AMCHAM
AMERICAN CHAMBER OF COMMERCE IN AZERBAIJAN

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Trends in Alternative Energy

- ★ Renewables: Key to Balancing Energy Trilemma
- ★ How to Avoid Greenwashing in Corporate Sustainability Reporting
- ★ Becoming A New Age University: Sustainable University Model of MSU

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A Word From Executive Director of AmCham

Dear members,
Welcome to the 43rd edition of IMPACT Azerbaijan magazine dedicated to Trends in Alternative Energy. In this edition of the magazine, contributions of AmCham Azerbaijan in growing our economy via alternative energy are represented. AmCham Azerbaijan is committed to raise the awareness about the alternative energy among its members and encourage the transformation of their strategies in this direction. With this purpose, we have devoted one of our Monthly Luncheons to the green opportunities in Azerbaijan where experts on alternative energy invited from U.S. to share their valuable knowledge and experiences with AmCham members. The event also featured organization of bilateral meetings between AmCham member companies and the U.S. businesses interested in supporting the advancement of Azerbaijan's renewable energy ecosystem. Furthermore, we have also been involved in the Capstone Project on "Prospects and Challenges of Driving Sustainable Growth in Azerbaijan through Green Energy" written by intellectual students. As AmCham Azerbaijan, we have supported the students with expert direction and assisted them to access the resources required to complete the project. The students were given an opportunity to get in touch with AmCham Sustainable Development and Corporate Impact committee and the US companies invited to the AmCham Luncheon and to collect the comprehensive data on possible prospects and challenges of green energy deployment in Azerbaijan. On top of that, within the framework of AmCham Sustainable Development and Corporate Impact committee, the Chamber is also closely cooperating with the government and organizing important meetings, workshops and events with participation of government officials. Moreover, we have been participating in remarkable events organized by the governmental organizations on alternative energy and sharing our plans, projects, experiences and contributions in the field. To conclude, AmCham Azerbaijan will continue to put a special emphasis on alternative energy and contribute to the improvement and growth of the economy of the country. To do so, we will continue to involve in different projects, maintain fruitful public-private dialogue and pursue the bright ideas of our members.

Best regards,
Gulnara Aslanbayli

Editor's Comment

Dear friends, members of AmCham Azerbaijan,
I'm very much pleased to welcome you on 43rd edition of IMPACT magazine. Over the latest periods, alternative energy has been one of the important issues of Azerbaijani government, as well as discourse among business community members. For this reason, the magazine covers this fundamental issue, by highlighting various matters touching to trends in alternative energy.
We are pleased to bring into your attention perspective of the government, having an interview with Minister Shahbazov, who touched to various key matters. At the same time, AmCham hub of experts from the business community provided in-depth viewpoints covering the recent development trends globally, challenges and perspectives of progress for Azerbaijan, application of GIS system, utilizing know how in production, port business, academic world, as well as meeting customer needs in dynamically changing world with innovative products.
Having an opportunity, I would like to appreciate for our advertisers – Procter & Gamble and Sustainera Solutions.
Enjoy reading the magazine.

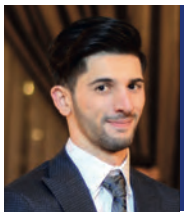
Sincerely,
Aykhan

IN FOCUS

MEMBER CONTRIBUTION

DEVELOPMENT & EDUCATION

The Crucial Role of GIS in Advancing Renewable Energy



Shahin Huseynli
Geo-solutions Manager,
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Alternative energy sector, specifically renewable energy, is becoming increasingly significant globally as a cleaner and more sustainable substitute for conventional energy sources. Nevertheless, it is imperative for renewable energy initiatives to undergo thorough evaluations of their environmental impacts to guarantee the absence of substantial harm to the environment.

The utilization of Geographic Information System (GIS) and technology in environmental impact assessments (EIAs) for renewable energy projects is gaining popularity. This is primarily attributed to its capacity to offer comprehensive and precise spatial data. This article examines advantages of employing GIS in EIA for renewable energy and its role in enhancing accurate and sustainable decision-making within the energy industry. Also, GIS various aspects of renewable energy, including site selection, grid integration, resource assessment, planning and policy development, and public awareness.

What is GIS?

GIS is specifically developed to handle, manipulate and present geographic information in diverse formats like maps, graphs and charts. It integrates various data sources, including satellite imagery, remote sensing, aerial photography, and GPS data, to offer a comprehensive understanding of the location, terrain, and surroundings of a specific area. Through spatial analysis, spatial data can be examined and interpreted to derive meaningful insights, such as the distribution of natural resources or the environmental consequences of land use changes. Additionally, GIS enables the modeling of different scenarios and the prediction of potential impacts resulting from varying factors on the environment. The utilization of GIS facilitates the visualization of spatial data, aiding in better comprehension and informed decision-making.

We can display, analyze and interpret complex relationships between spatial and non-spatial data owing to the sophisticated technology known as geographic information systems (GIS), which combines geographical data with different layers of information. Decision-making, resource assessment, infrastructure planning and environmental impact analysis are all made easier with the use of GIS when it comes to alternative and renewable energy. The following are some significant ways that GIS is promoting the creation and use of alternative energy sources.

