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WORLD GREEN SCIENCE DAY 2023

JLASC
Journal of Latin American
Sciences and Culture

“JLASC promotes the Science Culture Construction (SCC), and the exchange of knowledge. It fosters the sharing of information that echoes on the construction of a community of shared future for mankind.”

Editorial TeamJournal of Latin American Sciences and Culture (JLASC)

“JLASC is open to the world. It crosses the geographic, cultural and linguistic barriers. Popularizing science can contribute to the development of society and improve the well-being and well living of people in harmony with nature.”

Prof. Dr. Marco A. Cabero Z.Editor-in-ChiefJournal of Latin American Sciences and Culture (JLASC)

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Editorial

Dear Participants:

Welcome to the second Celebration of the World Green Science Day 2023 on behalf of the Andean Road Countries for Science and Technology (ARCST) and the organizing committee of the World Green Science Day.

This day marks a significant milestone in our journey towards a sustainable future. We have gathered experts from all over the continents to celebrate the achievements of science and technology in promoting, green science, climate action, biodiversity conservation, and green development in harmony with nature.

The Science Culture Construction has played a vital role in this journey. It has helped us to create a culture of innovation, collaboration, and sustainability. It has enabled us to develop new technologies, new products, and new solutions that are environmentally friendly and socially responsible.

Throughout the international and mutual collaboration, we have launched two centers, the first one in June this year, the International Green Science Center for Latin America and the Caribbean (IGSCLAC) in Colombia, and the International Center for Innovation in Science and Technology for Latin America and the Caribbean (CICITLAC) in El Salvador. Together we will keep promoting Biopochito which is the main character of a game designed to support young people ages 8 to 12 in developing green science readiness skills, raise awareness about climate change, show them the role that humans play in it, and engage them in biodiversity conservation and green and sustainable development. The game is an adventure in game-based learning drawing on a team of professors with more than a decade of curriculum development experience at their institutions. By engaging young students in climate change action and biodiversity conservation, Biopochito is helping to make green science more popular in the world. The game is a fun and interactive way for young people to learn about the importance of protecting the environment and the role that they can play in creating a more sustainable future.

Embarking on an extraordinary journey towards a sustainable future, we are thrilled to announce that all the contributions of our distinguished speakers at the World Green Science Day will find a lasting home in the inaugural Green Science Library—a groundbreaking initiative in collaboration with the Journal of Latin American Sciences and Culture and several other institutions. This repository will encapsulate the collective efforts, innovative ideas, and transformative solutions contributed by our dedicated participants. Together, we are weaving a narrative of progress, fostering a community of visionaries, and laying the foundation for a greener

tomorrow. Your contributions will be immortalized in the pages of this library, symbolizing a shared commitment to environmental stewardship and the pursuit of knowledge that transcends borders. We are united in this noble cause and together we inscribe our legacy in the chronicles of sustainable science and culture.

As the curtains draw close on today's celebration, we will announce the three most exceptional works that have presented to the "Sustainable Future through Applications of Science and Technology – SFAST 2023," contest. They have illuminated the path to a sustainable tomorrow. In the crucible of innovation, we sifted through a remarkable pool of over 200 articles—each a testament to the dedication and brilliance of our contributors. The selection process was arduous, a testament to the high caliber of submissions received. Indeed, every article held the potential to be a winner, making the task of singling out the best an intricate challenge. Yet, after careful deliberation, the time has come to unveil the three best works, whose contributions stand out as beacons of excellence, illuminating the way forward in our collective journey toward a sustainable and enlightened future.

Today, we stand at a crossroads. The world is facing unprecedented challenges, from climate change to biodiversity loss, from pollution to resource depletion. But we also have unprecedented opportunities. We have the knowledge, the skills, and the technology to create a better world for ourselves and future generations.

The Science Culture Construction is the key to unlocking these opportunities. It is the foundation upon which we can build a sustainable future. It is the bridge that connects science and society, that brings together scientists, policymakers, and the public to work towards a common goal.

We extend our heartfelt appreciation to the numerous institutions and experts both within China and abroad, whose invaluable contributions were pivotal in organizing the World Green Science event. The success of this endeavor, aimed at fostering global collaboration in the realm of environmental sciences, is a testament to the collective efforts of over 150 individuals. Their dedication and expertise transcended geographical, cultural, and linguistic barriers, underscoring the universal importance of addressing environmental challenges collaboratively. These collaborative efforts not only emphasize the significance of international cooperation but also highlight the shared commitment of diverse individuals and organizations toward a sustainable and greener future for our planet.

Let us work together to promote green development and biodiversity conservation. Let us use science and technology to create a better world for ourselves and future generations. On this World Green Science Day, let us renew our commitment to the Science Culture Construction.

The organizing committee of the World Green Science Day 2023.

Figure 1. Official Logo of the First Celebration of the World Green Science Day in 2022. Source: Andean Road Countries for Science and Technology (ARCST)

The climate crisis and environmental degradation are two of the most significant challenges facing humanity as a whole. These challenges will last for decades, and immediate action is needed to address them. Not only is it urgent to preserve ecosystems and the abundant Earth we know it to be, but for the sake of the human species' survival. In that sense, under the framework of the Science Culture Construction (SCC) initiated by the Andean Road Countries for Science and Technology (ARCST), the first World Green Science Day(WGSD) was launched and celebrated on December 9th, 2022. The main goal was to raise awareness of the role that science plays in societies that are peaceful and sustainable. "Green Science for and with Society" (moving towards a nature-positive world) was 2022's theme for the WGSD. It emphasized how "science" is inclusive and equal and how it is helping to tackle important environmental goals.

In 2023, we will explore the research, policies, practices, innovative ideas, and actions taken by different organizations around the world to engage society in climate change action. We want to get the public involved in open science discussions about current science-related issues. This year's theme is "The New Paradigm for Cooperation: The Science Culture Construction Fostering Innovation and Green Development" especially focused on "Green Science and Sustainable Development in Practice."

The WGSD 2023 will focus on important adaptations to mitigate the adverse effects of biodiversity loss, climate change, pollution, and water calamities. The event will discuss contemporary issues that are crucial to the ongoing exchange of information related to human health, the economy, food security, climate, biodiversity conservation, green development, and people's well-being.

WGSD 2023 is oriented to:

- The scientific community, including universities and, in particular, departments involved in environmental sciences, biology, ecology, physical geography, botany, zoology, climatology, meteorology, and the management of natural resources.
- The educational community, particularly universities and schools, who are interested in converting their own buildings into places that are friendly to the environment.
- The general public, including young people who are concerned about resilience to climate change, biodiversity, and water management.
- Government ministries and agencies with a mandate and an interest in biodiversity, climate, the environment, pollution, and water.

WGSD 2023 aims to:

- Implement the thoughts on ecological civilization into science popularization.
- Focus on scientific communication of biodiversity conservation and green development, and further strengthen the connection between scientific research projects and science popularization.
- Integrate different countries into actions related to the fulfillment of the Sustainable Development Goals (SDGs 3,6,11,12,13,14,15).
- Promote scientific literacy, climate literacy, wetland protection, biodiversity protection, and green development,
- Boost public understanding of green science development.
- Grow the academic network of experts interested in Biodiversity Conservation and Green Development.
- Raise interest in Green actions to promote the restoration of wetlands, oceans, watermarks, etc.
- Create and launch the first Green Science Library.
- Strengthen the quantity and quality construction of science popularization bases and expand their functions.
- Popularize practices around major issues such as ecological civilization, climate change, sustainable development, and human health.

Figure 2. Official Logo of the Second Celebration of the World Green Science Day in 2023. Source: Andean Road Countries for Science and Technology (ARCST)

WGSD is an excellent and exceptional opportunity to join representatives of different countries, among which borders and distances no longer exist. Offering delegates the chance to discuss their experience in promoting tangible actions that favor green development and biodiversity conservation. We challenge the academic community to take on new perspectives and build strong new friendships that span across the globe. The event will be inspirational through our guest speaker sessions and scintillating topics.

Theme: *The New Paradigm for Cooperation: The Science Culture Construction Fostering Innovation and Green Development"*

Sub-theme: "Green Science and Sustainable Development in Practice."

Forums: Panel speeches on the congress theme, 5 subforums (the information about each forum can be found below).

- Forum 1 Green Development Agenda,
- Forum 2 Green Science Popularization,
- Forum 3 Green Technology and its Applications,

- Forum 4 Global Initiatives in Harmony with Nature,
- Forum 5 Hydrogen Energy, an alternative for the future

Date and Time: 9th December, 18:30 -22:30 (Beijing time), 6:30 am – 10:30 am (GMT-4)

Venue: via Zoom (after registration, the link will be shared one day before the event with the speakers). The participants can join the live broadcast on Baidu and Weibo.

Organizers:

1. Andean Road Countries for Science and Technology (ARCST)

Founded in 2018, ARCST is an international scientific organization based on the general principles of "joint consultation, joint effort, and joint sharing" and the promotion of shared development and achievement of the UN SDGs. ARCST members include national academies of sciences, universities, research institutes, and international organizations. ARCST is committed to playing an effective role in catalyzing and implementing innovative international science initiatives to build a community of humankind with a shared future. Science, Technology, Innovation, and Capacity Building (STIC) are essential to the progress and welfare of human societies and ARCST is particularly keen to cooperate and partner with those who want to collaborate in these endeavors. Promoting the popularization of Science, the exchange of knowledge, the diffusion of information, mutual learning, and collaboration. The vision of ARCST is to become an international science organization of global impact in catalyzing and implementing concrete innovative programs, initiatives, and actions in Science, Technology, Innovation, and Capacity Building (STIC) for the promotion of shared development and the advancement of the UN Sustainable Development Goals (SDGs).

2. Science Culture Construction (SCC)

Science Culture Construction (SCC) refers to the promotion of science and technology as a cultural value. It involves the creation of an environment that promotes the conservation, development, and diffusion of science and technology, and the freedom indispensable for scientific research, which aligns perfectly with Article 15 of the International Covenant on Economic, Social, and Cultural Rights. The SCC helps to foster a culture of innovation and creativity, which is essential for the development of new technologies and the advancement of society. The SCC is a new paradigm of collaboration that

aims to bring together scientists, policymakers, and the public to address complex problems. This approach can be particularly useful in promoting green development and green science, which are essential for addressing environmental challenges and green development.

3. China Biodiversity Conservation and Green Development Foundation (CBCGDF)

Founded in 1985, China Foundation for Biodiversity Conservation and Green Development (CBCGDF), is a non-profit public foundation and a social legal entity dedicated to the conservation of biodiversity and green development. It is an independent NGO on the environment, biodiversity conservation, sustainability, and CCAfa ("Community Conservation Area"). It is a member of IUCN and the UN Global Compact and an accredited observer of the UN IPBES. It is also a member of the Global Genome Biodiversity Network (GGBN), a partner of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and an observer of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the International Treaty on Plant Genetic Resources for Food. n and Agriculture (ITPGRFA) of the FAO of the United Nations. It is an official data publisher of the Global Biodiversity Information Facility (GBIF). By far, CBCGDF has funded hundreds of grassroots NGOs supported tens of thousands of people, and organized many environmental and conservation events across the country to raise awareness, encourage people, and empower people.

4. Journal of Latin American Sciences and Culture (JLASC)

Founded in 2019, with ISSN 2788-8991 (France). Publishes scientific and academic articles in three languages, English, Spanish, and Chinese. The Journal of Latin American Sciences and Culture (JLASC) is an international journal seeking to promote the scientific landscape in Latin America and the Caribbean by pushing conventional boundaries to include issues, perspectives, and methods relevant to education, science, technology, and culture. JLASC thus intends to truly internationalize these areas through the journal's attention globally. JLASC seeks to explore not only the diversity and richness of Latin American and Caribbean scientific issues, but also perspectives, research methods, and evidence of the many creative flows of influence that exist between Latin America, Sino-American cultures, and other peripheries, therefore, education, science, technology can be powered by wide-ranging ideas from many cultures and research areas. JLASC welcomes submissions that focus on empirical research, theoretical analyses, or literature and book reviews. Proposals for special issues are actively encouraged and should be discussed with the Editor-in-Chief or a member of the Senior Editorial Team

of the journal. The JLASC promotes scientific literacy, the popularization of science, science popularization, Media, and Information Literacy (MIL) through the guidelines of UNESCO. The JLASC also promotes the exchange of knowledge and the dissemination of information for the development of society in science, technology, innovation, education, and culture. Special attention is given to the use and promotion of the Spanish language for these purposes. We also count on the support of Chaoxuan Intelligent Research Institute and Elektro High Tech Co. Ltd for the promotion of Science and Technology advances that can be beneficial for the world.

5. Elektro High Tech Co. Ltd.

Founded in 2020, Elektro has the mission to improve people's lives through meaningful innovation. At the same time has the vision to inspire the world with innovative technologies, products, and designs that enrich people's lives and contribute to social prosperity by creating a new future in harmony with nature.

6. Universidad Privada del Valle (UNIVALLE)

Founded on October 4, 1988, by Dr. Gonzalo Ruiz Martínez; Univalle has been projected as a synonym for academic excellence in Latin America with more than 32 undergraduate degree programs. Currently, about 14,000 national and foreign students carry out their higher studies in the university infrastructure with the greatest technological advance in Bolivia. In these 33 years of academic trajectory, Univalle has trained more than 16,000 professionals at the undergraduate and postgraduate levels in its four locations, which are located in Cochabamba, La Paz, Sucre, and Trinidad. And soon in the new headquarters located in Santa Cruz. Our history reflects the fact that "We are the Scientific Answer to the Future".

7. Unidad Central del Valle del Cauca (UCEVA)

The Central Unit of Valle del Cauca (Spanish: Unidad Central del Valle del Cauca), also called UCEVA, is a public, departmental, coeducational university based in the city of Tuluá, Valle del Cauca, Colombia. The UCEVA is a public institution of higher education, committed to the training of upright professionals for the human development of the region and the country, in the context of its social responsibility; founded on the exercise of its autonomy, with continuous improvement as a quality condition, from an integrating curriculum mediated by an inter structuring pedagogical model, relevant for the transformation of the life of its stakeholders, responding through the generation of knowledge to the challenges of local society. In its commitment

to permanence in time for the year 2030, the UCEVA will be recognized as an institution of high quality in its missionary processes, its significant impact on regional and national development and inclusive dialogue with local society, guiding its actions to the continuous search for the transformation of the life of its stakeholders.

8. International Green Science Center for Latin American and the Caribbean Countries (IGSCLAC)

Nowadays, mutual collaboration is essential for the development of science and technology. With the same spirit, we emphasize the importance of collaboration, mutual understanding, friendship utilizing mechanisms of science popularization, and the promotion of technology and innovation in different areas of knowledge. That is why, we are honored to launch the International Green Science Center for Latin America and the Caribbean Countries (IGSCLAC) located in Colombia, longing to connect the community of researchers, professors, students, and the community in general between Latin America, the Caribbean, and the world.

The center engages society in actions that favor the well-being and well-being in harmony with nature, utilizing scientific, technical, and educational methods for this purpose. The members of the center believe that through IGSCLAC it will be possible to communicate and exchange views and break the geographic and language barriers that sometimes are responsible for ineffective communication at the international level. IGSCLAC is looking forward to your participation.

9. Centro Internacional de Innovation en Ciencia y Tecnologia para Latino America y el Caribe (CICITLAC)

The International Center for Innovation in Science and Technology for Latin America and the Caribbean (CICITLAC from its acronym in the Spanish language) is the result of the transcontinental integration of stakeholders from the public and private sectors that firmly believe in the paradigm of the Science Culture Construction (SCC) to promote collaboration and green development. CICITLAC is located in El Salvador. Its strategic position will integrate the North and the South regions of the Caribbean and Latin America through the promotion of innovation in the areas of green energy technologies, research, and development, science popularization, etc. With the main vision to build a community with a shared future for humankind.

10. International Green Science Academy Network (IGSAN)

Our network is a unique community of Universities, Academies, and Research Centers located across the globe. We support each other and collaborate to provide the exchange of knowledge, the diffusion of information, green science popularization, biodiversity conservation, and green development. We offer opportunities to connect, share, and provide meaningful and pragmatic development of Green Science. We work with partner organizations to build broader collaboration and projects across the Globe. IGSAN's mission is to empower individuals, especially youth, to lead in the response to biodiversity protection, green development, and environmental challenges facing the globe. By establishing partnerships, we develop, implement, and oversee educational programs and workshops that promote environmentally sustainable behaviors among all age groups, with a particular emphasis on University students. IGSAN is the result of the collaboration between different academic institutions across the globe. IGSAN is an initiative of the Green Science Project (GSP) the South-South Biodiversity Science Project (SSBSP) and the International Green Science Center for Latin America and Caribbean Countries (IGSCLAC) to promote biodiversity conservation and green development across the globe.

Collaborators:

1. National University of Science and Technology (Pakistan)

The university offers undergraduate and graduate degrees, including doctoral and professional degrees. Founded in 1990, it was initially formed for the need of commissioned officers by combining engineering colleges and schools. Later, it was converted into a public research university with the main campus setup in Islamabad to promote science and technology in Pakistan. Founded to provide quality technical education to support rapid industrialization in Pakistan, NUST adopted an American university model and stressed laboratory instruction in applied science and engineering.

It has since played a key role in the development of standardization in education of fields such as engineering, mathematics, and technology in Pakistan and is widely known for its innovation and academic strength, making it one of the most prestigious institutions of higher learning in Pakistan. The university is also home to an under-construction International Association of Science Parks (IASP) certified National Science and Technology Park.

2. Jinzhong Institute of Information

Approved by the Ministry of Education and People's Government of Shanxi Province, Jinzhong College of Information (JCI) is a modern multidisciplinary institution featured in information science and technology while developing simultaneously with disciplines including economics, literature, science, engineering, agriculture, management, and the arts. Established in 2002, JCI is located in the famous historical and cultural city of Taigu, Shanxi Province, which is known as the hometown of Mencius mom and the origin of famous Shanxi merchants.

3. Daxing International Hydrogen Incubator

Daxing International Hydrogen Energy Incubator is located in Building 2 of the Daxing International Hydrogen Energy Demonstration Zone. It is a unique hydrogen energy vertical incubator in China. Committed to creating a hydrogen industry vertical incubation space, through the "depth of incubation + precision investment + entrepreneurial training + brand exposure + resource docking" incubation model, to provide "low-cost joint office space + high-quality business support + entrepreneurial mentor practical counseling" services, With the help of the hydrogen energy demonstration zone to provide entrepreneurs with a wide range of social and resource integration channels, thereby reducing the entrepreneurial threshold of entrepreneurs, accelerating the development process of entrepreneurs, improving the success rate of entrepreneurship, and forming a gathering place for innovation resources in the hydrogen energy industry.

4. South China Agricultural University

Situated in Guangzhou, "The City of Flowers", South China Agricultural University (SCAU) is a high-level university listed in the "Double-First Class University Program" of China. SCAU covers a total campus area of 546.6 hectares, of which constructed area is over 1.39 million square meters. With beautiful scenery and a pleasant environment, the university is selected as one of the ten most beautiful campuses in China. The university has formed valuable traditions and shaped distinguished features as reflected by the university motto Upgrading Integrity, Broadening Knowledge, Pursuing Truth, Seeking Breakthroughs. We provide high-quality knowledge, education, and research, and were evaluated as "excellent" for undergraduate education by the Ministry of Education.

