewable energy are enabling a sustainable future.

Therefore, it is imperative to continue developing these areas and take a deep look at how the startup ecosystem and green-tech startups are playing a crucial role in this transformation in Georgia and globally

## Introduction:

Georgia is a small country located in the Caucasus region, with a population of around 3.7 million people plus around 1.3 million represented in the diaspora. The country has a rich history and culture and has recently undergone significant economic and political reforms.

Georgia's economy is driven by agriculture, tourism, logistics, and manufacturing, but the country also has the potential to become a hub for green technology.

Green technology, also known as clean technology, is the application of science and innovation to develop products and services that have a positive impact on the environment. This includes renewable energy, energy efficiency, sustainable transportation, waste management, and water management, among others.

Green technology has the potential to create jobs, reduce carbon emissions, and promote sustainable development in Georgia and globally.

## Global Trends in Green Technology:

Green technology is a rapidly growing industry worldwide, with significant investment and innovation in recent years. According to a report by the International Energy Agency, renewable energy sources such as wind, solar, and hydropower are expected to account for 90% of the increase in global electricity generation over the next two decades. In addition, the global electric vehicle market is expected to grow rapidly, with sales projected to reach 30 million vehicles by 2030.

The green economy has seen a rise in recent years, as more people and corporations are looking for sustainable solutions to combat climate change and resource depletion. Venture capital investments in decarbonization solutions have increased from \$418 million in 2013 to \$87.5 billion invested in climate tech between July 2020 to July 2021. Additionally, renewable power was on track to set another global record in 2022, and corporations are placing greater focus on sustainability. This growth in green energy is supported by falling costs of generating sustainable energy and newer technologies that are predicted to take more time to come into the mainstream.

Furthermore, there are many emerging green tech products that can be integrated into our daily lives, such as Nimble's energy-efficient portable charger made with recycled materials, Pela's Lomi residential smart compost system, and the Respira Smart Garden. With green technology being integrated into various sectors, entrepreneurs stand to benefit from coming up with green technology business ideas to serve a growing market need, while investors are focusing more on the renewable sector to improve the world while making a positive financial return.

The year 2022 saw record-breaking investment in green technology companies, with more than \$40 billion raised across approximately 1,000 venture and growth deals. This is expected to continue in 2023, with total investment in the climate and cleantech sectors predicted to reach \$6.4 trillion. Despite the global market slowdown of investment, capital and talent continued to flow into the GreenTech sector as new startups pulled to the forefront of their sector through exciting innovation and industry-disrupting business models.

This writing also looks at the top eight GreenTechs attracting the most attention

from investors and are predicted to grow the fastest in 2023. First on the list is ZeroAvia, which is revolutionizing the aviation sector by providing zero-emission hydrogen-electric powertrain engines. The startup aims to support airlines in scaling sustainable flights while cutting costs and emissions. Second is Redwood Materials, which is on a mission to build a circular supply chain for lithium-ion batteries. The startup is closing the loop at end-of-life batteries by combining recycling, refining, and remanufacturing technologies.

FreeWire Technologies is a global electric vehicle (EV) charging and energy solutions provider, offering ultrafast, battery-integrated EV charging stations and energy management solutions. Climavision is developing high-resolution weather radar and satellite networks with advanced weather prediction modeling, and Universal Hydrogen is developing a flexible, scalable, and capital-light approach to hydrogen logistics by carrying it in modular capsules to airports without the need for new infrastructure.

Lilac Solutions is focused on ending the supply shortage and paving the way for the development of electric vehicles by leading the industry in the production of high-quality

lithium with very little environmental impact. Living Carbon aims to use plant power to sustainably restore the planet's carbon cycle. AMP Robotics combines AI, robotics, and infrastructure to manage excess garbage and recycle goods. These top eight GreenTechs are revolutionizing their sectors through innovative and environmentally-sustainable solutions. Their business models offer scalable and long-term solutions that can help mitigate climate change while reducing costs and improving efficiency. With increasing investment capital flowing into GreenTechs, these startups are likely to play a vital role in the future of our planet.

### **The Green South Caucasus Region:**

The region includes Armenia, Azerbaijan, and Georgia, and is an area of growing interest in terms of green technology and economy. The region is rich in natural resources such as hydro and solar power, which provide an opportunity for the development of green energy. However, there are also challenges in terms of political instability, which has hindered investment in the region. Armenia has made significant strides in developing its green economy in recent years, with a focus on developing renewable energy sources

such as wind and solar power. The country has set a target of producing 30% of its energy from renewable sources by 2025.