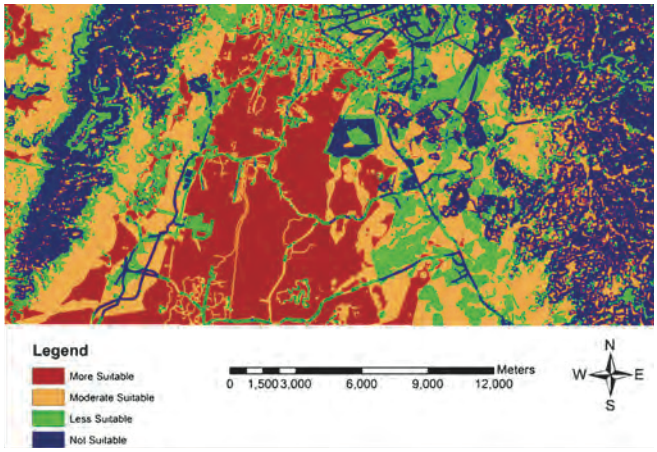
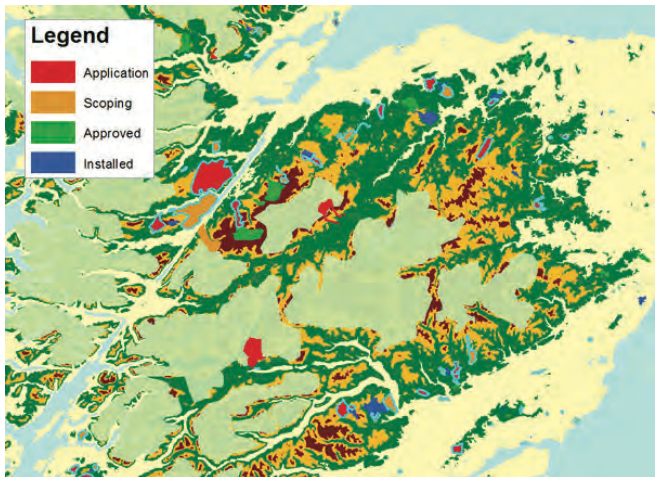


Figure 1. EIA map for Integrated Land Suitability Analysis
(Environmental Impact Assessment (EIA) Using Geographical Information System (GIS): An Integrated Land Suitability Analysis of Filling Stations)



Site Selection and Resource Assessment

Finding adequate places for infrastructure installation is one of the main issues facing renewable energy projects. GIS aids in locating the best locations for geothermal, hydroelectric, solar and wind energy projects. GIS enables specialists to identify regions with the greatest potential for energy generation by examining variables like wind speed, solar irradiation, water availability and geological characteristics. This data-driven strategy guarantees effective use of energy resources while saving time and money.

Transmission and Distribution Planning

Inaccessible to populated regions or current power grids, renewable energy sources are frequently found in such isolated locations. Transmission and distribution network planning and design are made easier with the help of GIS, ensuring effective connectivity between renewable energy sources and end customers. GIS aids in optimizing the layout of transmission lines, minimizing losses and maximizing the distribution of renewable energy to customers by simulating various scenarios and considering elements like terrain, land use and existing infrastructure.

Environmental Impact Assessment

It is vital to take the environment into account when we switch to alternate energy sources. By combining project data for renewable energy sources with environmental elements including protected areas, delicate ecosystems, and wildlife habitats, GIS makes it possible to do thorough environmental impact analyses. In order to reduce negative environmental effects, this integration aids in identifying possible conflicts and developing mitigation methods. GIS is essential for controlling and tracking the long-term effects of renewable energy installations.

Policy and Regulatory Support

Strong rules and regulatory frameworks are necessary for the successful integration of alternative energy sources into the current energy infrastructure. GIS offers spatial data analytics, infographics and scenario modeling to help policymakers and regulators make educated decisions. This technology aids in evaluating the possible effects of policy changes, locating opportunities for renewable energy investment incentives, and keeping track of regulatory compliance. Energy forecasting is supported by GIS-based tools, allowing decision-makers to prepare for future energy demands and allocate resources appropriately.

Public Engagement and Education

By making renewable energy projects and their potential benefits visible, GIS improves public participation and education. Communities, policymakers and investors can study and comprehend the spatial dimensions of alternative energy projects thanks to interactive maps and web-based applications. This openness inspires confidence, engagement, and helps people make well-informed decisions. In addition, GIS can be used to convey the development and results of renewable energy projects, as well as to increase public understanding of the advantages of clean energy.

To sum up, GIS is essential for improving alternative and renewable energy since it offers priceless solutions, tools and insights across the whole project lifecycle. GIS equips decision-makers and stakeholders with the knowledge they need to make well-informed decisions, optimize energy generation and distribution and reduce the environmental impact of renewable energy projects. This knowledge can be applied to everything from site selection and resource assessment to transmission planning, environmental impact analysis, policy support and public engagement. The incorporation of GIS will surely play a crucial role in defining our future energy landscape as we continue on the path towards one.

Author's biography

Mr. Shahin Huseynli *is a qualified individual with expertise in the use of GIS and other remote sensing tools for sustainable development. As a GIS expert, he has contributed to numerous environmental projects in Azerbaijan, as well as at multinational corporations like TomTom, GIZ, etc. In order to suggest appropriate locations for alternative energy, he also served as a GIS consultant for a World Bank initiative. Since 2015, he has taken a leading role in national and local programs, particularly those pertaining to the environment.*

Shahin Huseynli has earned a Master of Science in Geospatial Technologies from the Westfälische Wilhelms-Universität Münster (WWU), Institute for Geoinformatics (IFGI) and the Universidade Nova de Lisboa (NOVA - IMS), both in Lisbon, Portugal.

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