5. Chaoxuan Intelligent Research Institute

Chaoxuan Research Institute is a leading technology and mode research and development institution set up by Chaoxuan Group. The Institute brings together academicians and experts in various fields and has an academic committee and some expert committees.

6. UNESCO Media and Information Literacy (MIL) Alliance

Our brains depend on information to work optimally. The quality of information we engage with largely determines our perceptions, beliefs, and attitudes. It could be information from other persons, the media, libraries, archives, museums, publishers, or other information providers including those on the Internet. People across the world are witnessing a dramatic increase in access to information and communication. While some people are starved for information, others are flooded with print, broadcast, and digital content. Media and Information Literacy (MIL) provides answers to the questions that we all ask ourselves at some point. How can we access, search, critically assess, use, and contribute content wisely, both online and offline? What are our rights online and offline? What are the ethical issues surrounding the access and use of information? How can we engage with media and ICTs to promote equality, intercultural and interreligious dialogue, peace, freedom of expression, and access to information? Through capacity-building resources, such as curricula development, policy guidelines and articulation, and assessment framework, UNESCO supports the development of MIL competencies among people. Free and open online courses are available for self-paced learning about MIL. Through media and information technologies, the Organization facilitates networking and research through the Global Alliance for Partnerships on MIL (GAPMIL) and MIL University Network. The recently launched MIL CLICKS social media initiative is also part of UNESCO's strategy to enable media and information-literate societies.

7. Mega Science

Founded in 2021. Science popularization means to bring science to the general public, disseminate knowledge, and foster a scientific way of thinking among people. In particular, science popularization refers to the understanding of science and public engagement. In this way science popularization is a powerful tool and a strategic measure to build a modern society, not only disseminating useful knowledge and skills but also spreading a general approach and a common culture. In general, conflicts between the science community and public opinion are connected to people's distrust but also to scientists' prejudice. In some cases, science is not correctly understood by

non-scientists due to the use of technical jargon and wrong communication. We believe that every topic can be the object of scientific popularization; it only depends on the communication skills of who is in charge of the dissemination and the way to disseminate it. That is why we are glad to cooperate with Mega Science, the first platform of science popularization that creates and shares content in three languages and diverse areas of science.

8. YPGLOBAL SDN

With youth as the main body and with the aim of promoting sustainable development in the world, Implement the United Nations SDGs goals, through the implementation and dissemination of education for sustainable development and other projects, empower youth development, enhance youth's systematic understanding of human destiny and well-being, the Earth's ecological crisis, and international social issues, and cultivate youth's social responsibility awareness, citizen action, and cross-field collaboration ability.

Languages: Chinese, Spanish, and English

I. Congress Scientific Board

Ojeda S. Mary L., Unidad Central del Valle del Cauca – Tuluá.
Perez C. Jose G., Unidadad Central del Valle del Cauca – Tuluá.
Ruiz de La Quintana Jorge C., Research Director, Univalle University.
Zhou Jinfeng, Secretary-General of China Biodiversity Conservation and Green Development Foundation (CBCGDF).
Wong Linda, Deputy Secretary General of the China Biodiversity Conservation and Green Development Foundation (CBCGDF).
Yuan Sherry, South China Agricultural University.
Gonzales R. Maria J., National Head of Promotion of the Comprehensive Development of Forests and Land of the Authority for the Supervision and Social Control of Forests and Land for Bolivia.
Zhou Candice, Zhonguancun Dongsheng International Science Park.
Lamas Edwin, Facultad Nacional de Ingeniería, Universidad Técnica de Oruro.
Ming Li, Zhou Candice, Zhonguancun Dongsheng International Science Park.
Cabero Z. Marco A., President Anden Road Countries for Science and Technology.

II. Congress Organizational Board:

Moreno G. Daniel H., Universidad Central del Valle del Cauca – Tuluá.
Otero Valle Maria Nadiezda, Didactic Comprehensive Management in Sustainable Hydrosanitary Engineering, Univalle University.
Dr. Bushanova Violetta, Kazakhstan University of Innovative and Telecommunication Systems.
Santos Indala Edwin, Universidad San Francisco Xavier de Chuquisaca.
Shao Xiaoting, Secretary-General of GTC, China Forestry & Environment Promotion Association.
Sliwa Krzysztof, Universidad de Bielsko-Biala, Poland.
Tan Yiyong, Deputy Secretary-General of the Garbage Treatment Working Committee of China Forestry and Environment Promotion Association.
Wu Chao, Founder of Youth Promoting Global Sustainable Development Network (YPGlobalSDN).
Wu Qiuling, Founder of Upbeing, an online platform.
Zhao Liu, Founder Beijing Yuelv Architectural Design Co., Ltd.
Zhao Yanyan, Vice President of Beijing Chaoxuan Intelligent Science and Technology Research Institute.

III. Congress Agenda

Time	**Venue**	**Participants**
18:00 - 18:45	Waiting room opens. Different locations on the world connected by zoom	Open to everyone
18:46 – 18:51	Presentation of the Soundtrack of the World Green Science Day WGSD 2023.	
18:52 – 18: 59	Presentation of the video of Mother Nature by Julia Roberts	
Keynote Speech Session / Inauguration of the WGSD 2023 & 2nd Annual Meeting on Science and Climate Literacy		
Time	**Speaker**	**Affiliation**
19:00 - 19:03	Dr. Shantel Guillaume	Communication officer, Andean Road Countries for Science and Technology (ARCST)
19:03 - 19:08	Prof. Dr. Marco A. Cabero	Chairman ARCST
19:08 - 19:15	H.E. Maria Soledad Cordova	Ambassador of Ecuador in the Popular Republic of China

19:16 - 19:20	Prof. Dr. Imran Hashmi	National University of Sciences and Technology (NUST, Pakistan), International Green Science Academy Network (IGSAN). Advisor ARCST
19:21 - 19:27	Prof. Jose Gabriel Perez & Prof. Mary Luz Ojeda	Unidad Central del Valle del Cauca (UCEVA, Colombia), International Green Science Center for Latin American and the Caribbean Countries (IGSCLAC). Advisors ARCST
19:28 - 19:34	Prof. Jorge Ruiz	National Research DirectorUniversidad Privada del Valle (UNIVALLE)
19:35 - 19:41	Dr. Sylvain Eimer	Editor Journal of Latin American Sciences and Culture (JLASC), ARCST Advisor, Beihang University
19:42 - 19:46	Dr. Ting Shao	Daxing International Hydrogen Incubator
19:47 - 19:51	Dr. Desire Atchike	Liaison Andean Road Countries for Science and Technology (ARCST), Taizhou University.
19:52 - 20:00	Coffee Break, arrangement of the forums	Worldwide Participants

Forum 1 Green Development Agenda		
Chair:	Pablo Arce Maldonado (Universidad Privada del Valle)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:18	Prof. Douglas de Castro	Lanzhou University
20:19 - 20:29	Andey Ng	Peking University
20:30 - 20:40	Angel Jose Lozada Das Dores	Unidad Central del Valle del Cauca
20:41 - 20:46	Dr. Michael Opoku Adomako	Taizhou University
20:47 - 20:53	Dr. Hassan Anwer	National University of Sciences and Technology
20:54 - 21:04	Dr. Andréa Condamine	University of Jianghan
21:05 - 21:15	Dr. Hira Amjad	National University of Sciences & Technology
21:16 - 21:31	Prof. Sara Platto	Jianghan University

Forum 2 Green Science Popularization		
Chair:	Prof. Desire Atchike (Taizhou University)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**

20:05 - 20:15	Prof. José Gabriel Pérez Canencio & Prof. Mary Luz Ojeda Solarte	Unidad Central del Valle del Cauca
20:16 - 20:27	Dorofeeva Anastasiia	Language School Welcome
20:28 - 20:39	Dr. Sotindjo Coffi Patrick	National University of Sciences, Technologies, Engineering and Mathematics (UNSTIM) - Benin
20:40 - 20:50	Prof. Alexandra Trujillo Zapata & Prof. Karol Andrea Leal Vásquez & Prof. Luisa Fernanda Cabezas Burbano	Unidad Central del Valle del Cauca
20:51 - 20:56	Shabahat Hasnain Qamar	National University of Sciences and Technology (NUST)
20:57 - 21:08	Zhang Jing Jing	Jinzhong College of Information
21:09 - 21:13	Cristina Morataya & Manuel Diaz	Executive committee CICITLAC
Forum 3 Green Technology and its Applications		
Chair	Prof. Dr. Imran Hashmi (National University of Sciences and Technology)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:12	Duan Yongjian	Jinzhong College of Information
20:13 - 20:23	Prof. Edgar De Jesus Sandoval Arboleda & Prof. Vivian Orejuela Ruiz	Unidad Central del Valle del Cauca
20:24 - 20:32	Dr. Jimena Barrientos Parás	Universidad Nacional Autónoma de México (UNAM)
20:33 - 20:42	Prof. Kunzheng CAI	South China Agricultural University
20:43 - 20:53	Zhang Tiantian	Jinzhong College of Information
20:54 - 20:58	Prof. Xiaoyun Wang	Shandong Agricultural University
20:59 - 21:09	Dr. Rashid Iftikhar	National University of Sciences and Technology
21:10 - 21:20	Dr. Moisés Tejocote Pérez	Autonomous Mexico State University

Forum 4 Global Initiatives in Harmony with nature		
Chair:	Alvaro Gutierrez Rojas ((Universidad Privada del Valle)	
20:00 - 20:04	Introduction to the forum	
Time	Speaker	Affiliation
20:05 - 20:15	Dr. Ana Elisa Alcántara Valladolid	Autonomous Mexico State University

20:16 - 20:22	Ling Xu	Future Green
20:23 - 20:34	Pei Tingting	Jinzhong College of Information
20:35 - 20:47	Di Xiaoying	Jinzhong College of Information
20:48 - 20:59	Yu Xi	Fudan University
21:00 - 21:05	Li Shuxuan	Jinzhong College of Information

Forum 5 Hydrogen Energy, an alternative for the future		
Chair:	Yang Shanshan (Jinzhong College of Information)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:16	Prof. Kong Yanqiang	School of Energy Power and Mechanical Engineering, North China Electric Power University, and Deputy Director of the Hydrogen Energy Teaching and Research Office
20:17 - 20:27	Zhang Ruixue	Regional Manager of Beijing China Electronics Fengye Technology Development Co., Ltd.
20:28 - 20:39	Prof. Chen Dongfang	University of Science and Technology Beijing
20:40 - 21:00	Yang Kai	Beijing Hydron New Energy Technology Co., Ltd. Founder/General Manager
21:01 - 21:12	Yang Wei	Sales Manager of Carbon Energy Technology (Beijing) Co., Ltd.

I. For the speakers:

- Keynote Broadcast links: these will be shared by email, WeChat or WhatsApp message

II. For the audience:

- Keynote Broadcast links:

B. Baidu broadcast link: https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8789961366

C. Weibo broadcast link:

https://m.weibo.cn/status/4972740810902837?s_channel=4&s_trans=5327744144_4972740810902837

D. Broadcast Forum1 : https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8815149950

E. Broadcast Forum2: https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8815159520

F. Broadcast Forum3: https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8815164729

G. Broadcast Forum4: https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8815171007

H. Broadcast Forum5: https://mbd.baidu.com/newspage/data/mdpage?sid=1016847&tag=33&offset=10&method=LiveList&getTPL=1&livepre=1&roomid=8815175712

Forum 1
Green Development Agenda

Forum 1 Green Development Agenda		
Chair:	Pablo Arce Maldonado (Universidad Privada del Valle)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:18	Douglas de Castro	Lanzhou University
20:19 - 20:29	Andey Ng	Peking University
20:30 - 20:40	Angel Jose Lozada Das Dores	Unidad Central del Valle del Cauca
20:41 - 20:46	Michael Opoku Adomako	Taizhou University
20:47 - 20:53	Hassan Anwer	National University of Sciences and Technology
20:54 - 21:04	Andréa Condamine	University of Jianghan
21:05 - 21:15	Hira Amjad	National University of Sciences & Technology
21:16 - 21:31	Sara Platto	Jianghan University

“The green development agenda is a critical initiative that aims to promote sustainable development and biodiversity conservation through international collaborations in science. The importance of the green development agenda lies in its ability to address the challenges of environmental degradation, climate change, and poverty alleviation. The green development agenda is a comprehensive approach that seeks to balance economic growth with environmental protection and social equity. It is a call to action for governments, businesses, and individuals to work together to create a sustainable future for all.

The green development agenda is essential because it recognizes that economic growth and environmental protection are not mutually exclusive, but rather, they are interdependent. The green development agenda is a long-term strategy that requires a collective effort from all stakeholders to achieve its objectives. The green development agenda is a crucial step towards creating a sustainable future for our planet and future generations and it is part of the first forum of the World Green Science Day Celebration.

Topic: "Designing for Sustainability: Behavioral Affordances and Interface Nudges for Eco-Friendly User Actions"

Andy Ng
Peking University
Speaker 2

Abstract

Popularization of green energy technology is difficult because it's difficult to engrain it as a daily part of our life. Rather than the traditional methods of educating people on sustainability and green practices, we need to create seamless incremental design changes in our products to train users to keep sustainability in mind with positive reinforcement.

With the pervasiveness of e-commerce as an integral part of our lives, its packaging has created 1 million tons of waste each year. In this speech, I will discuss how we can use behavioral science and cognitive science as a design principle to empower e-commerce developers and entrepreneurs to think about how to embed green education in their products to create seamless incremental nudges for users to make sustainability a part of their core values.

Topic: Learning by Doing Strategy for Electronic Engineer Students toward to sustainability at Unidad Central del Valle del Cauca

Angel Jose Lozada Das Dores
Unidad Central del Valle del Cauca
Speaker 3

Abstract

Learning by doing strategy is applied as learning- teaching strategy in order to consolidate electronic engineering concepts and to demonstrate how academic electronic project may be identified as technology tools toward to sustainability. Projects must be implemented outside the university in a Micro Small Medium Size Enterprise (MSME) or primary-secondary school.

Topic: Transformational Dynamics of Quality Education: A Key to a Sustainable Environment

Dr. Michael Opoku Adomako
Taizhou University
Speaker 4

Abstract

The fundamental attributes of the Earth's biosphere are comparable to a "passcode" that allows entry to specific files or spaces. The document or area is unlocked and readily accessible after the passcode is entered logically. Our capacity to understand how to maintain the underlying principles guiding these fundamental features is a significant prerequisite for utilizing the positive multifunctionalities offered by Earth's ecosystems. For example, wetland ecosystems are critical to mitigating climate change, but the primary challenge is how to sustain wetlands worldwide to realize their potential fully. To preserve the sustainability of the environment, it is necessary to interpret the governing principles and successfully implement them to explore the benefits the environment offers.

Quality education, which is nothing more than "the ability to put the least an individual has discovered into pragmatic use for the benefit of humanity," is ultimately what determines one's aptitude to comprehend the governing principles. Now is the moment to inspire and urge people around the globe to respect and place value on the knowledge they have gained via formal or informal education to salvage the rapidly deteriorating global environment.

Topic: Navigating Youth Employment Aspirations within Sustainable Development Goals

Dr. Andréa Condamine
University of Jianghan
Speaker 6

Abstract

In this talk, we will explore how young people's job aspirations connect with and gravitate towards Sustainable Development Goals (SDGs). We'll see how their dreams of meaningful work can contribute to, making the world a better, more sustainable place to live. It's about showing the powerful impact when young talents aim for opportunities that not only align with their beliefs but also achieve global goals for a greener future. Join us to discover how the dreams of the youth can be a driving force for positive and durable change in our world.

Topic: Is Fast Fashion a Risk for Environmental Sustainability?

Dr. Hira Amjad
National University of Science and Technology
Speaker 7

Abstract

We are facing a climate crisis, and the effects are already being felt all across the world. From unprecedented heatwaves to deadly flash floods, rising sea levels to biodiversity loss, it is clear that climate change is not a future threat, but a present reality.

The fashion industry has a devastating impact on the planet, and the most vulnerable workers in the fashion system are often at disproportionate risk of experiencing these impacts first-hand. Throughout the entire fashion supply chain, natural resources are extracted, habitats are exploited, toxic emissions are produced, water is polluted, and waste is carelessly dumped.

The Fashion Revolution is now calling on brands, retailers, producers, policymakers, educators, designers, students, journalists and citizens to fight back. We know that this issue can feel overwhelming and upsetting.

That is why it’s more important than ever that we come together as a community to take action. As individuals, we cannot solve the climate crisis alone, but we have the power to support each other in this global movement and make a positive difference.

Green Belt and Road: China-Latin America Partnership for Sustainable Development

Speaker 1

Forum 1

Green Development Agenda

Prof. Douglas de Castro
School of Law, Lanzhou University
Email: douggcastro@gmail.com
DOI: 10.52428/27888991.v5i8.1057

Abstract

Within the larger framework of international relations, the China-Latin America cooperation has become a compelling focal point in the search of a sustainable global future. The innovative Green Belt and Road program, a forward-thinking project that aims to balance ecological responsibility with economic progress, is at the center of this partnership. With a focus on tackling the urgent issues of climate change and biodiversity preservation, this chapter delves into the complex interactions between China and Latin America and examines their shared commitment to sustainable development within the framework of the Green Belt and Road.

Historically based on economic exchanges, the alliance between China and Latin America has developed into a complex relationship encompassing much more than just trade and investment. The two areas have realized that they must immediately reevaluate the parameters of their partnership in light of the compelling need to address environmental concerns, socioeconomic disparities, and the requirement of ecological stewardship.

This redefined approach is embodied in China's grandiose Belt and Road program (BRI), which is expanded upon by the Green Belt and Road program. It imagines a web of initiatives aimed at promoting environmental sustainability as well as economic progress. The concepts of green infrastructure, renewable energy, biodiversity conservation, and responsible resource management are all woven into the international relations fabric by this revolutionary framework, which reflects the common understanding that biodiversity loss and climate change represent two of the most pressing global issues of our day.

"I would like to start by thanking the organizers of the WGSD 2023. It is a pleasure to be here with you today. Today, we're delving into the intricate and

evolving partnership between China and Latin America within the framework of the Green Belt and Road Initiative. This partnership is not just a mere collaboration; it's a transformative approach reshaping sustainable development paradigms globally, with significant implications for the Global South."

The Importance of China-Latin America Partnership

"Let's begin by understanding the existing partnership between China and Latin America. This cooperation isn't just another link in international relations but a pivotal force in the realm of sustainable development. In a world grappling with challenges like environmental degradation and economic disparities, the symbiotic relationship between these prominent global actors becomes crucial. Today's world faces an existential threat posed by the environmental degradation initiated by the Industrial Revolution, which made it possible for Global North countries to achieve high degrees of development, leaving the Global South vulnerable to the negative effects and underdeveloped. The Green BRI by China stands at the center of this partnership, redefining sustainable development, representing an alternative to the Bretton Woods model of development, and reflecting a deep-rooted history of civilization connections, notably the Silk Road."