Azerbaijan has also made efforts to develop its green economy, with a focus on renewable energy and sustainable development. The country has set a target of producing 30% of its energy from renewable sources by 2030, and has launched several projects aimed at promoting green energy.

Georgia is another country in the South Caucasus region that has been working to develop its green economy. The country has made significant strides in terms of energy efficiency and renewable energy, and has set a target of producing 20% of its energy from renewable sources.

In summary, the South Caucasus region is an area of growing interest in terms of green technology and economy, with Armenia, Azerbaijan, and Georgia all making efforts to develop renewable energy sources and promote sustainable development.

### Green Tech in Georgia:

Georgia has significant potential for green technology, with its abundance of natural resources and strategic location. The country has a strong hydropower sector, with around 80% of its electricity coming from hydropower. In addition, Georgia has significant potential for solar and wind energy and has already begun to invest in these areas. The government has also launched initiatives to promote energy efficiency and reduce waste. However, there are also challenges for the growth of green tech in Georgia. These include a lack of investment and financing, limited public awareness and education about green technology, and the lack of a skilled workforce in the sector. In addition, there is a need for better coordination between the government, private sector, and civil society to promote the growth of green tech in Georgia.

Environmental protection and sustainability are becoming increasingly important in today's world. With the negative impact that human activities are having on the planet, it is crucial that we all play our part in protecting the environment. This is particularly true in Georgia, where many individuals and businesses are still not fully aware of the importance of environmental



care and the positive impact that eco-friendly initiatives can have on society. Fortunately, there are companies and organizations that are taking a proactive approach to promoting sustainability and green business.

One such organization is ProCredit Bank. For many years, ProCredit Bank has been implementing eco-friendly initiatives and promoting green business in Georgia. This has been expressed through the Environmental Management System that the bank uses, as well as the executed projects that have helped reduce the negative impact on the environment. The bank has been operating in Georgia for 23 years, and during this time, it has established itself as a leader in green financing.

ProCredit Bank offers access to financing to both private individuals and small and medium-sized businesses by offering specialized green loans to promote investments in energy efficiency, renewable energy, and environmental protection. This demonstrates the bank's commitment to funding environmentally and socially sound projects and working only with businesses that comply with environmental regulations and do not endanger the population's health

and safety. ProCredit Bank also invests in renewable energy technologies, having installed a rooftop solar power plant. Additionally, 100% of the bank's car fleet consists of electric vehicles. Despite the progress made in promoting sustainability and green business in Georgia, there are still several challenges to overcome.

One of the main challenges is the low awareness of the importance of caring for the environment. This highlights the need for all of us to do our part in raising awareness and promoting eco-friendly initiatives.

One more organization is CENN, or the Caucasus Environmental NGO Network, an organization that has been operating in Georgia since 1998. The mission of CENN is to promote sustainable development in the Caucasus region through networking, cooperation, and engagement with all sectors of society.

The organization works with local communities and national governments through region-wide initiatives to promote green growth at every level. With representation throughout the South Caucasus, CENN has the capability and commitment to providing a service that is

consistent, professional, and of the highest quality.

CENN works with communities, businesses, and governments to find viable solutions to local and regional environmental challenges. The organization has a team of more than 60 full-time members of staff and a network of volunteers across the region. With 25 years of experience in managing and implementing over 250 complex projects for international multilateral and bilateral donors, CENN has acquired the necessary capabilities to manage complex international multi-million dollar projects in the Caucasus region.

The organization has established efficient cooperation with public and private partners and has been successful in establishing public-private partnerships (PPPs). The organization's approach to sustainable development is based on the belief that economic development, social equity, and environmental protection are interdependent and mutually reinforcing. Through its work, CENN has been successful in promoting sustainable development in the Caucasus region and beyond.

Another reasonable actor in the country is the Georgian government and the Ministry of Economy. As a concerned citizen of Georgia, I appreciate the Ministry of Economy's plans to develop a green growth strategy for the country.

However, I believe that the government must do more than simply plan and acknowledge the importance of sustainable practices. They must take concrete actions to ensure the successful implementation of this strategy.

It is crucial that the government works closely with the private sector to integrate green economy principles into their operations. Proper incentives and regulations must be put in place to encourage the private sector to adopt sustainable practices. The government must also take an active role in promoting and enforcing eco-labeling, bio-production certification, and quality mark standards. Without proper enforcement, these measures will not have the desired effect.