Historical Context - The Silk Road

"The Silk Road, a term that evokes the extensive network of trade routes connecting China, Central Asia, India, and the Middle East, was more than just a path for goods. It was a cradle of cultural and idea exchange, a network that wasn't just physical but intellectual. As Peter Frankopan notes, it was a melting pot of cultures and ideas, very different from the European expeditions that started in the 1500s in which the main purposes were extractivism and slavery. The Silk Road's significance in shaping civilizations and the beginning of globalization sets the backdrop for understanding China's modern initiatives like the BRI."

Belt and Road Initiative (BRI)

"The BRI, launched in 2013, is a monumental endeavor by China to rejuvenate the Silk Road's spirit in a modern context. It's about building a network of infrastructure and trade across continents. The initiative's scope is vast, covering over 2,600 projects with an investment value of around $4-8 trillion. It's a fresh perspective on development, emphasizing connectivity, economic cooperation, and reshaping the global economic landscape. It has people-to-people exchanges as the civilizational component and not just the economic dimension."

Green Belt and Road Initiative (Green BRI)

"An essential evolution within the BRI is the Green BRI, introduced in 2017. It reflects the internal environmental gains in China in its foreign policy framework. This approach integrates sustainable development into China's grand vision. It's about making the Belt and Road Initiative environmentally

sustainable, focusing on projects that prioritize environmental protection and clean energy sources. The Green BRI is not just an economic plan; it's a pathway to an ecological civilization that seeks harmony between humans and nature."

Impact on Global South

"The Green BRI is particularly consequential for the Global South. It's not just about economic growth; it's about fostering environmental sustainability and addressing the pressing issues developing countries face. By focusing on sustainable infrastructure and energy projects, the Green BRI offers a development model that balances economic needs with environmental conservation, a critical concern for regions like Latin America that are on the frontline of environmental challenges. Energy transition projects financed under the Green BRI umbrella in Brazil, Argentina, and Chile, for instance, are essential for the region to accommodate the need for development and the protection of nature. There should be no doubt that the coupling of interests between China and Latin America have as primary drivers their national interests, which does not invalidate or reject the proposed argument of the Global South cooperation based on the existence of non-material forces encapsulated in the Bandung spirit"

Criticisms and Adjustments

"Since its inception, the Belt and Road Initiative has undergone a number of changes, which makes sense given the breadth and complexity of the projects as well as the variety of countries and legal systems involved. At first, there was a lot of criticism about the participating countries' large infrastructure projects' lack of labor and environmental standards. However, this was eventually addressed and helped to change the legal frameworks in the countries that received the investments. Acknowledging these concerns, significant adjustments have been made over the years, demonstrating China's commitment to evolving the initiative in line with global standards. This adaptability is crucial, as it showcases the BRI's resilience and responsiveness to the complex dynamics of international development."

BRI as an Alternative Development Model

"The Second World War and the subsequent decolonization movements paved the way for the rise of globalization as a dominant force in shaping the global order. International institutions such as the World Bank, International Monetary Fund (IMF), and World Trade Organization (WTO), known as the Bretton Woods institutions, seek to impose a development model to integrate countries into the global economy through liberalization, privatization, and market-oriented reforms. The countries we pushed to prioritize economic indicators over social welfare and environmental sustainability, which often entailed reliance on export-oriented industries, foreign direct investment, and debt financing, perpetuating a cycle of dependency and inequality. Scholars, activists, and policymakers argue that this model neglects social development, exacerbates income disparities, and undermines environmental sustainability,

thus perpetuating the dominance of global economic powers, leading to a state of neocolonial relationship between the Global North and the Global South In contrast to the post-WWII Western development models, the BRI and Green BRI offer an alternative paradigm. They are not merely economic alliances; they represent a shared pursuit of sustainability and a resistance to traditional industrialization-focused development models. These initiatives echo the 'Bandung spirit' of solidarity and transcend materialistic dimensions, challenging the norms set by developed nations and offering a more equitable development path for the Global South."

Challenges and Future Prospects

"Looking ahead, the BRI and Green BRI present both opportunities and challenges. Their potential to redefine global development paradigms is immense, but they must navigate complex geopolitical landscapes. The initiative's commitment to inclusivity and sustainability will be key to its success and its ability to mitigate potential geopolitical tensions and environmental concerns. Latin America is not a single country, but a patchwork of several, each with its own distinct political, cultural, and historical contexts. This variability points to significant geographical variations in the application and consequences of the Green BRI. Certain countries may gain from infrastructure and energy developments, but others may face challenges due to variances in their sociopolitical circumstances or ecological sensitivities. Projects funded by the Green BRI should therefore take Latin America's diverse cultural context into account. Indigenous cultures, for example, are closely linked to their natural surroundings. Initiatives that ignore these cultural connections run the danger of running across opposition and causing strife. "

Conclusion and Call to Action

"In conclusion, the Green BRI represents a significant turning point in the history and prospects of Latin American development, as it is marked by a deliberate shift towards ecological responsibility, sustainable growth, and mutual respect in international relations. It offers a different course of action for more balanced and equitable progress, eschewing the traditional paradigms of power dynamics and development. China and Latin America are cooperating under the Green Belt and Road Initiative (BRI), which requires improvement but is based on mutual respect, shared interests, and a shared commitment to sustainable development rather than a rerun of past colonial endeavors. As they engage with the Green BRI to expand their capacity to create a future that is both rich and aware of the earth and all of its people, Latin American nations are at a turning moment in their development trajectory. For the benefit of both the present and the future generations, this cooperative project thus symbolizes a promising future in which growth coexists peacefully with the environment."

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Drivers and Constraints Affecting the Transition to Sustainable Farming Practices

Forum 1

Green Development Agenda

Speaker 5
Dr. Hassan Anwer
National University of Sciences and Technology (NUST)

DOI: 10.52428/27888991.v5i8.1058

Abstract

The decisions of farmers to use farming practices and their ability to move forward along the sustainability trajectory are influenced by many external forces, such as markets, public policies, available science, technology, knowledge and skills, and the farmers' own values, resources, and land tenure arrangements. The market, policy, and knowledge structure are in turn influenced by efforts of broad social movements and organized interest groups that have different perspectives about how agriculture should be organized and how food should be produced and distributed. Understanding the drivers and the trends can direct policy attention to where changes can be made to influence farmers' decisions to effectively address the challenges.

Hello and welcome to this video presentation on World Green Science Day. I am Dr. Anwer, and in this video, we will explore the different Drivers and Constraints Affecting the Transition to Sustainable Farming Practices.

We are familiar with the sustainable trends in agriculture, which include food security, carbon sequestration, water preservation, reduced emissions, reduced waste, and land conservation. Let's look at some drivers and constraints that affect the farmers' decision-making process and could hamper the implementation of sustainable practices in farming.

So, the factors affecting farmers behavior and decision making can be broadly classified in to four categories.

Let's start with policies. Policies are the rules and regulations that farmers must follow when they farm. Farmers can have positive, negative, or mixed feelings towards policies. An example of negative feedback is that farmers in general may resist sustainable policies that involve strict regulations and compliance requirements. These could include rules related to water usage, pesticide restrictions, or land management practices that they view as

burdensome or costly. In another example, let's consider government subsidies. Farmers may have mixed feelings about subsidies for sustainable practices. Some may view them as essential support, while others may see them as insufficient or unfairly distributed.

Now see the Markets. Markets are where farmers sell their products and buy their input. These markets can be divided into three types: (1) farm inputs in the form of seeds, fertilizers, pesticides, machinery, and labor, (2) farm commodities in the form of fruits, vegetables, and grains, (3) value-added markets in the form of products such as flour, bread, cheese, yogurt. Markets can have positive or negative impacts on farmers' behavior and decision making. For example, markets that provide access to credit or insurance can enable farmers to invest in sustainable technologies or practices while those that limit access to credit or insurance can constrain farmers from adopting sustainable practices.

Knowledge institutions: Scientific research plays a critical role in advancing and improving sustainable farming by providing the knowledge, data, and innovations needed to develop and implement sustainable agricultural techniques. However, there are situations where scientific research can have unintended negative consequences.
Unintended consequences: Scientific research can lead to the development of genetically modified crops and advanced pesticides that are initially deemed environmentally friendly, but in the longer run they prove to be ecologically unsustainable. Conflict of interest: In some cases, scientific research can be influenced by industry or corporate interests, leading to biased results that prioritize profit over sustainability. This can result in the promotion of farming practices that may not be truly sustainable.

Stakeholders and social movements: Agricultural dynamics are influenced by the power of different interest groups. Public awareness of sustainability issues relies on dissatisfied individuals and groups challenging the current agrifood system. Although more organizations are emerging to support innovative farmers and sustainable agriculture, their progress is limited by the dominant conventional stakeholders. In future, achieving sustainable agriculture will require finding common ground and compromises among these diverse interests in markets, policies, and research institutions.

Farmers behavior and decision making is influenced by policies, markets, scientific research, and stakeholder interest. These factors are not isolated from each other, but rather interact with each other in complex ways. For example, policies can affect markets, markets can affect knowledge institutions, knowledge institutions can affect stakeholders and social movements, and stakeholders and social movements can affect policies. All factors must be considered simultaneously to achieve desired long-term sustainable goals in agriculture.

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Balancing the One Health, One Welfare, One Biology with the Global Needs

Forum 1
Green Development Agenda

Prof. Sara Platto
Jianghan University
Speaker 8

DOI: 10.52428/27888991.v5i8.1059

Abstract

This presentation examines the challenge of harmonizing the principles of One Health, One Welfare, and One Biology amidst the ever-growing global demand for food and the escalating stress on food production systems due to the impacts of climate change.

The relentless rise in global food demand, driven by population growth and evolving dietary patterns, poses a significant conundrum in maintaining the integrity of these three foundational frameworks. Balancing One Health, which underscores the interconnectedness of human, animal, and environmental health, and One Welfare, which advocates for the ethical treatment of animals across various contexts, becomes increasingly complex when confronting with the global needs for food. In addition, climate change, as a result of human activities, further disrupts agricultural practices, threatens biodiversity, and exacerbates the pressure on food production systems.

Therefore, there is great urgency of incorporating One Welfare standards into the United Nations Sustainable Development Goals (SDGs). Integrating One Welfare principles into the SDGs would provide a change in the paradigm from a strongly anthropocentric to one that bring a better understanding of the interaction between humans and animals.

In addition, including One welfare in the SDGs would ensure a more inclusive roadmap for addressing these complex challenges and fostering a more equitable, and sustainable future that balances the imperatives of human, animal, and environmental well-being, all while addressing the global demand for food in the face of climate change.

Good morning, everybody, I am Dr. Sara Platto, professor of animal behavior and welfare at the college of life sciences, Jianghan University, Wuhan, CHina.
I would like to thank the organization ARCST for inviting me to participate to the World Green Science Day.

In my presentation I will take about how to Balance the One Health, One Welfare, and One Biology with the Global Needs. I will explain how we can include animal welfare in the 2030 Agenda

We are all aware that from November 2022 we reach the total population number of 8 billion people. This means that we put a lot of pressure on food demand, and therefore on food production, and in particularly on livestock industry which requires to produce more to satisfy the world needs. This cause further development of the industrialized livestock system which if for one side they can satisfy the world food needs, on the other side they are well known for their poor animal welfare conditions.

In addition, all these pressures also impact the environment because we are not efficient in using our resources. We are consuming a lot, and producing a lot of waste, in particular waste that comes from livestock industry that are full of antibiotics which can cause, as it has been defined by WHO, the future threat for humanity: antimicrobial resistance. In order to find a solution for all these problems, we need to be more sustainable, to better our resources and reduce all the pressures mentioned earlier.

We are all familiar with the concept of one biology that underline the interconnections among all living beings on this planet. We share similar genetic material with other animal species. Being all connected also means the health of the humans is connected to the health of the animals, and the health of the environment where we live - the concept of One Welfare -. Similarly, we also share the same concept of welfare, which means that the welfare of humans is connected to the welfare of the animals and the environment - the concept of One Welfare, which is a broader framework that also include One Health, and many other factors such as socio-economical. IN order to support these frameworks and to create a better environment for all of us we need to find solutions.

In 2015 the UN in agreement with many other countries in the world supported the development of the Sustainable Development Goals Agenda, which is a set of goals that address various social, economic and environmental challenges, that the countries should solved by 2030.

Even though this framework is very beautiful, many researchers consider it impracticable. One element that this agenda is missing is the role of domestic and wild animals and their welfare. The fact that animal welfare is missing from the 2030 agenda, and it is an important element that should be included

was supported by UN Global Sustainable Development Report in 2019. This report considers animal welfare an important element that should be included int he 2030 agenda in order to make it more comprehensive.

In addition, there are several global organizations that recognize the importance to address the animal welfare issue in the 2030 Agenda. Specifically, the Global Agenda for Sustainable Livestock identified 9 SDGs that are directly linked to the livestock, underlying further the importance of including animal welfare in the SDGs. Last year, March 2022 we had a further development when the UNEA 5 adopted the resolution to incorporate animal welfare in the next report of UNEA in 2024. In addition, In December 2022, the UNEP approved a resolution, The Animal Welfare-Environment-Sustainable Development Nexus that explicitly referenced the importance of animal welfare.

All of this underlines that the missing link, animal welfare, is actually a very critical issue. For example, if we take into consideration from one side the socio-economical status of the people who share a specific environment with domestic animals they use for food or leisure, and the wild animals, this global picture allows us to better understand how the welfare and health of the humans are interlinked with the ones of the animals.

In addition, from the moment we include animal welfare in the SDG agenda means we substitute the previous paradigm that was based on economic growth with a paradigm that is based on well-being. In fact, the economic growth paradigm is the one that led us in the crisis we are currently. In addition, the current organization of the SDGs is very anthropocentric, which is the reason why it would be important to also include in them the welfare of the animals.

The inclusion of the animal welfare in the SDG is not so straightforward practice. We need need first to understand what the strength between animal welfare and each SDG is, and how we can incorporate animal welfare in them in order to support the development of the agenda 2030.

Keeling et al performed two studies: one in 2019 and one in 2022, the latter is "a global study to identify a potential basis for policy options when integrating animal welfare into the UN sustainable development goals. These two studies had from one side the objective to rate the strength of the association between animal welfare and the SDGs, and on the other side to evaluate at which extent achieving the targets in the SDG can favor the development of animal welfare and vice versa.

These two studies have actually underlined further the importance of incorporating the animal welfare in the policy making, and all activities concerning the humans, animals and the environment because by doing this it would benefit the achievements of the SDGs.

This means that by doing so all the organizations that work on animal welfare and the ones that works on achieving the targets of the SDGs cannot work by themselves anymore but they need to start to find common grounds and collaborate, and to support each other in order to achieve positive outcomes for animal welfare as well as for the SDG targets.

The study of Kneeling at al 2019 pointed out that the SDGs could be divided into three groups depending on the impact animal welfare has on them or which impact each of these SDG has on animal welfare. In the top right quadrant we have the mutually reinforcing SDGs. What does that mean? It means that applying animal welfare to these SDGs strongly favor their development, as well as supporting these SDGs can favor positive outcomes for animal welfare.

In the top left of the graph, we have the enabling/reinforcing SDGs. This means that enabling the development of animal welfare might not directly favor the achievement of the SDG, on the contrary Reinforcing/promoting these SDG can actually on a long term favor the development of animal welfare. In this case the animal welfare organizations and the organizations that work on developing the targets of the SDGs still need to find a common ground even though the outcomes might not be strongly positive as in the first group.

In the bottom left of the graph we have the Consistent group of the SDGs. This group of SDGs gas the so called mutually symmetrical association with animal welfare. This means that the progress in one area such as animal welfare can contribute to the progress on the target supported by the specific SDG. But the magnitude of the impact can vary which means that if we develop a specific SDG it might not have a stronger impact on the development of animal welfare or vice versa. But still the outcomes are positive.

So the organizations that works on animal welfare and on the SDGs still might find common positive ground and work to reduce the trade-off. Furthermore, in the groups mutually reinforcing and enabling/reinforcing we can find anthropocentric and zoo-centric SDGs, while the consistent group contains more technical SDGs. These latter SDGs even though they focus more on industrial and city development still they have a mutually symmetrical association with animal welfare which means that the development of these SDGs can still lead to positive outcomes for animal welfare.

Kneeling et al 2019 also found an interesting point which is instead to focus in trying to associate animal welfare to all SDGs , it is better to identify those SDGs that have more targets in common with animal welfare and start working on those. For example, the SDG 14 which represents the Life Below Water and the SDG 12 that represents Responsible production and Consumption together they have 21 targets that have a positive association to animal welfare.

It is important to consider that when we want to include animal welfare in the 2030 agenda the relationship between animal welfare and the SDGs is complex and context dependent. Despite that, we should still work out our best collaboration in order to make the 2030 Agenda more zoocentric and well-being oriented.

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Forum 2
Green Science Popularization

Forum 2 Green Science Popularization		
Chair:	Prof. Desire Atchike (Taizhou University)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:15	José Gabriel Pérez Canencio & Mary Luz Ojeda Solarte	Unidad Central del Valle del Cauca
20:16 - 20:27	Dorofeeva Anastasiia	Language School Welcome
20:28 - 20:39	Sotindjo Coffi Patrick	National University of Sciences, Technologies, Engineering and Mathematics (UNSTIM) - Benin
20:40 - 20:50	Alexandra Trujillo Zapata & Karol Andrea Leal Vásquez & Luisa Fernanda Cabezas Burbano	Unidad Central del Valle del Cauca
20:51 - 20:56	Shabahat Hasnain Qamar	National University of Sciences and Technology (NUST)
20:57 - 21:08	Zhang Jing Jing	Jinzhong College of Information
21:09 - 21:13	Cristina Morataya & Manuel Diaz	Executive committee CICITLAC

Green Science Popularization is vital for fostering widespread awareness, understanding, and engagement with environmentally sustainable practices. As societies grapple with pressing ecological challenges, such as climate change and biodiversity loss, the dissemination of green science knowledge plays a pivotal role in shaping informed decision-making at individual, community, and policy levels. By making complex environmental concepts accessible to the public, green science popularization inspires a sense of shared responsibility for our planet. It empowers individuals to adopt eco-friendly behaviors, influences consumer choices, and encourages the integration of sustainable technologies. Moreover, a well-informed public can drive demand for green policies, influencing governments and industries to prioritize environmentally conscious practices. Ultimately, the popularization of green science is not just an educational endeavor; it is a catalyst for positive change, contributing to the creation of a more sustainable and resilient future. The Green Science Popularization forum is a vital section of the World Green Science Day celebration.

Topic: Citizen Science as a tool for discovering pro-environmental behaviors

Forum 2 Green Science Popularization

Prof. Jose G. Perez C.
ORCID:
Prof. Mary L. Ojeda S.
ORCID:
Unidad Central del Valle del Cauca
Speaker 1

Abstract

Pro-environmental behaviors address the study of actions consciously oriented to the optimal maintenance of natural resources and the care of ecosystems in response to social and individual needs to maintain the balance of the planet and survival on earth. When pro-environmental behaviors are studied for research purposes, the behavior of communities or social groups in specific topics of interest to the researcher will be known. Applying some Citizen Science techniques can be very useful to obtain knowledge of the pro-environmental behavior of the population on issues related to the environment and biodiversity. In this study we include the integration of Citizen Science with technology for the construction of instruments that facilitate the process of obtaining information in an agile, entertaining and efficient way. Likewise, we explain a way to verify a set of questions and research objectives that through observation and experimentation guided by a methodological process for the systematization of the knowledge acquired can lead to the formulation of hypotheses.

Topic: Green Science Popularization in Benin as part of the SDG-4

Forum 2 Green Science Popularization

Dr. Sotindjo Coffi Patrick
National University of Sciences, Technologies, Engineering and Mathematics (UNSTIM)
Speaker 3

Abstract

This communication aims to show the relevance of the popularization of green science within the framework of SDG-4. To do this, we will start with a definition of green science and SDG-4. Then, we will present the importance of green sciences and the extent of the field of action of this science in the field of technology. We will end this communication by showing the impact of green science on quality education (SDG-4).

Topic: Inter-structuring training on food security with a focus in the sustainable production as a contribution to the foundation of Green Science in the Agricultural Engineering program


Forum 2 Green Science Popularization

Prof. Alexandra Trujillo Zapata
Prof. Karol Andrea Leal Vásquez
Prof. Luisa Fernanda Cabezas Burbano
Unidad central del Valle del Cauca

Speaker 4

Abstract

The Agricultural Engineering program at the Unidad Central del Valle del Cauca implements integrative projects as an integral part of its institutional inter-structuring pedagogical model. The goal purpose of these projects is for students to apply the knowledge acquired in their formative process to address current challenges in the agricultural sector, with the aim of managing sustainable production that corresponds to environmental changes and facilitates the creation of scenarios that guarantee food security.

Through these projects, it is intended that students not only understand the theoretical concepts but also apply them effectively in the real context, proposing innovative solutions to improve the problems associated with production processes in the agricultural field. In this process, a dynamic is followed that involves the formulation, execution, and socialization of a project that integrates the content of the semester's subjects.

This initiative encourages collaboration between students and professors by allowing students to evaluate their knowledge and skills. Integrative projects focus specifically on the design of alternatives for agricultural production processes with an emphasis on sustainability and the minimization of environmental impacts in a global and local context their considering social, technical, environmental, and economic complexities.

This work compiles significant contributions that have emerged during the execution of these integrative projects, which, through an interdisciplinary approach, comprehensively address challenges in the agricultural field. In this way, it contributes to the advancement and sustainable development of the community and the sector as a whole.

Topic: Unraveling the Quantum Computing Climate Conundrum

Forum 2 Green Science Popularization

Shabahat Hasnain Qamar
National University of Sciences and Technology (NUST)
Speaker 5

Abstract

Quantum computing has emerged as a disruptive technology that holds immense potential to revolutionize various industries, including climate science. Quantum computers are capable of resolving complicated issues that are beyond the capabilities of classical computers by utilizing the concepts of quantum mechanics, such as superposition and entanglement.

The fight against climate change, one of the most urgent issues confronting humanity, is significantly impacted by this. Rising temperatures, sea level rise, and extreme weather events are just a few of the causes of the climate crisis, and resolving these problems calls for creative solutions.

We can open the door to a more sustainable future by solving the quantum computing climate conundrum. In order to improve renewable energy systems, simulate complex climate models more precisely, and create new materials for carbon capture and storage, quantum computing can play a crucial role in this.

The presentation will provide a thorough analysis of how quantum computing might be used to fight the climate crisis and identifies the obstacles that must be removed in order to fully utilize its potential.

Topic: Design and Implementation of Courses on Ecological Protection Based on the Concept of General Education

Forum 2 Green Science Popularization

Zhang Jingjing
Jinzhong College of Information
Speaker 6

Abstract

The presentation highlighted the concept and practice of comprehensive general education courses that focuses on ecological protection. The course design prioritizes enhancing students' understanding of ecological concepts, promoting environmental awareness, and fostering a sense of responsibility towards ecological preservation.

The curriculum includes a diverse range of topics such as climate change, biodiversity, sustainable development, and conservation strategies. The implementation of the courses integrates theoretical knowledge with practical learning experiences. Students are engaged through interactive lectures, group activities, field trips, and case studies.

Course encourages critical thinking, problem-solving, and collaboration among students. Moreover, the presentation emphasized the importance of interdisciplinary approaches, incorporating elements from natural and social sciences, humanities, and technology. Such a holistic approach ensures that students gain a well-rounded understanding of ecological protection issues and are prepared to address them from various angles.

Overall, the design and implementation of this kind of courses on ecological protection based on the concept of general education provide students with the necessary knowledge, skills, and attitudes to protect and preserve the environment in a sustainable manner.

CICITLAC for the scientific and technological innovation in Latin America and the Caribbean

Forum 2 Green Science Popularization

Cristina Morataya
Manuel Diaz
Executive Committee International Center for Science and Technology Innovation in Latin America and the Caribbean (CICITLAC)
Speaker 7
DOI: 10.52428/27888991.v5i8.1061

Abstract

International Center for Innovation in Science and Technology for Latin America and the Caribbean (CICITLAC). A project in which its participants have been carrying out for more than two years. CICITLAC is the result of the laborious work of a team of entrepreneurs from Latin America, the Caribbean, and China who believe and trust that innovation and scientific and technological development can bring numerous benefits to their participants. The CICITLAC representatives are Eng. Cristina Morataya, Eng. Manuel Díaz Pantoja.

Desarrollo

Un saludo especial a todos los participantes de este evento, en el día mundial de la ciencia verde estamos muy agradecidos de estar participando, es por primera vez que el CICITLAC, el Centro de Internacional de Innovación de Ciencia y Tecnología para América latina y El Caribe participa en este evento tan importante. Nos sentimos muy complacidos por la invitación que nos han dado y estar participando y estar formando parte de este crecimiento, desarrollo, científico y ambiental de nuestros países, a través de todas las propuestas que se van a ir generando.

Gracias, en esta oportunidad, este centro está conformado por cuatro empresas, que todas tienen intereses en los conceptos de expansión de la cultura científica, siempre poniéndola al servicio del ser humano y cuidando el medio ambiente, están las empresas comercializadora de energía eléctrica , vehículos eléctricos, en energías renovables, así que, pronto van a empezar a escuchar n noticias e iniciativas del centro en El Salvador.
Lo más importante es la vinculación que se ha generado con estas empresas y tratar de trasladar todo esto a los países de Latinoamérica, a través del CICITLAC, hemos logrado hacer la invitación a la participación del concurso

con diferentes países, tanto a nivel personal, como educación media y universitarios, es por esto, que, desde la organización que hemos formado, estamos trabajando desde la educación con temas de sensibilización para abordar temas importantes de impacto ambiental, motivación al actuar, que es uno de los ejes principales de todas las jornadas que hemos estado viviendo y esta vinculación la hemos hecho a través de campañas de sensibilización, capacitaciones, cursos que hemos brindado sobre temas de movilidad eléctrica, el ciclo sostenible de carga, cultura de reciclaje, entre otras actividades con las que hemos estado participando en los últimos meses, sobre todo en este año 2023 hemos intensificado estas actividades por eso nos sentimos complacidos de poder dar este paso, en participar en este día, con actividades que están enfocadas en este desarrollo científico y ambiental como ya lo hemos mencionado.

En este punto también quiero comentarles que es bien importante que hagamos una retroalimentación del trabajo que hemos estado teniendo y esto va en acompañamiento con empresas tanto de Colombia, China y todo el trabajo que, como colectivo hemos estado desarrollando aquí en El Salvador.

Y es así que, nosotros nos sentimos complacidos de este proyecto queremos trasladarles que, la invitación está abierta, para la participación activa de nuevas oportunidades, nuevos proyectos que se vengan, sobre todo, aquellas herramientas que puedan fortalecer este desarrollo, vamos a tratar de trasladárselas, a través de los medios oficiales, y que podamos ir incluyéndolas en nuestras agendas de trabajo para 2024.

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Forum 3
Green Technology and its applications

Forum 3 Green Technology and its applications		
Chair	Prof. Dr. Imran Hashmi (National University of Sciences and Technology)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:12	Duan Yongjian	Jinzhong College of Information
20:13 - 20:23	Edgar De Jesus Sandoval Arboleda & Vivian Orejuela Ruiz	Unidad Central del Valle del Cauca
20:24 - 20:32	Jimena Barrientos Parás	Universidad Nacional Autónoma de México (UNAM)
20:33 - 20:42	Kunzheng CAI	South China Agricultural University
20:43 - 20:53	Zhang Tiantian	Jinzhong College of Information
20:54 - 20:58	Xiaoyun Wang	Shandong Agricultural University
20:59 - 21:09	Rashid Iftikhar	National University of Sciences and Technology
21:10 - 21:20	Dr. Moisés Tejocote Pérez	Autonomous Mexico State University

Green technology and its applications are crucial for addressing contemporary environmental challenges and fostering a sustainable future. By emphasizing the development and deployment of eco-friendly solutions, green technology aims to minimize the ecological footprint of human activities. Whether in energy production, transportation, waste management, or construction, the adoption of green technology mitigates the impact on the environment, reducing pollution, conserving resources, and curbing greenhouse gas emissions. These innovations not only contribute to environmental conservation but also drive economic growth by fostering industries focused on renewable energy, energy efficiency, and sustainable practices. In essence, the importance of green technology lies in its potential to harmonize human development with the preservation of our planet, creating a pathway toward a more resilient and environmentally responsible global society.

Topic: Green development of agriculture and control of salinized soil

Forum 3 Green Technology and its applications

Duan Yongjian
ORCID:
Jinzhong College of Information
Speaker 1

Abstract

Soil salinization has become a serious threat to soil health and food security. Green development of 44gricultura is related to the development of 44gricultura44 and human welfare. 44gricult the soil salinization phenomenon in the Syr Darya River irrigation 44gri, the composition, spatial distribution and influencing factors of soil salt were studied, and relevant countermeasures were proposed for green 44gricultura and sustainable development in the Syr Darya River Basin.

Topic: Vertical Urban Crops, an alternative to reduce the carbon footprint of food transportation in Colombia

Forum 3 Green Technology and its applications

Prof. Edgar De Jesus Sandoval Arboleda
ORCID:
Prof. Vivian Orejuela Ruiz
ORCID:
Unidad Central del Valle del Cauca
Speaker 2

Abstract

One of the main challenges of conventional agriculture is related to the logistics and transportation of perishable products, whether nationally or globally. In regions with scarce land, unfavorable climatic conditions for outdoor cultivation or geographies that increase transportation costs, as is the case in Colombia, an ideal alternative has emerged: vertical urban crops; this option is safer, dispenses with pesticides or herbicides, requires less water and space, and has shorter delivery circuits, thus reducing the polluting footprint. According to statistics from the Food and Agriculture Organization of the United Nations, since 2007 approximately half of the world's population has been living in urban areas, and this proportion is projected to reach 60% by 2030. Cities and metropolitan areas are responsible for about 70% of global carbon emissions and more than 60% of resource consumption (Sustainable Development Goals Indicators, 2021). This reality increases the demand for food in urban environments significantly.

Topics: Effects of biological pretreatments and co-digestion with bovine manure for enhancing the anaerobic digestion and biomethane yield in S. natans y S. fluitans

Forum 3 Green Technology and its applications

Dr. Jimena Barrientos Parás - México (UNAM)
ORCID:
Speaker 3

Abstract

Sargassum natans and S. fluitans (sargassum) arrivals in the southeast coast of Mexico represent a serious problem. This biomass must be properly managed to avoid negative impacts in the zone, being a sustainable option the recovery of a resource (methane) by anaerobic digestion (AD). Hydrolysis is the limiting step for methane production from sargassum, as it is a recalcitrant biomass with lignocellulosic fibers and structural polysaccharides like alginate, fucoidan and laminin. Using biological pretreatments, as well as codigestions to accelerate the rate and extent of methane production would improve the techno-economic feasibility of the process, while reducing the mass of the final residue (digestate). In this work, the anaerobic digestion (AD) of sargassum is coupled to microbial and enzymatic pretreatments (CellicCtec2 and alginate lyase enzymes) as well as codigestion with bovine manure to increase the hydrolysis and, in consequence, the methane production.

Topic: The new Mexican termodryed foods: Environmental ecomomy

Forum 3 Green Technology and its applications

Dr. Moisés Tejocote Pérez - Autonomous Mexico State University
Speaker 8

Abstract

The Research Center in Applied Biological Sciences of the Faculty of Sciences, UAEMéx., has a patent to dehydrate foods using the Advanced Thermodehydration method at low temperatures, obtaining foods that preserve their nutritional content in a functional manner up to 98% efficiency , does not use chemical preservatives and has a shelf life of up to 5 years at room temperature, reduces its weight by 90% and is easy to store without refrigeration methods. Its functional nutrients keep the metabolism of the human body active and provide vitamins, proteins, carbohydrates, lipids, enzymes, minerals, antioxidants and metabolites with high nutritional and health-beneficial properties, since, due to their form, they improve nutrition and prevent diseases. such as cancer, diabetes, hypertension, anemia, colitis, allergies, atherosclerosis, constipation kidney problems. Environmental, Industrial, Medical and Food Biotechnology, using fungi, bacteria, protozoans and microalgae as biological models, applied in wastewater treatment, phytoremediation, soil bioremediation, organic fertilization of vegetables, production of bioenergetics, advanced dehydration of foods, development of antivirals, vaccines, functional additives and management of forest systems.

Ecological Circular Agriculture and Green Development

Forum 3
Green Technology and its applications

Prof. Kunzheng CAI
South China Agricultural University
Speaker 4
DOI: 10.52428/27888991.v5i8.1063

Abstract

(1) Identify the ecological and environmental problems faced by agriculture; (2) Introduce the necessity and importance of developing ecological agriculture and green development; (3) Ecological agriculture model and technology (Recycling of waste resources; biodiversity use; green substitution and reduction of chemical inputs, greenhouse gas mitigation etc.); (4) Policy and law regulation.

Hello, My name is Kunzheng Cai, come from Natural Resource And Environment, South China Agricultural University, China.

Today, I will discuss about ecological circular agriculture and green development, including four parts.First is some problems related to conventional agriculture, second is how to transform from the conventional agriculture into ecological agriculture, the third is some examples for the ecological agriculture technologies, and the last is some policies and law regulation for ecological agriculture.

During the decades, Chinese grain production has made great progress, but it is depended on the higher input. For example, high input of irrigation, chemical fertilizer, pesticide, film were used, which led to lot of problem, including environmental pollution, lower biodiversity with monoculture,greenhouse gas emission etc.

For example, overuse of chemical fertilizer resulted soil acidification and environmental pollution. And agriculture is one of the sources of greenhouse gas emission, it contributed more than 10%.

So, what's the green development of agriculture? It is to coordinate “green” with “development” to realize the transformation of current agriculture with high resource consumption and high environmental costs into a green agriculture or ecological agriculture.It means sustainable agriculture.

There are four levels to transform conventional agriculture into sustainable agriculture. First, we can reduce the input of chemicals and increase the efficiency of resource utilization. Second, we can replace chemical fertilizers and pesticide with organic and biological inputs.The third one, we can design the agroecosystem to increase biodiversity. For example, intercropping, crop rotation,agroforestry etc.The last one, we may reconnect the growers to the consumers and increase the cultural sustainability.

I will give some examples for this conversion.

For biological diversity use, this can be realized at the landscape, agroecosystem level. We can integrate different crops through intercropping according to their ecological niche, effectively use land, light and nutrient. In paddy field, rice can be integrated with aquatic plants and animals, such as vegetables, ducks, fishes etc. We can keep some grass in the fruit garden to increase the biodiversity. But how to realize the mechanization of intercropping, as traditional intercropping needs a lot of labour. There are two different solution methods.First, we can design some specific machine for this intercropping, Japanese scientists have invented some specific machines which can be used in this traditional intercropping. Another method is that we can design the intercropping system which are suitable for the current machine, such as strip intercropping.

For nutrient management, we can integrate irrigation with fertilization and use liquid fertilizer, thus reducing the water and fertilizer input, increasing nutrient utilization efficiency. And we can apply new type of fertilizers such as controlled-release fertilizers with coaching materials and biochar-based fertilizers to increase fertilizer efficiency.

For waste recycling in agroecosystem, we can use biogas to connect plant and animal farming. Animal wastes can be materials to produce biogas, liquid and solid from biogas tank can be returned to the fruit field. These pictures showed a medium fruit garden, poultry farm and biogas tank, biogas was used to connect them.

For soilborne disease control, I will introduce a new no-chemical method called Anaerobic Soil Disinfestation (ASD) to replace traditional chemical control.First, organic carbon sources such as crop straw or rice bran was incorporated into the soil, then irrigation and film mulching were used to create an anaerobic condition to eliminate the soil borne disease. Here we showed the effects of ASD on the soilborne disease control of several crops including strawberry, banana and chilly.

How about the mitigation of greenhouse gas emission from agriculture? We take methane as an example, because paddy fields are among the largest sources of CH4 emissions. There are some strategies to reduce CH4 emission, including water management through mid-season drainage or alternate

wetting and drying irrigation, optimizing fertilization, organic input through straw removal, biochar and manure application, and breeding some new water-saving varieties.

In china, there are three kinds of food system, including safe food, green food and organic food. Safe food is the basic requirement for market. Green food has two levels, A level and AA level.Green AA level is close to organic food, but in green A level, some specific fertilizer and pesticide can be used.

Beside the above technologies, policies and laws regulation are also important in ecological agriculture and food system. In ecological agriculture, there are natural, human direct intervention and social and economic regulation to sustain agricultural production.For example, for those ecological sound agricultural practices, some economic methods can be implemented through reducing taxation, government investment and award, reducing interest rate; for those ecologically wrong practices, the methods can be used such as increasing taxation, increasing the charge for pollution and resource, increase interest rate.

So, this is what I want to talk about from the conventional agriculture to a sustainable agriculture.

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The health effects of flower arrangement

Forum 3
Green Technology and its applications

Prof. Zhang Tiantian
Jinzhong College of Information

Speaker 5
DOI: 10.52428/27888991.v5i8.1064

Abstract
The art of Chinese flower arrangement has always followed the tradition of natural aesthetics and paid attention to the theory that man is an integral part of nature. In the long history of more than 2000 years, Chinese flower arrangement, as a cultural symbol, has become a rather elegant art form with its unique style, enriched people's yearning for a better life. Participating in floriculture activities and creating floriculture works can reduce heart rate and relieve bad emotions, and have great help for people's psychological or physical recovery.