Furthermore, it is not enough to simply adopt new green technologies. The government must also invest in research and development to create and implement

sustainable technologies and practices that are tailored to the needs of the country.

This will require the government to allocate sufficient resources toward sustainable development initiatives. It is also important for the government to involve and educate the public about the importance of sustainable practices. The government can do this by implementing public outreach programs and raising awareness through various media channels.

This will help to create a culture of sustainability and encourage individuals to make sustainable choices in their daily lives. In conclusion, while I am optimistic about the government's green growth strategy, I believe that it must take a more active role in its implementation. The success of this strategy will require collaboration between the government, the private sector, and the public. It is time for the government to move beyond planning and take concrete steps toward a sustainable future for Georgia.

Green economy investments are gaining traction in Georgia, and the Green for Growth Fund's (GGF) Georgia Energy Efficiency and Renewable Energy Credit Line (GEEFF) program is one of the driving forces behind this trend. The program provides financing for businesses and

households to invest in high-performing energy-efficient and renewable energy technologies, which can lead to a range of benefits. For households, GEEFF provides an opportunity to reduce their energy, water, and resource consumption, leading to lower related costs and improved comfort and quality of their real estate assets.

For businesses, the program offers a chance to improve their energy efficiency, productivity, and product quality, as well as increase their profitability and competitiveness. In addition to these benefits, vendors can also experience higher turnover and larger sales/production of energy-efficient and renewable energy technologies, while the environment benefits from the conservation of natural resources, reduced pollution, and healthier surroundings.

One of the key advantages of the GEEFF program is that it can benefit any sector, providing expertise and services to both the commercial and residential sectors. This flexibility makes it an excellent tool for promoting sustainable economic development and environmental protection in Georgia.

Overall, the GEEFF program is an excellent

example of how green economy investments can benefit not only the environment but also households, businesses, and vendors. Its success in Georgia demonstrates the potential for similar programs to drive sustainable economic growth and environmental protection in other regions.

Last, but not least, my organization Startup Büro is a pioneering organization that is dedicated to fostering Georgia's startup ecosystem. With its headquarters based in Tbilisi, the organization is actively engaged in collaborating with both private and public sector entities to design and implement a range of programs aimed at building the skills and capacity of entrepreneurs, innovators, and creatives.

At the core of Startup Büro's mission is a commitment to driving innovation and promoting entrepreneurship in Georgia. The organization's comprehensive range of programs includes hackathons, business bootcamps, incubation, pre-acceleration and acceleration programs, community meetups, trainings, and conferences.

Through these initiatives, Startup Büro provides aspiring entrepreneurs with access to the resources, expertise, and support they need to turn their ideas into

reality. One of the key strengths of Startup Büro is its ability to build partnerships with a diverse range of stakeholders.

The organization works closely with both the public and private sectors to create an enabling environment for startups to thrive. By collaborating with governments, universities, corporations, and other organizations, Startup Büro is able to tap into a wide range of resources and expertise to support its programs. In addition to its focus on skills building and capacity development, Startup Büro is also committed to promoting a culture of entrepreneurship and innovation in Georgia. The organization places a strong emphasis on community building, organizing regular meetups and events where entrepreneurs can network, share ideas, and learn from one another. Through these initiatives, Startup Büro is helping to build a strong and vibrant startup community in Georgia.

Overall, Startup Büro is playing a vital role in strengthening Georgia's startup ecosystem. By providing entrepreneurs with access to the resources, expertise, and support they need to succeed, the organization is helping to drive innovation and create new opportunities for economic growth and development. With its commitment to

community building, skills development, and partnership building, this year, Startup Büro is trying to be a key player in the emerging landscape of green-tech startups in Georgia from 2023.

### Implications and Food for Thought:

The growth of green technology in Georgia has significant implications for the country's economic, social, and environmental development. Green tech has the potential to create jobs, reduce carbon emissions, and promote sustainable development. It can also help diversify the country's economy, reduce dependence on fossil fuels, and improve energy security. However, there are also potential risks associated with the growth of green techs, such as the displacement of workers in traditional sectors and the potential for environmental damage from poorly planned projects. It is important to ensure that the growth of green tech is sustainable, equitable and that it benefits all segments of society.

Increasing investment in green technology is driving innovation and creating opportunities for entrepreneurs and investors, leading to the development of new green technology products. Record-

breaking investment in green technology companies was seen in 2022, with total investment predicted to reach \$6.4 trillion in 2023.