中文字幕

插花作为人类的一种文化活动，由来已久。无论在东、西方，均有约2000年的历史。人们以剪切植物为素材，经过艺术加工，赋予这些素材文化内涵，形成了一门独特的艺术--插花艺术，在中国称为插花，在日本称为花道，在欧美国家称为花艺。

插花艺术与书法、绘画等平面艺术不同，它是一门立体艺术，但又与雕塑、建筑等立体艺术不同，它是一门有生命的立体艺术。因此，作者不但要遵循美学法则，进行艺术创造;要吸收文学精髓，赋予精神内涵;还要掌握植物的生理、生态特征，合理加工，予以恰当表现，并延长观赏期。从这个意义上说，插花艺术综合的是艺术和技术。

插花艺术既是一门学科，也是一个创意产业。对插花者而言，既要掌握构图、色彩、植物、文学等知识，同时又要对材料、光学、力学等知识有所了解，结合自身的悟性，方能创作出好的作品。

插花艺术的作用

1.环境作用

(1)柔化空间

人们在生活的空间中，接触建筑、家具等硬线条实物较多，视觉较为单一、生硬。布置线条优美的插花作品，能使人们的视觉得到缓冲，感到赏心悦目。

(2)给环境带来生机

人们在工作或生活环境里接触无机物较多。布置有生命的插花作品，能增添生气。尤其到了冬天，室外万物萧条，室内春意盎然，带给人们生机勃勃的感受。

(3)优化生活

插花是高雅艺术，是家庭或工作场所的软装潢。在工作或生活的环境里，布置几件插花作品，能保护视力，调节心情，享受自然。

2.文化作用

(1)传承祖国优秀文化

中国插花艺术是东方插花的基础和重要组成部分,也是我国的“国粹”。普及和提高中国插花艺术有益于弘扬祖国优秀传统文化，发展健康有益的民族文化。

(2)陶冶情操

插花是一种追求真、善、美的高雅文化活动，无论是创作插花还是欣赏插花，插花形态美和意境美的熏陶，有利于培养人们高雅的生活情趣，追求高尚的行为准则。

(3)提高文化艺术素养

人们在学习和创作插花艺术过程中，会不断丰富构图色彩、植物、文学诗歌等知识。日积月累，插花水平提高了，文化艺术素养也会相应提高。

3.感情作用

花卉是世界上最美好的象征物，人们在不同的节日或特定的时间场合，通过送花来传递友情、亲情、爱情乃至爱国之情。花卉在人们感情生活中起了无法替代的润滑剂作用，可以说插花是服务于人们昨天、今天、明天的感情使者。

随着人们生活水平的不断提高，在城市水泥森林里的人们迫切希望拥抱和回归自然，应运而生的园艺疗法是现代园林园艺的新兴产物。广义的园艺疗法，是以园艺为媒介，以人为对象，通过植物及与植物相关的活动达到促进体力、身心、精神的恢复疗法。莳花弄草已被社会大众当作一种减压康复的疗养手段，作为园艺疗法从属之一的花艺疗法，就是利用鲜花插花及其相关活动，从其社会、教育、心理以及身体诸多方面进行调整更新的一种有效方法。

花艺疗法是城乡居民生活调适减压的有效方法。生活中人们会感到生气、暴躁、悲伤、哀愁，但多数人一看到花，心灵自然会得到一种油然而生的莫名安抚。中国有着悠久的园艺养生文化传统，花艺疗法的实施更多强调体验，是感受植物对人的刺激，不追求尽善尽美，而追求实施过程中的乐趣。花艺已成为目前我国发展园艺疗法的生力军，为改善健康状态和生活质量发挥重要作用。

中国的插花艺术一直遵循自然美学的传统，并重视人是自然不可分割的组成部分的理论。在2000多年的悠久历史中，中国插花作为一种文化象征，以其独特的风格，丰富了人们对美好生活的向往，成为一种相当优雅的艺术形式。参加花艺活动，开展花艺工作，可以降低心率，缓解不良情绪，对人们的心理或身体恢复有很大的帮助。

插花包括了构思、采摘、插制和分享等过程。

首先，构思，本身是让自己静下来的过程。静，是身心自我修复的最佳条件。想一想今天要插什么样的花？选一个什么样的花瓶？用几种色彩搭配？造型是什么样的？表达一个什么样的主题？等等。构思的过程，其实是让自己专注于插花这一件事的过程。

构思完成后，无论你去花店买花，还是在周围环境中采花，更甚者去山林里去采摘鲜花。那种心情，特别是在大自然中采花的心情，是放松的，是愉快的，是对身心最好的安抚。道理很简单，因为你面对的是特别美好的事物。就算是在高楼大厦，车水马龙闹市里的花店。当你面对色彩斑斓的鲜花，芳香的韵味也会很容易让你把一切的烦恼抛在脑后！

插制，你要小心翼翼地裁剪、制作、变换位置。。。直到插出自己满意的作品。这个过程，是不可能一心二用的，除非你在插那种千篇一律的商品花。在插制的过程中，你会发现，你会很容易跟花打成一片。随着你审美的不断提高，插制技巧不断熟练，手里的花会越来越配合你，很默契地跑到你需要的位置。而疲惫的身心，就会在这和谐的感觉中修复如初！

最后，就是分享了！动人的作品，会引起观众的共鸣；美丽的作品，会让大家赏心悦目；出色的作品，会让大家回味无穷。总之，只要你是用心插出的作品，就一定会有感动人的地方。你会在赞美的回馈里，得到最大自我满足！而这种幸福的感觉，正是千金难买的疗愈神药！

INGLÉS

Flower arrangement, as a kind of cultural activity of human beings, has a long history. It has a history of two thousand years in both the east and the west. In flower arrangement, people cut plant materials through artistic processing, and give them cultural connotation, which has been developed into a unique art called flower arrangement(Chahua) in China, ikebana in Japan, and floriculture in European countries and USA.

Flower arrangement art is a three-dimension art which is different from graphic arts (like calligraphy and painting). Unlike sculpture and architecture, it is a living three-dimension art. Therefore, artists must not only follow the laws of aesthetics to create art works, but also absorb the essence of literature and give spiritual connotations, grasp the plant physiological and ecological characteristics, rational processing and proper performance so as to extend the

viewing period. In this sense, flower arrangement art integrates art with techniques.

Flower arrangement art is both a discipline and a creative industry. The flower arranger must not only master the knowledge of composition, color, plant, literature, and the like, but also gain some understanding of materials, optics, mechanics, and the like. Only by combing his or her own understanding can the flower arranger create good works.

Functions of Art of Flower Arrangement

1.Environmental Function

(1) Softening space

People are in touch with more hard-edged objects such as architecture, furniture and others in their living space. The vision is single and blunt. Decorating graceful flower arrangement can make people's vision pleasant and buffering.

(2) Bring vitality to the environment

In working or living environment, people are exposed to many inorganic substances. Arranging some living flower arrangement works can add vitality to environments. Especially in winter, outdoor environments are in all depression, Indoor environments are furious spring, which bring people a vibrant feeling.

(3) Optimizing life

Flower arrangement is a refined art and a soft decoration of family and working places. In working or living environments, arranging several flower arrangement works can protect eyes, regulate mood and enjoy nature.

2.Cultural Function

(1) Inheriting national excellent culture

Chinese flower arrangement art is the basic and important part of the Oriental flower arrangement. It is also the “Quintessence”of Chinese culture. Popularity and improving Chinese flower arrangement art is good for carrying forward our national excellent traditional culture and developing healthy and beneficial national culture.

(2) Cultivating mind

Flower arrangement is an elegant cultural activity that pursues the truth, the goodness, and the beauty. Both creation of flower arrangement and appreciation of flower arrangement are beneficial for cultivating people's graceful living interests and pursuing noble behavior standards through flower arranging formal beauty and edification of artistic conception beauty.

(3) Improving cultural and artistic accomplishment

In the process of learning and creating flower arrangement art, people will continuously enrich composition, colors, plants, knowledge of literature and poems and so on. With the accumulation over time, flower arranging levels are improved, and cultural artistic accomplishment will be improved accordingly.

3.Emotional Function

Flower is the most beautiful symbol in the world. People send flowers to express their friendship, affection, love and even universal love for the whole country in different festivals or at a special time. Flower plays an irreplaceable

part in people's emotional life as lubricant. It is flowers that serve people as emotional messengers yesterday, today and tomorrow.

With the continuous improvement of people's living standards, people in the urban concrete forest are eager to embrace and return to nature, and the horticultural therapy become the emerging product of modern garden horticulture.

Horticultural therapy, in a broad sense, is a therapy that promotes physical strength, physical and mental recovery therapy through plants and plant-related activities through horticulture as a medium and people as objects.

Planting flowers and grass has been regarded by the public as a means of decompression rehabilitation. As a subordinate of horticultural therapy, floral therapy is an effective method through flower arrangement and related activities to adjust and update the social, educational, psychological and physical aspects of flower arrangement and related activities.

Floral therapy is an effective way for urban and rural residents to adjust and decompress their lives. In life, people will feel angry, hot-tempered, sad, sorrowful, but most people see flowers, the soul will naturally get a spontaneous inexplicable comfort.

China has a long tradition of horticultural health culture, the implementation of flower therapy emphasizes more on experience, which is to feel the stimulation of plants to people, not to pursue perfection, but to pursue the fun in the process of implementation.

Floriculture has become a new force in the development of horticultural therapy in China, and plays an important role in improving health and quality of life.

The art of Chinese flower arrangement has always followed the tradition of natural aesthetics and paid attention to the theory that man is an integral part of nature. In the long history of more than 2000 years, Chinese flower arrangement, as a cultural symbol, has become a rather elegant art form with its unique style, enriched people's yearning for a better life.

Participating in floriculture activities and creating floriculture works can reduce heart rate and relieve bad emotions and have great help for people's psychological or physical recovery.

Flower arrangement involves the process of conception, picking, planting and sharing.

First of all, ideation itself is the process of letting oneself calm down. Tranquility is the best condition for physical and mental self-repair. Think about what kind of flowers you want to plant today. What kind of vase to choose? How many colors to use? What's the styling like? What kind of theme will you express? And so on.The process of ideation is actually the process of allowing yourself to focus on one thing: flower arrangement.

After the idea is completed, whether you go to the florist to buy flowers, or pick flowers in the surrounding environment, or even go to the mountains to pick flowers. That kind of mood, especially the mood of picking flowers in nature, is relaxed, pleasant, and the best comfort for the body and mind. It's simple, because you're dealing with something really beautiful. Even a florist

in a tall building, busy downtown. When you are faced with colorful flowers, the fragrant charm will make it easy for you to leave all your worries behind!

Arrangement process, you have to carefully cut, make, change the position... Until you finish a work that you are satisfied with. In this process, it is impossible to do two things, unless you are inserting the same kind of commodity flowers. During the arrangement process, you will find that you will easily mingle with the flowers. With the continuous improvement of your aesthetics and the continuous proficiency of your arrangement skills, the flowers in your hands will cooperate more and more with you, and run to the position you need very tacitly. Your tired body and mind will be recovered in this harmonious feeling!

Finally, it's time to share! Moving works will resonate with the audience; Beautiful works will make everyone happy; Excellent works will leave you with endless memories. In short, as long as you make the work with your heart, there will definitely be something touching about it. You will get the greatest self-satisfaction in the feedback of compliments! And this feeling of happiness is a healing elixir that is hard to buy!

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Control of Southern root-knot nematode on tomato using soil amendments

Forum 3

Green Technology and its applications

Prof. Xiaoyun Wang
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Speaker 6

DOI: 10.52428/27888991.v5i8.1065

Abstract

The present results found that organic waste materials were effective against root-knot nematode attacking tomato under field condition and significantly reduced root gall indices, nematodes and egg masses as compared to control. Organic soil amendments stimulate the activities of microorganisms that are antagonistic to root-knot nematodes. The decomposition of organic matter results in accumulation in the soils of specific compounds that may be nematicidal. Amendments are mainly bio-products and wastes from industrial, agricultural, biological and other activities. Ladies and gentlemen, It my pleasure to share my topic with you. Then I'd like to talk about

I.Background

First I'll introduce the background .
As we know, root-knot nematode lives and feeds in the root of various plants, and the most susceptible crop is tomato.
RKN has a stylet, a hollow retractable needle connected to the esophagus and three unicellular esophageal glands. This structure is used to pierce and penetrate plant cell walls, to release esophageal secretions into the host tissue and to take up nutrients from the giant cells which have several nuclei.
Root-knot nematode most economically destructing species is on feld, horticulture, crops , and vegetable crops losses around 10%. Meloidogyne species are obligate parasites of the plant roots like monocots, dicots, herbs, shrubs, and woody plants.
Meloidogyne's infection symptoms include root galls (formation of galls due to damages in water and nutrient-conducting abilities of the roots), shoot chlorosis, defciency of nutrient, stunted growth, and wilting.

II. Methods of root knot nematode control

In view of the adverse impact of root-knot nematodes, it is important to manage the root-knot nematode infestation in the manage. There are severies methods:

1. use of chemical nematicides

Chemical nematicides are popular for their quick response. Nematicides are artificial solutions made for the control, although they start giving feedback as soon as after the application; They damage to the crop itself and also side effects associated with the human health. So the use of chemical nematicides is being limited.

2. rotation of antagonistic plants and usage of grafting

The antagonistic feature of these crops has highly reduced the nematode population

3. use different biocontrol agents.

Biological agents like fungi, bacteria, actinomycetes, and others are host specific and have the potential to kill the plant parasitic nematodes. Among these fungi and bacteria are the most dominant microbes that naturally born in soil ecosystem and also have a great potential to control the nematodes.

4. organic materials on control of root-knot nematode（RKN）

In the literature, many trails of organic amendments like crop waste, compost, manure, agro-industrial waste, different extracts and chopped leaves are used by different researchers as organic additives to improve crop yields and suppress the root-knot disease. Organic materials may be animal and plant origin.

Numerous plant-based products have been used in suppressing the nematode infestation, not only the plants or their residues also their byproducts are found to be quite satisfactory.

III. Organic materials on control of root- knot nematode of tomato

Now I'll introduce two kinds of amendments, one is the waste of a kinds of medicinal insect , EUPOLYPHAGA, the other is a plant-based product , Zanthoxylum bungeanum Seeds.

EUPOLYPHAGA FRASS AND ITS EXTRACTS PROTECTED TOMATO FROM MELOIDOGYNE INCOGNITA INFESTATION.

This topic mainly take Eupolyphaga (Eupolyphaga sinensis Walker) frass as material, the control effects of frass and its extracts on Meloidogyne incognita was studied through laboratory assays, pot experiments and field trials. The nutrients, organic volatile compounds and oligochitosan contents in the frass were analyzed.

The nematode immobility and mortality was significantly increased with increasing extract concentration and treatment time.

Compared with control, the egg hatching was significantly inhibited when the extract concentration was beyond 20%.

Through pot experiments, the gall index (GI) decreased significantly. And in the soil, the number of root-knot nematodes were obviously reduced after adding frass.

The ingredients analysis showed that organic matter and humic acid content is 19.3% and 8.85%, respectively, macroelement and microelements are rich in frass. There are 18 essential amino acids, 110 kinds of volatile compounds.

And the content of oligochitosan was about 4.4%. Oligochitosan is derivative of chitin that is part of insect constituents has nematicidal effect. These natural chitinous materials are potential as substitutes to synthetic nematicide, since they are also abundant and less harmful to environment.

Control of Southern Root-knot Nematodes on Tomato and Regulation of Soil Bacterial Community by Biofumigation with Zanthoxylum bungeanum Seed. We used field experiments in the greenhouse to determine the effects of Z. bungeanumseeds on SRKN, plant growth parameters, soil physicochemical andmicrobial_characteristics.

As the chart and pictures showed biofumigation with Z. bungeanum seed had a significant effect on controlling SRKN.

There were 26 kinds of volatile compounds were qualitativelyidentified. Some of the volatile substances were previously reported as having insecticidal activity.

As shown in the figures, biofumigation of Z. bungeanum seed provided favorable living conditions for these microorganisms to accumulate in the following periods in the treated habitat. And the co-occurrence network of bacterial communities was reconstituted by biofumigation of Z. bungeanum seed.

IV conclusion

Although the use of organic amendments for effective nematode control is limited by the large quantities needed, they can reduce nematode population densities to different.

In addition to their suppressive effects on nematode density, organic amendments stimulate microbial populations of actinomycetes, bacteria and fungi, elements of which might be antagonistic to nematodes.

Meanwhile organic soil amendments provide better media for plants to grow, result in better soil texture, increase water holding capacity, supply the nutrients to deficient soil.

Organic soil amendments have been used successfully as effective alternative, environment friendly methods for controlling the root-knot nematodes.

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Microorganisms to solve key environmental problems: Trends, challenges and future prospects

Forum 3

Green Technology and its applications

Dr. Rashid Iftikhar

National University of Science and Technology

Speaker 7

DOI: 10.52428/27888991.v5i8.1066

Abstract

Recently, emerging applications of microbial biotechnology have demonstrated the potential to solve some of the global challenges like climate change as well as providing a source of sustainably produced feedstock for product development. The potential applications of these microbes vary from biofertilizers in agriculture to advanced methods of treatment in water wastewater technologies.

The applications of these microbial contents and processes have been found in nutraceutical, processing industry and as biofuel. However, Several barriers exist that need to be overcome to ensure that microbial biotechnology can assist with sustainable development in practice. Some of them include production optimization, cost-effective large-scale cultivation and substantial investment. The roadmap ahead should focus on these challenges as a mean to ensure a safe and sustainable future for generations to come.

Hello, I would like to welcome you all to this video presentation on World Green Science Day. I am Dr. Iftikhar, a biogeochemist, and in today's presentation, we will explore the role of microorganisms to solve key environmental problems: Trends, challenges and the way forward

Each of us shares our air, food, water and shelter with tiny colonies of microorganisms that include viruses, bacteria and fungi. We are already familiar with their role as decomposers that recycle the dead, as producers of oxygen that we breathe, as primary producers that control and feed the world, as a routine resource to treat domestic and industrial wastewater, as good microbes in and on our body to prevent us from harm such as keeping our skin healthy and as fixers of atmosphere nitrogen that is needed for building DNA, RNA, and protein molecules.

A key interlinking factor of many global issues including climate change is the use of poor practices that are not environment friendly and mismanagement of our remaining natural resources.

Recently, emerging applications of microbial biotechnology have demonstrated the potential to solve some of these challenges as well as providing a source of sustainably produced feedstock for product development. A few of these applications include:

1. Use of electric bacteria that could quadruple the speed of sewage processing. These are the bacteria that grow their own electrical wires to help them survive in harsh environments and are now helping us in transforming how we process sewage.
2. Application of bacteria that turn trees into pollution-eating machines. Hacking trees by adding bacteria to their roots to develop symbiotic relationship that could help scrub contaminated soil clean of chemicals and metals coming from industries, as a gentle remediation process.
3. Next is milking microbes for renewable energy that could help replace fossil fuels. Scientists have now found a way of producing fuel for cars from microalgae, and scaling up these techniques could create a reliable source of renewable energy.
4. Also, 'Living buildings' that could use bacteria for heat, electricity and repairs. Inserting bacteria into bricks and concrete could help designing innovative construction materials that could transform bricks into living buildings with a reduced environmental footprint.

These were just a few examples. Many of the applications of these microbes are already in practice such as biofuel production. Let's take the example of microalgae specie. Its biomass is rich in carbohydrates, proteins and lipids. In addition to these, microalgae are capable of producing a broad range of pigments, including chlorophylls, phycobili-proteins and carotenoids, and a diverse range of secondary metabolites.

Their potential applications include treating wastewater, utilization for biofuel and biogas production, use as bio fertilizers and bio stimulants in agriculture, biomass use as feed stock for fishes and apart from this, the intracellular pigments and proteins can be utilized in cosmetic, food, pharmaceutical and processing industry for diverse reasons from as a colorant, to produce bioplastic to as a resource to develop novel anticancer drug.

Although the emerging applications of microbes demonstrate the potential of these organisms to assist with the achievement of sustainable development goals. Several barriers exist that need to be overcome to ensure that microbial biotechnology can assist with sustainable development in practice. Such as production optimization, cost-effective large-scale cultivation and substantial investment. There is a dire need to come up with programs like living building challenge by living future institute to fast-track the roadmap to green sustainable practices.