The top green tech startups are revolutionizing their sectors through innovative and environmentally sustainable solutions, offering scalable and long-term solutions that can help mitigate climate change while reducing costs and improving efficiency. Despite the potential for green tech in Georgia, there are challenges to its growth, such as a lack of investment and financing, limited public awareness and education, and a lack of skilled workforce in the sector. To promote the growth of green tech in Georgia, the government, private sector, and civil society need to work together.

The increasing investment in green tech offers tremendous opportunities for entrepreneurs and investors to develop innovative, sustainable, and scalable solutions. It is crucial to promote the growth of green tech in a sustainable and equitable manner, benefiting all stakeholders while mitigating climate change and reducing costs.

Startup ecosystem leaders play a crucial

role in promoting the growth and success of new businesses. By embracing green technology and implementing various skill-building programs, leaders can help entrepreneurs, innovators, and creatives develop the necessary expertise to succeed in the business world. One effective approach to supporting startups is through the use of hackathons, business bootcamps, and incubation, pre-acceleration, and acceleration programs. These initiatives provide entrepreneurs with the skills and resources necessary to succeed in the competitive business landscape. Additionally, community meetups, trainings, and conferences can provide valuable networking opportunities, allowing entrepreneurs to connect with investors, mentors, and other industry professionals. An effective startup ecosystem requires a liberal environment, accumulated resources, experienced teams, legal framework, with an equal balance of skill sets in strategy, marketing, and technology, among others. Mentors can also play a vital role in providing guidance and support to entrepreneurs. Furthermore, embracing green technology can lead to the creation of new industries and innovative solutions to environmental challenges.

Growth-hacking has been a popular entrepreneurial approach in the 21st century, resulting in the creation of new tech giants and entirely new industries. By embracing green technology, entrepreneurs can create sustainable and environmentally friendly solutions that can benefit society as a whole. Finally, cultivating the right leaders is essential for startup success. Leaders who possess resilience, passion, flexibility, focus, trust, and people skills can inspire and motivate their teams to overcome challenges and achieve their goals. In conclusion, by supporting startup ecosystem leaders who embrace green technology and implementing various skill-building programs, startups can thrive and contribute to sustainable economic growth. By cultivating the right leaders and providing resources and support, entrepreneurs can create innovative solutions that benefit both society and the environment.

### **Policy Recommendations:**

To promote the growth of green tech in Georgia, the following policy recommendations are proposed: increase investment in green tech research and development, and provide tax incentives and other financial support to green tech

companies. Improve public awareness and education about green technology, and promote government investment in green technology research and development, including grants and loans to startups, to accelerate the transition to a low-carbon economy.

Encourage the development and deployment of clean transportation options, such as electric vehicles and public transportation, by providing incentives and subsidies to both consumers and companies. Support the expansion of renewable energy sources, such as solar and wind power, by incentivizing the adoption of these technologies through tax credits, subsidies, and regulatory support. Implement policies to reduce greenhouse gas emissions from buildings, such as mandatory energy efficiency standards for new construction and incentives for retrofitting existing buildings with green technologies. Promote sustainable agriculture practices, such as organic farming, and invest in research to develop more sustainable and climate-resilient crops.

Encourage the development of smart cities and infrastructure, which leverage technology to optimize resource use and

reduce environmental impacts. Implement regulations and incentives to reduce waste and promote recycling, such as extended producer responsibility and deposit return schemes. Provide education and training programs to support the development of a green workforce, including programs that support the transition of workers in high-carbon industries to jobs in the green economy.

Lastly, by supporting startup ecosystem leaders and their programs, we can promote green innovation and economic growth, create new job opportunities, and foster social and environmental impact.

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[GEORGIA CONSERVANCY](#)

[Georgia USA](#)

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## About the Author:

Guri Koiava is an entrepreneur, startup mentor, and public speaker, who is currently serving as a Co-Director at Founder Institute Georgia, Co-Founder at Axel & Startup Büro, and Board Member at the European Business Angels Network (EBAN). With a strong desire to make a positive impact on the startup community, Guri Koiava has developed an end-to-end understanding of the inner workings of a successful organization through his years of experience in the corporate industry, and his background in organizational development and management in the non-profit, government, and private sectors.