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Forum 4 Global Initiatives in Harmony with nature

Forum 4 Global Initiatives in Harmony with nature		
Chair:	Alvaro Gutierrez Rojas ((Universidad Privada del Valle)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:15	Dr. Ana Elisa Alcántara Valladolid	Autonomous Mexico State University
20:16 - 20:22	Ling Xu	Future Green
20:23 - 20:34	Pei Tingting	Jinzhong College of Information
20:35 - 20:47	Di Xiaoying	Jinzhong College of Information
20:48 - 20:59	Yu Xi	Fudan University
21:00 - 21:05	Li Shuxuan	Jinzhong College of Information

Global initiatives in harmony with nature are of paramount importance as they recognize the interconnectedness of human well-being with the health of the planet. In the face of pressing environmental challenges, such as climate change, biodiversity loss, and ecosystem degradation, collaborative international efforts are essential. Initiatives that prioritize harmony with nature promote sustainable practices, conservation of natural resources, and the protection of biodiversity. By fostering a global mindset of stewardship, these initiatives encourage responsible consumption, the adoption of eco-friendly technologies, and the restoration of ecosystems. Embracing a harmonious relationship with nature not only safeguards the delicate balance of ecosystems but also contributes to the resilience of communities worldwide. Such initiatives recognize that the well-being of humanity is intricately linked to the health of the planet, emphasizing the need for collective action to ensure a sustainable and thriving future for both people and the natural world.

The influence of biological interactions with the contamination of aquatic systems

Forum 4 Global Initiatives in Harmony with nature

Dr. Ana Elisa Alcántara Valladolid
Autonomous Mexico State University

Speaker 1

Abstract

explains the importance of biological interactions within contaminated aquatic systems an object of study of the families of fungi and bacter present of the cienega de Chimaliapan, State of Mexico. The purpose is to make known to the general public and to professionals related to the subject that, in order to make decisions of proposals on the treatment of water from contaminated water bodies, it is necessary to consider the correlation of the physicochemical parameters of water quality with microbial interactions. We announce that, for the cienega de Chimaliapan there is a temporality and microbial distribution according to the quality of the water, there are 12 bacterial families with correlation, being positive with the Enterobacteracea family and negative among between the Chromatiaceae and Xatomonadiaceae families with total nitrogen, and nitrates (respectively).

Topic: Injecting "sustainable development" into every link of the industrial chain - taking Huaxi Biotechnology as an example

Forum 4 Global Initiatives in Harmony with nature

Li Shuxuan
Jinzhong College of information

Speaker 6

Abstract

Bloomage Biotech won the "2023 ESG Best Practice Case of Listed Companies" by the China Association of Public Companies. While practicing ESG, low-carbon and environmental protection measures, Bloomage Biotech has also been committed to promoting green manufacturing with technological innovation, replacing traditional animal extraction methods with hyaluronic acid microbial fermentation technology, and relying on synthetic biotechnology to obtain various substances. Relying on its own biotechnology advantages, it integrates green, low-carbon and environmental protection into all aspects of enterprise operation, such as manufacturing, enterprise management, culture and public welfare, to achieve sustainable development and contribute to ecological civilization and a better world.

A Vision For Green, A Future For All

Forum 4 Global Initiatives in Harmony with nature

Ling Xu
Future Green
Speaker 2
DOI: 10.52428/27888991.v5i8.1068

Abstract

Future Green is committed to promoting green influence through market and marketing methods, connecting all channels upstream and downstream to truly provide sustainable green solutions. Our goal is to integrate environmental protection concepts into people's daily lives, allowing everyone to contribute to protecting the Earth.

Moreover, we raise public awareness and participation in environmental protection through various channels to promote a green lifestyle. In summary, FutureGreen is dedicated to fostering green development in a comprehensive and profound way to contribute to the achievement of global sustainable development goals.
Presentation Transcript: A Vision For Green, A Future For All.

Hello everyone my name is Ling Xu. I'm the founder for sustainability consulting platform called Future Green. Thank you so much for inviting me to attend this amazing World Green Science Day event, talking about sustainable future what is the definition for it.

Sustainable future means that we live a good life quality not for our generation but also for the future generation. We use the clean energy, we maintain the harmony between the nature with the human race, we protect all the assets from the earth. Sustainability is not a new word, it's actually an old word because everyone knows that we have to do something about it. But how we are doing it and why we are doing it.

That is something Future Green has been working heavily and hardly for the past few years. FutureGreen wants to raise the awareness of sustainability among the general public.

For the past few years we have working with the landmarks in China, we have working with artists, musicians, fashion designers and movie producers to put a lot of interesting events of the nature. We're working with Ngos for example like WWF or CI or shanshui conservations.

We promoting their aims, their works and their missions to the general public.We are not only given the general public some academic background about the conservations, about our nature, about the problem that we are facing but also this can be fun and fashion. We want every single one become a media on this part. So we encourage them to attend all the events because the events are all free.

We encourage them to use their social media to spread all these informations, so this is how we working with the general public and also we are working with some celebrities and Kols. For example we have IP called Sustainable Faces, what is mean the sustainable faces is in we invited Kol and young leaders to come on this project working with the artists, to use themselves as part of the art piece,make some videos about their voices towards the earth, how to protect the earth, how we find climate change. We use the young leaders power hopefully more people can follow these pioneers, can follow their works, so that is something we are doing with the channel public.

FutureGreen is also a company alliance. At the moment, we have more than hundred company has joined us. We are obviously focusing on sustainability area, we provide frequently events that engage company with international professionals institutions, Ngos and also technologies and some investments.

So at this platform we want to find a real and achievable solution for the companies, we want to raise business opportunities, we want to share informations, we want to real solve the problem. So that is how FutureGreen Alliance can be benefits to the companies and also benefits to all the partners.

FutureGreen also working heavily with local governments. We know on 2020, China has announced a 3060 carbon neutrality target, China has been putting on a lot of
effort on achieving those goals. Cities they have regulations on supporting company to achieve their carbon emission goals. FutureGreen has established and hosted some big submit in the past, and working with the local governments. We want to share all the regulations, and all the financial supports, and all the technical support to companies who are willing to setting up in local cities.

Towards the sustainable future is not government's responsibilities, it is everyone's responsibilities. It needs all parties to get fully involved and fully engaged. FutureGreen is the platform that we created and we want to establish dialogues between all parties want to share information with no limitation and no boundaries. With this platform, we hope more company can join us, we hope more institutions, governments, professionals and talents individuals can join us together. We can build a future for all with the vision of green.

Forests and Health——Forest health

Forum 4 Global Initiatives in Harmony with nature

Pei Tingting
JInzhong College of information
Speaker 3
DOI: 10.52428/27888991.v5i8.1069

Abstract

"Forest health" is relying on forest ecological resources to carry out forest recreation, vacation, recuperation, health care, elderly and other activities, is an important part of the health industry, cross-border and integration is the only way for the development of forest health industry. The development of forest health industry perfectly interprets the huge advantages of "tourism, entertainment, products and cultivation" brought by a fine ecological environment, fully reflects the development concept of "innovation, coordination, green, open and sharing", and is an important content of promoting supply-side structural reform to strengthen green supply. The government should continue to coordinate and promote a variety of ways of using forest resources, encourage the development of ecotourism, forest health care, forest home, nature education industries with their own characteristics, and integrate science popularization education, leisure tourism, health care, entertainment and sports, specialty food, old-age health care and other related industries into forest health care. Let forest health develop into an integrated and innovative industry of ecology, forestry, psychology, medical treatment, tourism, sports, culture and other formats.

森林与健康——森林康养

Forests and Health——Forest health

大家好，我叫裴婷婷，我本次汇报的主题是森林与健康——森林康养。

首先，背景引入：随着城市化进程的推进，以及城镇规模的扩大，人口密度剧增。

First, background introduction: With the advancement of urbanization and the expansion of urban scale, the population density has soared.

城市化带给人们生活很多便利的同时也产生一些负面影响，比如：城市热岛效应；其次，城市化造成的空气污染、水污染、噪声污染、土壤污染等环境污染在很大程度程度上影响着人的身心健康；第三，人类的生活方式都市化，在快节奏的工作、生活等各方面的进程中，人们压力增加，而在满是混凝土塑造的这样一个空间内，很难有一个比较舒适的空间供居民放松、修心养性。在这样一个城镇空间硬质化的过程中，除了城市的一些公园、城市绿地等类似的空间可以给人提供一个安静、比较适宜的休闲空间之外，森林旅游与森林景观逐渐受到重视。

Urbanization brings a lot of convenience to people's life, but also produces some negative effects, such as: urban heat island effect; Secondly,

the environmental pollution caused by urbanization, such as air pollution, water pollution, noise pollution and soil pollution etc, affects people's physical and mental health. Thirdly, the urbanization of human life style;People's pressure increases in the process of fast-paced work, life and other aspects. Also in such a space full of concrete shape, it is difficult to have a more comfortable space for residents to relax and cultivate their mind. In such a hardened space, some parks and urban green spaces and other similar Spaces in the city can provide quiet and more suitable leisure spaces for people, people also have gradually pay attention to forest tourism and forest landscape.

通过查阅相关的文献，我们发现有一些学者对居民健康水平以及其影响因素进行的分析；比如河南理工大学王莉对我国居民健康水平、时空演变特征及影响因素等进行分析，研究结果表明，城镇化对城市居民健康指数有极显著的影响，环境质量对城市居民健康有明显的影响。

By referring to relevant literature, we find that some scholars have analyzed residents' health level and its influencing factors; For example, Wang Li from Henan Polytechnic University has analyzed health level, spatio-temporal evolution featurete and influencing factors of the residents' health of China.The research results show that urbanization has a very significant impact on the health index of urban residents and environmental quality has obvious influence on the health of urban residents.

除了在城市有限的空间内塑造一些绿地景观之外，森林康养、森林景观、森林公园、森林旅游等逐渐受到人们的青睐。

In addition to shaping some green landscape in the limited space of the city, forest health and forest landscape, also forest park and forest tourism and so on are gradually favored by people.

针对森林康养的相关研究主要涉及有森林康养开发利用模式和评价指标体系构建、森林康养资源的建设、森林康养旅游基地的开发、森林康养要素组成和景观设计等等。

The related research on forest recuperation mainly involves the construction of forest recuperation development and utilization mode and evaluation index system, the construction of forest recuperation resources, the development of forest recuperation tourism base, the composition of forest recuperation elements and landscape design, etc.

另外，我们在中国知网上对森林康养进行主题检索后，得到的结果如图所示；以森林康养为主题的研究居多，并进一步对其研究机构进行分析发现高校为主要研究单位。

In addition, we carried out with the theme of Forest Kang on CNKI, and the results showed that the majority mainly about the forest health landscape and system construction; We also further analysised its research institutions and found that universities are the main research units.

另外有一些相关的政策或文件，在一定程度上促进了森林康养的建设。

In addition, some related policies or documents, to a certain extent, promote the construction of forest health.

习总书记在江西考察时指出“发展林下经济，开发森林食品，培育生态旅游.....要培育生态旅游、森林康养等新业态”等建设。

During General Secretary XI visited to Jiangxi province, his pointed out that “Developing the economy under the forest, developing forest food, cultivating eco-tourism .....and New forms of business such as eco-tourism and forest health should be cultivated”.

2022年版《中华人民共和国职业分类大典》中，森林康养师正式被纳入其中。森林康养师的工种主要包括森林康养师和园林康养师。

In the 2022 edition of the“People's Republic of China Classification of Occupations,” forest health division was formally included. The kinds of Forest Health work category mainly include Forest Health teacher and Landscape Health teacher.

接下来我们对森林康养进行一个简单的说明，首先是其概念。

Next, we carry on a simple explanation to the forest health, first is its concept.

森林康养是指依托优质的森林资源，将现代医学有机结合，配备相应的养生休闲及医疗、康体服务设施，在森林里开展以修身养性、调适机能、延缓衰老为目的的森林游憩、度假、疗养、保健、养老等一系列有益人类身心健康的活动。

Forest health refers to rely on high-quality forest resources, and equip with the corresponding health leisure and medical, recreation and sports service facilities, in the forest to develop self-cultivation, adaptation function, which may delay the aging of forest recreation, vacation, convalescence, health care, aging and a series of activities beneficial to human health.

森林康养类型主要有：首先，深度体验型，主要是在森林林下空间开展一些活动，供人亲临其境；其次是强身健体型，比较典型的有森林浴、森林瑜伽，还有森林快走、森林太极等等；第三是疗养度假型，结合特色的森林康养区设计、森林特色住宿、森林食疗以及芳香疗养等方式体现其康养的功能。

The main types of forest health are: Firstly, deep experience type, mainly carry out some activities in the forest space so that people can feel it; Secondly, physical fitness type, the typical examples such as typical forest bath, forest yoga, and forest walk,forest tai chi and so on;Thirdly, convalescent vacation type, which combines the design of the characteristic forest convalescent area, the forest characteristic lodging, the forest dietotherapy and the fragrant convalescence, and so on, to embody its convalescent function.

森林康养的作用从两方面来分析。第一是康养，主要是采取一定的措施、提供一定的环境，或是利用一定的技术来给人们提供这样一个比较舒适的环境，在一定程度上促进其身心发展。第二是森林的作用，首先森林对环境的作用，植物能够释放氧气，能够形成一个自然氧吧；其次有生态的作用，能够作为气候的调节器，也可作为空气的

净化器。森林对机体的作用，可从以下四个方面分析，首先它是有毒气体的防毒面罩，可以滞尘与吸收有害物质；其次它是自然界的“CDC”；第三，是噪声的隔音板；第四，是精神心理治疗师，能给人提供不同的场景满足其精神需求。森林中大面积的林木可以释放氧气，释放杀菌素，形成负氧离子，营造具有较高浓度的负氧离子浓度的微环境；同时可以释放一些芳香，尤其是芳香类的植物。

The function of forest health cultivation is analyzed from two aspects. The first is health, which mainly take certain measures, provide a certain environment, or use a certain technology to provide people with such a relatively comfortable environment, to promote their physical and mental development. The second is the role of forests, first of all the role of forests on the environment, plants can release oxygen, can form a natural oxygen bar,can also be used as air purifier. The effect of forest on organism can be analyzed from four aspects: Firstly, it is the gas mask of poisonous gas, which can catch dust and absorb harmful substances;Secondly,it is the“CDC”of nature;Thirdly,it is the noise insulating board; Fourthly, it is the psychotherapist, which can provide people with different scenarios to meet their spiritual needs. Large areas of forest trees can release oxygen, release fungicides, form negative oxygen ions, create a higher concentration of negative oxygen ions microenvironment; at the same time, can release some aromatic, especially aromatic plants.

负氧离子对人体的作用，可从以下几方面进行分析。第一它可以调节机体内在的生物节律；第二可以改善脏器功能；第三使血液、体液的pH值呈弱碱性；第四，改善脂质糖代谢，促进吸收消化；第五，活化NK细胞，抑制有害菌种增殖。负氧离子浓度是空气清洁程度的重要指标之一，亦与人体的健康水平有直接相关。相关研究表明负氧离子可以抵御癌细胞活性的NK细胞的功能，也可以抑制无色三烯以及血清胆固醇等的生成。针对负氧离子对人体的机能的作用，我们还会继续进行相应的文献检索及研究。空气离子作用于人的神经系统、体液等在一定程度上可以起到预防治疗疾病的功能。它的作用机制和作用方法及相应的措施、机理等，我们后续有待进一步的探索与研究。

The effect of negative oxygen ions on the human body can be analyzed from the following aspects. Firstly, it can regulate the body's internal biological rhythm; Secondly, it can improve organ function; Thirdly, the pH value of blood and body fluids is weakly alkaline; Fourthly, improve lipid glucose metabolism, promote absorption and digestion; Fifthly, activate NK cells to inhibit the proliferation of harmful strains. The concentration of negative oxygen ions is one of the important indicators of air cleanliness and is directly related to the health level of the human body. Relevant studies have shown that negative oxygen ions can resist the function of NK cells active in cancer cells, and can also inhibit the production of achrotriene and serum cholesterol. In view of the function of negative oxygen ions on the human body, we will continue to conduct corresponding literature search and research. Air ions act on human nervous system, body fluids, etc., to a certain extent, can play a role in the prevention and treatment of diseases. Its

mechanism and method of action and corresponding measures, mechanisms, etc., we need to further explore and study.

在基础理论研究的基础上，注重森林康养实践。对典型案例进行分析，如河北省林栖谷森林康养基地、丈河森林康养基地和福鼎白茶森林康养基地等等。另外典型森林康养基地进行实地调研以及实景的考察，通过案例分析以及实践的调研，深入其境，在此基础上对它进行具体的分析以及康养景观设计；除此之外还结合高校的环境进行园艺疗法以及师生心理辅导的实践的探索。通过理论的研究以及实践的探索以及实践的应用来提升康养森林、康养景观的建设，也为建设“健康中国”而提供一份力量。

On the basis of basic theoretical research, we should pay attention to forest health practice. The typical cases are analyzed, such as Linqigu forest health base, Zhanghe forest health base, Fuding white tea forest health base and so on. In addition, the typical forest health base field investigation and real scene investigation, through case analysis and practical investigation, in-depth environment, on this basis, the specific analysis and health landscape design; In addition, combined with the university environment horticultural therapy and teachers and students psychological counseling practice exploration. Through theoretical research and practical exploration and application of practice to improve the construction of healthy forest, healthy landscape, but also for the construction of "healthy China" and provide a force.

典型的案例,河北省林栖谷森林康养基地，总占地面积是2800亩，整体划分为森林康养、休闲度假、文化旅游三大产业；它主要提供了高品质的养生、养心、养老旅游、旅居服务。截止目前为止，已建成项目有：康养休闲街、悦享澜庭综合服务中心、禅院、医美中心 民族特色疗法、照护中心、药膳局、康复中心抗衰中心、慢病调理中心、体检中心、茶院、医疗中心、竹林书院、葛洪热灸、理疗中心、全国森林康养总部、悦享农庄、书田花海、度假公寓、林栖荟、接待服务中心、森林木屋、梦幻夜森林、儿童乐园、罗曼庄园鹿门歌餐厅等项目，着力创建“生态、康养、休闲、聚落”，塑造林栖谷品牌。2023年3月获取“国家级康养示范小镇”，“全国康养示范区”荣誉称号。秉承“做中国康养领军品牌”的企业愿景，围绕“用户至上，专注品质，担当有为”的核心价值观，致力于打造“京南森林康养头等舱”。

A typical case, the forest health base of Linqigu, Hebei Province, it covers a total area of 2800 mu, and it is divided into forest health, leisure vacation, cultural tourism three major industries; It mainly provides high-quality health, heart, elderly travel, sojourn services. Up to now, the completed projects are: Health and Leisure Street, Pleasant Enjoy Lanting Comprehensive Service Center, Zen hospital, Medical beauty center National characteristic therapy, care center, Medicated Diet Bureau, rehabilitation center, anti-aging center, chronic disease conditioning center, physical examination center, tea house, medical center, bamboo forest Academy, Gehong heat moxibustion, physiotherapy center, National Forest health Headquarters, Joy Enjoy farm, Shutian Flower Sea, holiday apartment, Lin

Qihui, reception service center, Forest wooden house, dream night forest, children's paradise, Romain Manor Deer Song Restaurant Other projects, focus on creating "ecology, health, leisure, settlement", shaping the brand of Linqi Valley. In March 2023, it won the honorary title of "National Health Demonstration Town" and "National Health Demonstration Area". Adhering to the enterprise vision of "being the leading brand of health care in China", focusing on the core values of "customer first, focus on quality, and play promising", we are committed to creating "Jingnan Forest Health First Class".

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Land reclamation and soil health in mining area

Forum 4 Global Initiatives in Harmony with nature

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Abstract
Presentation Transcript: Land reclamation and soil health in mining area

一、Soil and Soil Health

1.Soil is the foundation of food security, but also the cornerstone of biological health on Earth, healthy soil is a prerequisite for healthy life. The U.S. Department of Agriculture's Natural Resources Conservation Service defines soil health as the continued ability of soil to serve as an important biological ecosystem for sustaining plants, animals, and humans.

In China's Cultivated Land Quality Grade (GB/T 33469-2016), soil health is defined as the continuous ability of soil to maintain its function as a dynamic living system, mainly through soil cleaning capacity and biodiversity.

Some chinese scholars believe that soil health and human health, animal health, environmental health is a big organism, soil health and microbial cycle in the "soil-plant-human (animal)" continuum is the core to achieve "big health". Therefore, it has positive implications from the whole large biosphere. Soil health pays more attention to the internal relationship between soil physical function, chemical function and biological function, and emphasizes the synergistic improvement of soil biological function, crop yield quality and health.

2. Soil Microbiome and Soil Health

Soil contains the richest microbial communities on Earth, such as bacteria, archaea, fungi, viruses, protists and some micro-animals, which can be collectively referred to as the soil microbiome. They play a crucial role in the cycling of soil organic matter, nitrogen and phosphorus, regulate many ecological processes, such as the production and emission of greenhouse gases such as methane and nitrous oxide, and are closely related to soil health and crop production.

The soil microbiome meets most of the criteria indicating biological indicators of soil health and can be used as an important indicator of soil health. Studies have shown that soils with higher microbial diversity exhibit more ecological functions, higher resistance to environmental stress and higher crop productivity. In the future, the soil microbiome can also be regulated to improve soil health and crop yield, reduce the application of pesticides and fertilizers, so as to reduce resource consumption in agricultural

production and alleviate environmental pollution problems, and achieve the second "green revolution" in agricultural production.

With the breakthrough of high-throughput sequencing technology and the development of bioinformatics, the research on soil microbiome and soil health has been developing rapidly. Especially since 2012, the number of relevant research papers has increased linearly, indicating that the use of microbiome to study soil health has gradually attracted the attention of researchers.

Research direction: Coupling of soil microbiome function and soil health. The combination of microomics and stable isotope probes has changed people's understanding of the structure and function of microbial dark matter, revealed the rich microbial genetic diversity, and discovered new bioreactors and new biogeochemical approaches. These molecular biological analysis methods are useful for predicting the function of soil ecosystem services. Uncovering the mechanisms by which the soil microbiome drives soil health is critical.

二、 Land Reclamation and Soil Health in Mining Areas

1. Destruction of soil resources in coal mining area

Soil destruction in coal mining area is a phenomenon of soil degradation with local characteristics. In areas rich in coal resources, human coal mining activities not only promote economic development, but also cause serious ecological environment damage. During the mining process, on the one hand, the geological structure is destroyed by geotechnical stripping; on the other hand, a large amount of land is damaged and occupied, the surface vegetation is destroyed, the ecosystem is seriously damaged, and the carbon storage is greatly reduced. The changes of physical and chemical properties such as heavy soil capacity, small porosity, poor soil structure and poor nutrients in coal mining area seriously hinder agricultural production, thus limiting the input of plant litter and plant roots into soil organic carbon.

2.mining land reclamation

Due to the decomposition of vegetation litter and plant roots, soil bulk density, pH value, organic matter content and other soil physical and chemical properties are gradually improved in the reclaimed coal mine ecosystem. Soil carbon storage increases in pairs with the increase of litter biomass, which has a huge carbon sink potential. Land reclamation and ecological restoration in mining areas have dual sink enhancement effects, which can not only restrain the carbon emissions of damaged land, but also restore the original carbon sink, and further increase the carbon sink through the innovation of restoration technology, which has great development opportunities under the background of carbon neutrality.

三、Soil and Soil Fertility

1. Soil aggregate and soil fertility

The magic of soil lies in the aggregate structure of soil and the function it plays. The polymer organic matter of soil binds together nano-sized clay particles, larger silt particles and larger sand particles. The "glue" secreted by microorganisms and roots makes the aggregates further larger and more

stable. The soil has voids of different sizes and has the performance of water retention and ventilation. The aggregate and the space formed by it become the home of various organisms in the soil, and the aeration and water retention of the soil provide conditions for the survival and reproduction of various organisms in the soil.

2. Soil carbon cycle and soil health

The carbon cycle is the core of the material cycle in the Earth's ecosystem, and the increase in atmospheric greenhouse gases will have an important impact on global climate change. Two-thirds of the Earth's terrestrial carbon is stored in soil organic matter. Soil organic carbon pool is one of the largest and most active carbon pools in the surface layer of terrestrial ecosystems. It is generally believed that the global soil organic carbon reserve is 1500Pg based on 1 meter soil mass. Soil stores more carbon than all plants, all animals and the atmosphere combined, roughly four times that of living plants or more than three times that of the atmosphere. Small changes in the amount of soil carbon profoundly affect the concentration of carbon dioxide in the atmosphere and bring about climate change, so soil carbon sequestration is more significant for mitigating climate problems.

四、Scientific Soil Management to Promote Soil Health

It is well known that soil formation is an extremely slow process, and it is difficult to see soil changes on the human life scale, and it is difficult to feel the impact of soil changes on human health and the future. On average, it takes 500 years to form an inch of topsoil. In the absence of human activity, it has been estimated that it would take 1,400 years to lose an inch of soil, but it currently takes 60 years or less to lose an inch of soil under human influence. The properties of soil are easily changed dramatically by human interference. Therefore, soil scientific management is an important means to make soil healthy development and solve food nutrition and food security.

1. Soil biodiversity is key to soil management.

According to research, there are at least 8.7 million species of life on Earth co-existing with humans, and about a quarter of them are in the soil beneath our feet. The organisms in the soil participate in the cycle of geochemical elements, decompose and release various elements in the rocks, transform carbon, nitrogen, phosphorus, sulfur and other substances, and supply plant nutrients. A large part of the photosynthetic products of plants are secreted into the soil through the roots. Both the litter and the dead roots of plants serve as food for soil organisms, supporting them and further promoting the geochemical cycle of elements. Soil biodiversity is the engine of earth evolution.

Microbial diversity is closely related to agricultural production. There are abundant and diverse biological groups in soil, which play an important role in soil ecological functions such as accumulation and turnover of organic matter, fixation and transformation of nutrients, improvement of soil structure, decomposition and transformation of pollutants, and transmission and control of soil-borne diseases. Soil contains both organisms that are good for plants and pests that cause disease. The organisms in a healthy soil-plant system are

in a state of interdependent dynamic equilibrium, and soil biodiversity is the cornerstone of the system's balance and stability, but now the decline of soil biodiversity, this balance system is suffering serious damage.

2. Soil organic matter is the core of soil management.

Soil organic matter generally refers to the substances derived from life in soil, including soil microorganisms, soil animals and their secretions, plant residues and plant secretions in soil. Soil organic matter can be divided into four parts: the living biological part is the engine of soil nutrient transformation; the fresh soil organic matter such as dead leaves is the potential food source of soil organisms; the decomposed organic matter is the carbon source and energy of soil organisms, and also the "glue" to build soil aggregates; and the stable organic matter, or humus, is the nutrient reservoir of soil. Make the soil buffer. Organic matter has a positive impact on the physical, chemical and biological properties of soil. Therefore, the scientific management of soil organic matter is the key to "storing grain and technology".

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A Constructed Bridge between Chinese Elegant Ideology to Environmental Mobilization

Forum 4 Global Initiatives in Harmony with nature

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Abstract
Presentation Transcript: A Constructed Bridge between Chinese Elegant Ideology to Environmental Mobilization: From Life Posture of Scholar-Emits in Tang and Song Dynasty to the Awakening of Environmental Consciousness
A while ago I was very fortunate to learn something about the current state of biodiversity in China and the world, and I would like to share some of it with you here first. There are currently some 3,000 nature reserves of various levels in China for the special protection and management of biodiversity and its environment, geological formations, and water resources, including but not limited to Changbai Mountain, Wolong, Tianmu Mountain, and many more. With the disruption of the global ecological balance, a series of ecological crises have emerged such as forest decline, grassland degradation, soil erosion, etc. The losses due to environmental pollution and ecological degradation have accounted for 7-20% of China's GDP in the last two decades. In terms of species, the number of recorded species worldwide is 1.7 million, while there are probably hundreds of millions not yet known to humans, and they are dying out at a rate of 0.01%-0.1% every year, with threatened species accounting for 37% of the number of species assessed by the IUCN. Ecosystems and species are inextricably linked, and the extinction of one species is likely to disrupt the food chain and ecosystem in which it is found. Today, in the Anthropocene, the new geological epoch proposed by the Dutch chemist Paul Crutzen in 2002, we must understand the importance of sustainable development and the importance of preserving biodiversity, but the pursuit of speed is inevitably the opposite of sustainable development, so it is important to establish a good ideology and to further develop a new model for sustainable development through ideology. Therefore, it is necessary to establish a good ideology and provide a new model for sustainable development.
We are here hoping to put the idea of ecological civilization into practice, promote the building of a community of human destiny and a community of life on Earth, and deeply implement the spirit of the series of speeches made by our leaders at the 15th Conference of the Parties to the Convention on Biological Diversity (CBD COP15), and it is in this context that my research has been expanding. The Twentieth National Congress of the Communist

Party of China (CPC) has put forward the idea of "comprehensively promoting the great rejuvenation of the Chinese nation using Chinese-style modernization" as the mission of the Party in the new era and the new journey, emphasizing that modernization in which human beings and nature coexist harmoniously is one of the "five characteristics" of Chinese-style modernization and assigning the construction of an ecological civilization in the new era a new historical mission. Industrial civilization has achieved a great leap in the overall productivity of human society and created unprecedented material wealth, but it has also caused a high degree of tension in the relationship between human beings and nature. Solving the ecological crisis and building a modernization in which human beings and nature coexist in harmony is a challenge to be met by all humankind. Although my research does not directly serve biodiversity and Marxism, nor does it directly enable us to see the output of human well-being and a healthy planet, it can balance the resources of food, medicine, energy, clean air, and water that are now available to human candidates for biodiversity with the natural dilemmas of modern industrialization and excessive economic and trade activities.

This study investigated the relationship between “Chinese elegant ideology" and environmental mobilization to explore a new possibility of consciousness awakening for environmental protection. The author considered the life posture of scholar-emits in the Tang and Song Dynasties. It conveyed a demand for the inheritance of ideas and civilizations as well as elegant and sustainable life orientation. The study will further identify the ideological and spiritual guidance and practical demonstration of cultural ideology for environmental movements by considering environmental
mobilization's causes and influential factors in modern society. It is supposed to get a trade-off between natural integration and social integration. The elegant life dynamics of the Tang and Song Dynasties construct an interaction between nature and mainstream human social behavior, which dramatically reduces the segregation and contradiction between social and natural integration. This study will advocate a sustainable and contracted "new form" that appeals to human spirits by studying the selection of scholar-emits in the Tang and Song dynasties.

This paper is mainly based on the exploration of the relationship between China's sense of elegance and environmental mobilization. The word “elegance” (Feng Ya) originated from the Book of Songs (Shi Jing), one of the six Classics in China, which is divided into three categories: “Ethos” (Feng), “Hyms” (Ya), and “Eulogies" (Song). [临之以王制，考之以风雅。] Feng also known as the airs of the states, is a collection of local music from different regions. There are a total of 160 pieces, most of which are folk songs, and a few are works of nobility. Ya is the positive voice of the Zhou Dynasty, as the music used in court banquets or opening exercises in Jingdu of the Zhou Dynasty, called elegance sounds, refers to more traditional and formal music. Later generations often use “elegance” (Fengya) of the word gathered by “Ethos” and “Hymns” as a representative of nobility and style, as well as the concept of dignity. This idea has been praised for a long time, even in the Han

Dynasty Ban Gu wrote in the Eastern Capital Rhapsody (Dongdu Fu) that "Take the Ritual records of System of King as the criterion of application, and Feng and Ya as the standard of study. [1]" In the Tang Dynasty, Du Fu said, "No matter which kind of genre comes from Feng and Ya, they are for us to learn."[2], which showed the further inheritance and study of this thought. In addition to the simple study of the two volumes of the Book of Songs, elegance, the thought hidden in the book, has also been constantly studied. In Literary Selection Huang Fu Mi, there is a saying that "In the Warring States Period, the line of governing the country declined, and the idea of elegance was abolished."[3]. In the same period as Du Fu, Li Bai also wrote a poem that said that "the sage knows when to retreat and when to retreat, and the man lived in trouble despise the elegant (Li, Tang Dynasty).[4]" This is a kind of saying to all things, to the world full of enthusiasm and serious spirit, seeking health, a noble lifestyle, and aesthetic concepts. This Chinese elegant ideology in the paper is based on the understanding that "elegance" is a culture in China. The term elegance refers to the gathering, spreading, and practice of civilization. The Book of Songs reflects the harmonious, civilized, and orderly social life with Zhou Rites as the guide and background. This is a process of following the Zhou rites and giving benevolence, that is, studying and spreading culture. If in ancient times "elegance" was a positive action of embracing rituals and following civilization, today, we would consider it to have been developed at that time as an act of recognizing what civilization and culture were, seeing its value, and practicing that understanding in practical action.

Results:

The core of the culture of the Tang and Song scholars lies in seclusion, which is also the core of the elegance under the forest. It is a unique traditional way of expressing the idea of elegance. The so- called "hermitage" is the pursuit of simplicity and inner peace, the most direct expression of which is to live in seclusion and avoid the world. In the face of frustration, most ancient Chinese literati chose to seek their thoughts and consciousness by living in seclusion and solitude in the mountains. Since the Tang Dynasty, influenced by the culture of seclusion, the desire for seclusion and solitude was gradually expressed in many literary creations and paintings. The idea of seclusion expressed in Tang and Song's literary works mainly comes from the pursuit and aspiration of their interest in the secluded life, and the culture of seclusion essentially expresses many ideas of the value of life: dashing and elegant, transcendent, and clear, and following the nature. Therefore, in this section, we will explore the relationship between elegance consciousness and environmental mobilization by

analyzing and summarizing first-hand historical data, to explore the part of environmental consciousness that can be seen in the life posture of Tang and Song scholars, and the logic that elegance consciousness itself is a kind of environmental consciousness that can be awakened.

- - The integration of elegant thought and environmental protection of scholar-emits in the Tang and

Song Dynasties

- - The concept of natural and social integration in the sense of elegance construction and
  mobilization
- - Elegantconsciousnessisenvironmentalmobilization
  On November 18, 2016, the People's Daily said in its 2007 edition, “Looking at the past and present, elegance is no small matter. In a sense, enhancing our cultural self-confidence today includes carrying forward the elegant spirit in the excellent traditional Chinese culture.” Elegance should not be held in a negative attitude. It is the essence of culture and civilization, a part of China's traditional culture that is worth carrying forward and inheriting. It is based on China's traditional culture as an auxiliary to the superstructure of socialist ideology with Chinese characteristics with strong cohesion and guiding power. Based on the Discussion on the Tang Code and Wu Zimu's (1980) Meng Liang Lu volume 12 in the Song Dynasty, we know that in the Tang and Song Dynasties, when the basic social and economic system had been established, the problem of environment was already seen by legislators and recorded in the rules of governance and governance. At the same time, its law is inherited from the Zhou Rites Qiu Guan method of cleaning the urban environment, which further shows the role of elegance from the source of Zhou Rites in the inheritance of etiquette and civilization in environmental protection. From the ideological level of China's traditional culture further study, the study of elegance only brings benefits and no harm, it is to express a more basic and retro concept, a more original ecological consciousness of nature, and a retreat from the present world to return to the original ideas.

  1) Promote the dynamic transformation of spiritual civilization implemented through the historical experience inherent in the tradition This paper hopes that the idea of elegance will be reconsidered in the application of environmental protection mobilization, and based on traditional historical experience, the socialist ideology of elegance adapted to the logic and thinking of a new China will be constructed. On this basis, it advocates and demands the passive and dynamic transformation of spiritual civilization. This paper holds that this dynamic transformation will also be integrated into the idea of “the greatest truths are the simplest” advocated in the Tang and Song dynasties. This thought is mainly manifested in the song culture of the integration of the three religions, Confucianism, Buddhism, and Taoism. Some are high moral integrity, some are the free and easy way of “there are no strings on the primitive zither, so use the headscarf made of kudzu to filter the wine素琴本无弦，漉酒用葛巾。”, some are the thinking of inner understanding, and some are the clarity of “do not feel happy or depressed because of the quality of foreign things and their gains and losses”. What this kind of thinking advocates is not

only the concept that the ordinary mind is Dao but also the emphasis on individual social responsibility. Most of the paintings above show individual behavior, which is also advocated and emphasized, because only when individual social responsibility is effectively played and utilized in environmental protection can we better obtain and influence the behavioral results of group environmental protection.

2) Environmental protection ideology under the guidance of elegant thinking in modern society coexists in Doubletree and secular life

The difficulty of enjoying both spiritual enjoyment and material desire was reflected in the Tang and Song dynasties when the thought of elegance flourished. This contradiction between elegance and secularization comes from the distinction between economic conditions, just like Meng Haoran's "wanting to retreat to the mountains and forests for a long time, but struggling without money一丘尝欲卧，三径苦无资。", but it also comes from the core ideology that values spirit and light material. In Confucian culture, reclusive people often fight against material poverty with their moral purity. This is why it is said in the Analects of Confucius that "eat coarse grain, drink white water, bend your arms as pillows, and the fun is in the middle饭疏食，饮水，曲肱而枕之，
乐亦在其中矣。" Besides, in Zhuangzi, it is said that "communicate with the heaven, earth, and spirit alone, but do not despise all things and condemn right and wrong[6].独与天地精神往来，而
不敖倪于万物。" In modern society, the environmental protection ideology we can construct under the guidance of elegant thinking should also be a "detachment" concept as unconventional and
original. This requires the architect of this ideological leading environmental mobilization to stand in a higher position to think. The process of building should be like the "seclusion" of the Tang and Song Dynasties. The result of construction should guide the formation of a strategy, which is not to solve the contradiction between material desire and spirit, but to deepen the implementation of the concept of spiritual self-sufficiency, to transcend the desire itself, satisfy and show the spiritual charm, and reduce the massive consumption and waste of material. The separation between spiritual enjoyment and material enjoyment is in harmony with worldly life. This may need to be supported by self-regulation laws and penalties, as well as by business and policy. Cultivating individual cultural identity will give the whole society a strong sense of responsibility for environmental protection.