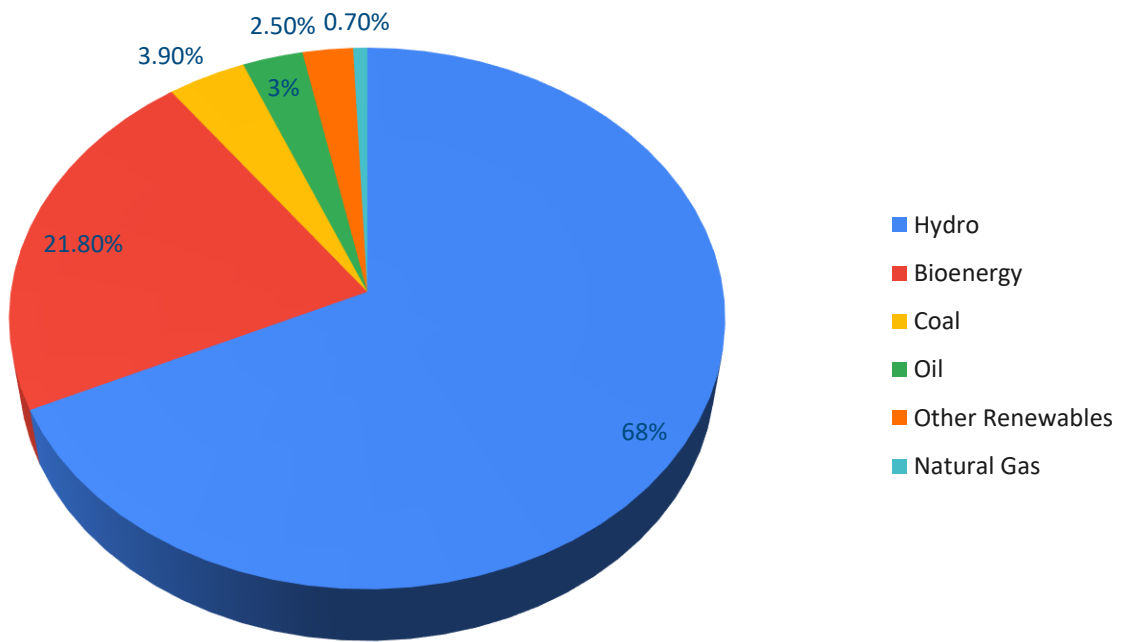
Prior to his current roles, Guri Koiava worked with the Georgian National Tourism Administration, where he contributed to increasing the influx of international visitors to Georgia by 21% and organizing music festivals in Anaklia and Poti, including KaZantip Republic, Georgian Electronic Music Festival, and Swing Festival. He is dedicated to helping people realize their dreams through the startup process and takes great joy in startup community building, angel investing, and seeing the direct impact of his actions. Guri Koiava's

experience in the startup ecosystem includes carrying out 39 distinctive programs, co-organizing over 200 startup events, and engaging 60,000 citizens and residents of Georgia [1]. He advocates for entrepreneurial growth and development and talks about mentoring, angel investing, entrepreneurship, startup communities, and accelerator programs.

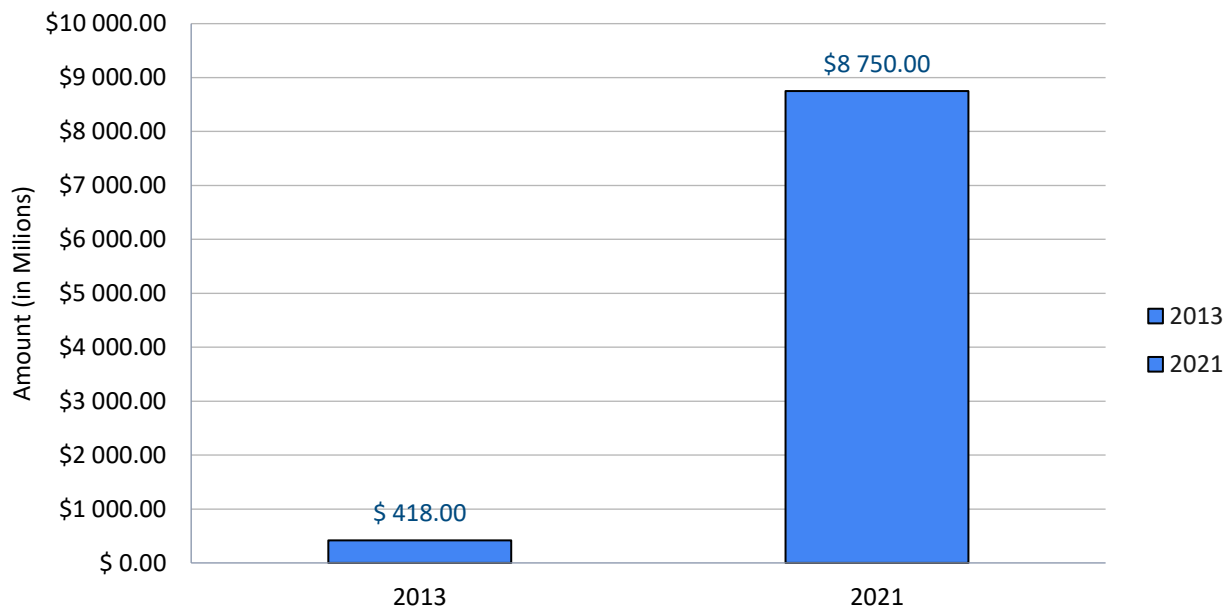
In addition to his professional accomplishments, Guri Koiava has other passions, including hiking, DJ-ing, business networking, and giving back. He has a wealth of knowledge and experience that he uses to mentor aspiring entrepreneurs and to make a positive impact on the startup ecosystem. Overall, Guri Koiava is a respected figure in the Georgian startup community, who has made significant contributions to the ecosystem through his various roles and initiatives.



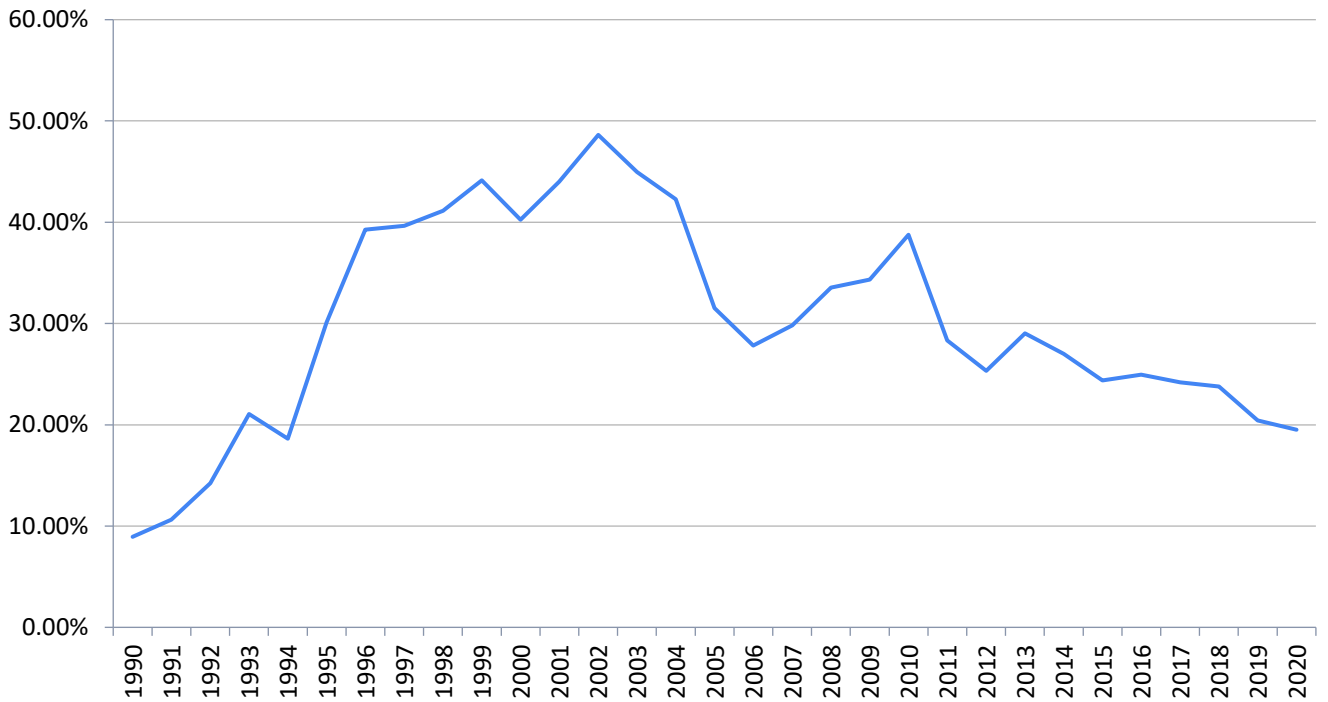
Georgia's Energy Production 2020



Venture Capital Investments in Decarbonization Solutions



### Renewable Energy Supply Georgia (as % of total)



### Comparison of Environment-Related Technologies in the Caucasus