3) Construction of a strategy guiding the contemporary context in the view of Chinese elegant ideology

The philosophical form of the new civilization emphasizes the wholeness of man and nature and opposes the unilateral emphasis on the opposition between man and nature, as well as the isolation of man and nature. The philosophy of ecological civilization observes, thinks, and understands the world from the perspective of ecology, in which man and nature are in harmony and symbiosis, and believes that the world is a composite ecosystem jointly composed of man and nature, with an emphasis on wholeness and

systematicity, which is a living community of life. General Secretary Xi Jinping has proposed the construction of a community of life between man and nature, placing it in the macro context of the community of human destiny. Today's China regards the construction of ecological civilization as very important, and to promote this non-dichotomous social and ecological construction of harmonious coexistence between human beings and nature, the integration of traditional Chinese culture is necessary. We need to use Chinese elegant ideology to integrate the habits of the Tang and Song scholars, who are the form of traditional culture and historical civilization, into modern society and to combine Marxist science and its cultural aspects into a significant and sustainable spiritual pillar.

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Forum 5 Hydrogen Energy, an alternative for the future

Forum 5 Hydrogen Energy, an alternative for the future		
Chair:	Yang Shanshan (Jinzhong College of Information)	
20:00 - 20:04	Introduction to the forum	
Time	**Speaker**	**Affiliation**
20:05 - 20:16	Prof. Kong Yanqiang	School of Energy Power and Mechanical Engineering, North China Electric Power University, and Deputy Director of the Hydrogen Energy Teaching and Research Office
20:17 - 20:27	Zhang Ruixue	Regional Manager of Beijing China Electronics Fengye Technology Development Co., Ltd.
20:28 - 20:39	Prof. Chen Dongfang	University of Science and Technology Beijing
20:40 - 21:00	Yang Kai	Beijing Hydron New Energy Technology Co., Ltd. Founder/General Manager
21:01 - 21:12	Yang Wei	Sales Manager of Carbon Energy Technology (Beijing) Co., Ltd.

Hydrogen energy stands as a pivotal alternative for the future, offering a transformative solution to the pressing challenges of climate change and sustainable energy. As a clean and versatile energy carrier, hydrogen holds the potential to revolutionize various sectors of our economy, including transportation, industry, and electricity generation. Its production, particularly through green methods like electrolysis powered by renewable energy, promises zero-emission energy. Hydrogen can serve as a storage medium for intermittent renewable sources, addressing the challenge of energy storage and grid stability. By fostering hydrogen adoption, we can significantly reduce carbon emissions, enhance energy security, and drive the transition to a more sustainable and resilient energy landscape, marking a critical step toward a greener and more environmentally conscious future.

Outlook for the celebration of the WGSD in 2023

The popularization of science ought to touch on issues such as the Sustainable Development Goals (SDGs), biodiversity conservation, and green development. These are areas that need immediate attention to realize the 2030 Agenda for Sustainable Development. It is feasible to design programs that can be sustainable over time and even included in university curriculums to engage youngsters to popularize science and scientific education. Efforts to improve the popularization of science can be directed in at least three directions: the general public, children and young adults, politicians, and entrepreneurs.

Also, initiatives to make scientific and technological knowledge accessible and familiar to the general public should be complemented by educational reforms that support the role of science teaching in primary and secondary schools as well as a significant expansion of hands-on experimental activities. After all, science is an experimental endeavor. We have entered a period of technological prosperity.

The advancement of science has never been so rapid, the scope of science has never been so broad, and the responsibility of fostering and promoting scientific culture has never been so vital and weighty as it is today. In our quest to popularize science, we must promote scientific culture as a way of life, viewing it as the most important component of advanced culture and the cornerstone of science and technology power. This is the only way to advance our scientific cause, and it is also our historical responsibility.

How did the Science Culture Construction start?

During the "1st Annual Meeting on Science Literacy 2021: A Prerequisite for Stimulating Climate Change Engagement" organized in November 2021. Several institutions and organizations from different fields around the world including research, academia, education, innovation, and technology, agreed on the First Declaration on Science and Climate Literacy across the Latin American and Caribbean regions. In 2022, we prepared a second version of the declaration, and in 2023, we launched its third version inviting the community of researchers, practitioners, scientists, activists, and the general public to work together to promote the harmonious development of science and technology, to contribute to the improvement of public science literacy, climate literacy, biodiversity conservation, green science, and green development to create a better future for the whole of human society.

Figure 3. The first version (2021) of the Declaration on Science and Climate Literacy. Source: Andean Road Countries for Science and Technology (ARCST)

In 2023 the updated version of the Declaration on Science and Climate Literacy is shown below.

Figure 4. Third version (2023) of the Declaration on Science and Climate Literacy across Latin America and the Caribbean. Source: Andean Road Countries for Science and Technology (ARCST).

How are SCC and the WGSD related?

The "South-South Biodiversity Science Project (SSBSP)" initiated by the China Biodiversity Conservation and Green Development Foundation (CBCGDF) and the Green Science Project (GSP) initiated by the Andean Road Countries for Science and Technology (ARCST) joined efforts to start the first of the four phases of the SCC through Science Popularization to raise awareness of climate change in Latin America and the Caribbean.

The project in Latin America and the Caribbean aims to develop a foundation for the scientific cause and build a community with a shared future for mankind.

If you want to know more about the "New Paradigm for Collaboration: The Science Culture Construction Fostering Innovation and Green Development" kindly visit the following links.

1 http://www.cbcgdf.org/English/NewsShow/5012/21823.html
2 http://www.cbcgdf.org/English/NewsShow/5008/21612.html
3 https://journalasc.org/2022/11/17/international-green-science-academy-network-igsan-an-initiative-of-the-south-south-biodiversity-science-project/
4 https://cbcgdf.wordpress.com/2022/09/05/the-south-south-biodiversity-science-project-was-introduced-in-the-fifth-forum-on-china-and-latin-american-countries-lac-dialogue-between-civilizations/
5 https://journalasc.org/2021/08/13/scientific_literacy_gsp_1/
6 http://z.cbcgdf.org/nd.jsp?id=580&_sc=3
7 https://journalasc.org/annual_meeting/
8 https://mp.weixin.qq.com/s/UpCYN7c1bs09ysKVJg3Hyg
9 https://onlinemac.wixsite.com/arcs
10 www.cbcgdf.org
11 https://revistas.univalle.edu/index.php/jlsc, https://journalasc.org/
12 https://onlinemac.wixsite.com/wwwelektrocom
13 https://www.univalle.edu/
14 https://www.uceva.edu.co
15 https://www.unesco.org/en/media-information-literacy#:~:text=Media%20and%20information%20literacy%20empowers,to%20information%2C%20and%20sustainable%20development.
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18 https://www.wosl.org.cn/en/NewsCenter/GlobalVision/art/2023/art_58cc7472b2124bb1ae0d6d314af93ef7.html (in English)
19 https://www.wosl.org.cn/xwzx/gjsc/art/2023/art_75aa87dffcc2436db115595bdff51c49.html (in Chinese)20 https://journalasc.org/blog/igsan/scc/21 https://journalasc.org/2023/01/25/science_lac/22 https://baike.baidu.com/item/%E4%B8%96%E7%95%8C%E7%BB%BF%E8%89%B2%E7%A7%91%E5%AD%A6%E6%97%A5/62454248?fr=ge_ala23 https://baijiahao.baidu.com/s?id=1751740800246938865&wfr=spider&for=pc24 http://www.cbcgdf.org/English/NewsShow/5007/22019.html

Invitation to the SFAST 2023 Contest

Contest Announcement
The Science Culture Construction towards a "Sustainable Future through Applications of Science and Technology"

Forum 5 Hydrogen Energy, an alternative for the future

Purpose

The Science Culture Construction towards a **"Sustainable Future through Applications of Science and Technology – SFAST 2023"** contest is launched by the Andean Road Countries for Science and Technology **(ARCST)**, the International Center for Innovation in Science and Technology for Latin America and the Caribbean **(CICITLAC)**, the International Green Science Center for Latin America and the Caribbean **(IGSCLAC)**, **UNESCO** Media and Information Literacy, and the Journal of Latin American Sciences and Culture **(JLASC)**.

Figure 5. Official logo of the **"Sustainable Future through Applications of Science and Technology – SFAST 2023"**

Eligibility

The **SFAST** is open in three categories:

• High school students of any year.

• University students.
• General public.

Benefits for the participants

It is a fantastic opportunity to demonstrate the positive actions for nature that take place in your realities through written essays and/or technological and scientific research and innovation projects. Through the competition, competitors hone their academic and professional skills and demonstrate their knowledge of sustainability, ecological development, and biodiversity conservation.

Bases for the competition

Competitors must build a compelling argument using real-world examples from their studies, research, innovations, or ideas. Projects must focus on arguments supported by facts, and support based on data and references; they must be recorded and signed by parents, teachers, guardians, or some other authority that can provide veracity of the information presented by the participant. The language of the submitted materials can be English or Spanish.

The winners' work will be published on the website of the Journal of Latin American Sciences and Culture at https://journalasc.org/es/ as well as on the Publisher's website https://revistas.univalle.edu/index. php/jlsc and will be available to the entire Green Science community in general.

Overview of the topics

The written projects or essays will refer to the following topics:
• The trends, opportunities, and challenges of environmental sustainability,
• green buildings and environmental sustainability,
• transport sustainability,
• environmental education for sustainability,
• strategic environmental sustainability,
• the role of food for sustainability in the built environment,
• greenwashing: total environmental sustainability?
• The link between environmental sustainability and social sustainability.
• Achieving sustainability in the environment, is there a relationship between economic development and environmental sustainability?

Rules for the presentation of essays:

1. The presentation format includes a Word document with the text written in APA format according to the format that can be downloaded from the following link: https://journalasc.org/es/call_for_papers/ in the section that says "To download the template, click here"

2. Participants must choose one of the essay topics and write a response with a strict limit of 500 words. That includes a small abstract that summarizes the main idea of the essay or proposal.

3. The submission must be made through editorial@journalasc.org and participants are limited to submitting one essay and only the first submission is considered. Each essay submission will have a $20 reading fee that must be paid at the time the essay is submitted. If this fee will impose a significant financial burden on your family, please email us requesting the waiver. The deadline to submit the essay is December 2, 2023, at 23:59 GMT+8.

4. Online test for non-plagiarism and "non-use" of GPT chat. Both tests are carried out online and you must attach the report when sending your essay along with the bank transfer receipt from the bank. If the document contains more than 2% plagiarism, it will be automatically disqualified from the competition.

Rules for project presentation:

1. The presentation consists of preparing a video of no more than 3 minutes that briefly shows the results of the Project with essential visual elements that validate what is described in the Word document that must contain only 500 words that can be downloaded here. In the section that says "To download the template, click here". The document will have to be signed by the "viewer" who may be the educational institution that attends, or the tutor or parent, or representative who confirms the veracity of the information shared, just as it will be necessary to include the viewer in the video to also confirm its real existence.
2. The presentation must be made through the email editorial@journalasc.org and participants are limited to sending one project and only the first presentation is considered. Each essay submission will have a $20 reading fee that must be paid at the time the essay is submitted. If this fee will impose a significant financial burden on your family, please email us requesting the waiver. The deadline to submit the essay is December 2, 2023, at 23:59 GMT+8.

Key dates

September 2, 2023: publication of the contest call
23:59 GMT+8, December 2, 2023 – deadline for project submission
December 7, 2023: Finalists notified
December 9, 2023: notification of the winners and publication of the results during the celebration of World Green Science Day (WGSD – 2023).
More information about the WGSD can be found here.

Awards

The scientific committee or judges of the competition is made up of a group of international experts from 4 continents. The judges' decisions are final. Prizes will be awarded for the best essay and the best Project. The work of the top three participants will be published (with the author's permission) in the

Journal of Latin American Sciences and Culture (JLASC). Likewise, the three winners will receive a digital certificate that will be delivered in a special ceremony during the celebration of World Green Science Day. They will also be invited to become members of the Andean Road Countries for Science and Technology (ARCST), the International Center for Innovation in Science and Technology for Latin America and the Caribbean (CICITLAC), and the International Green Science Academy Network (IGSAN).

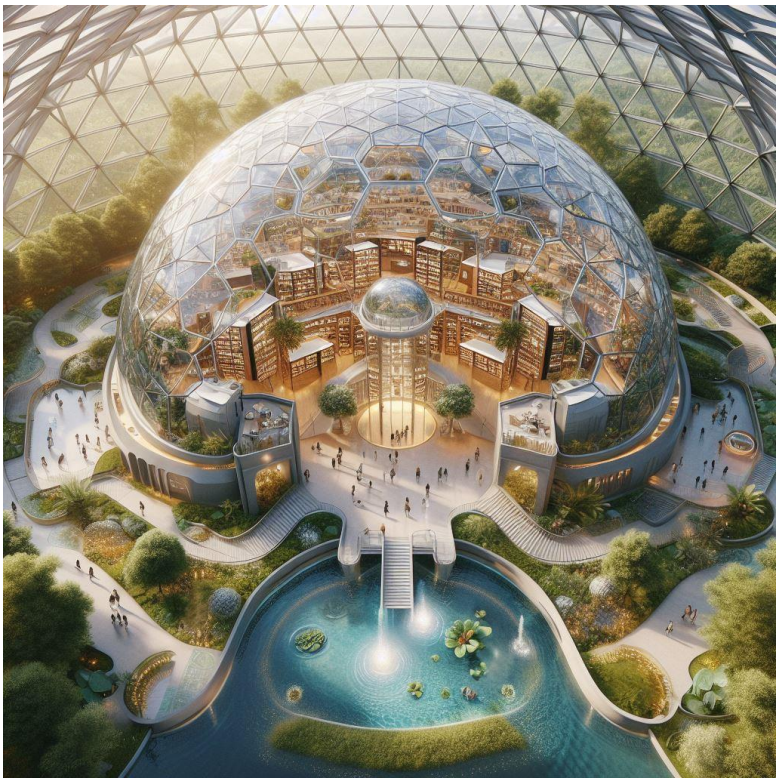
Terms and Conditions

• The word limit of 500 must be strictly adhered to. Any words above the limit will be truncated. This limit excludes abstracts, references, footnotes, titles, headers, and footers.
• projects must be written solely by the participant. Any external help must be declared at the beginning or end of the test.
• Only your first submission will be accepted. No more submissions will be read.
• References must be included, any plagiarism will lead to disqualification.
• References must be in Chicago or APA format.
• The only accepted document format is PDF. No other format will be accepted nor will refunds be made to those who do not follow this rule.
• No refunds are granted.
• The essay must not participate in any other contest or be published anywhere else, the project may have been presented in its educational institutions or have previously participated in a national category of projects related to the topic.
• Individual feedback on essays will not be given.
• The decisions made by the Scientific Committee of the competition in the final round of adjudication are final.
• Winners agree to have their names published on the ARCST and JLASC official websites.

If you have further questions kindly send us an email to e**ditorial@journalasc.org**

Launching of the Green Science Library (GSL)

(all the materials shared by our distinguished speakers during the WGSD - 2023 will be archived in the GSL)



Ladies and gentlemen, esteemed guests, and dedicated contributors,

Today marks a momentous occasion as we gather to celebrate the official launch of the Green Science Library. This endeavor is not merely about inaugurating a digital repository; it's about unlocking the doors to a wealth of knowledge, innovation, and collaboration in the pursuit of a sustainable future.

The Green Science Library is a testament to the power of collective efforts. We stand on the shoulders of individuals and institutions that have tirelessly contributed to this repository, sharing insights, research, and solutions that propel us towards a greener tomorrow.

In this virtual haven, the convergence of science, technology, and environmental consciousness is evident. It's a space where ideas take root and innovation flourishes—a living testament to our commitment to environmental stewardship.

As we launch the Green Science Library, let us reflect on the journey that brought us here. It's a journey of collaboration, of pushing boundaries, and of uniting diverse voices for a common cause. Every document, every study, every contribution within this library is a building block in the construction of a sustainable future.

We extend our deepest gratitude to all who have played a part in making this initiative a reality. Your dedication and passion are the driving forces behind this library, and your commitment to environmental sustainability resonates far beyond these digital shelves.

So, let us step into the future together, armed with the knowledge housed in the Green Science Library. May it be a source of inspiration, innovation, and collaboration for generations to come.

Thank you, and let the journey towards a greener, more sustainable world begin.

Bipochito

Biopochito, the innovative project spearheaded by the Andean road countries for science and technology, holds the transformative potential to revolutionize the way we approach and learn about green science. By integrating cutting-edge biotechnological advancements, Biopochito not only serves as a beacon of environmental sustainability but also as an educational catalyst. This project transcends traditional learning methodologies, offering a dynamic platform that engages learners in real-world applications of green science. Through interactive modules, hands-on experiments, and immersive experiences, Biopochito has the power to cultivate a generation of environmentally conscious individuals who not only understand the intricacies of green science but are inspired to actively contribute to a more sustainable future. The project's holistic approach can reshape educational paradigms, fostering a profound connection between learners and the vital principles of environmental conservation.

Centro Internacional de Ciencias Verdes para los países de América Latina y el Caribe (IGSCLAC)

Fig. 6.- Official Logo of IGSCLAC

The Construction of any endeavor requires a systematic approach. A step-by-step process ensures that the building blocks are correctly interconnected and cemented. On the other hand, Science Culture is the acquisition of ideas, habits, and actions that permeate the walls of scientific and academic institutions, to influence society and establish pathways to disseminate knowledge, promote innovation, economic and technological development, and the general improvement of human life.

It is in this sense, that the Andean Road Countries for Science and Technology (ARCST) have been committed since 2018 to building the Science Culture Construction (SCC) across the Latin American and Caribbean countries. Their efforts have received support from different Universities, academic and research institutions, the public and private sectors, and other social strata.

In 2021, the Declaration of Climate and Science Literacy across Latin America and the Caribbean (DCSLAC) was promulgated with the collaboration of several experts from all over the world. In 2023, the Declaration has been revised and published in its third version.

Nowadays, mutual collaboration is essential for the development of science and technology. With the same spirit, we emphasize the importance of collaboration, mutual understanding, friendship and utilizing mechanisms of science popularization, and the promotion of technology and innovation in different areas of knowledge. That is why, we are honored to launch the International Green Science Center for Latin America and the Caribbean countries (IGSCLAC) longing to connect the community of researchers, professors, students, and the community in general between Latin America, the Caribbean, and the world. We plan to engage society in actions that favor the well living and well-being in harmony with nature, utilizing scientific, technical, and educational methods for this purpose.

The launching ceremony is planned to be held on June 26th at 8 pm (Beijing time) and it will last for one and a half hours. We invite you to build it together and create more opportunities to converge into topics that are beneficial for Green Development and can be useful to promote knowledge transfer, the diffusion of information, science popularization, research, and innovation.

We believe that this will be an excellent opportunity to communicate and exchange views and break the geographic and language barriers that sometimes are responsible for ineffective communication in the international field. We look forward to your participation and hope to see you during the launching ceremony of the IGSCLAC.

For more information please send us an email to: editorial@journalasc.org

If you want to see the video of the launching ceremony of the IGSCLAC kindly visit the following link: https://rb.gy/bjedm

If you want to read the news of the launching ceremony of IGSCLAC kindly click here.

Let this be the opportunity to express our feelings of consideration and appreciation.

Organizing Committee

IGSCLAC

Apertura al Centro Internacional de Innovación en Ciencia y Tecnología para Latinoamérica y El Caribe (CICITLAC) para hacer frente a la triple crisis planetaria

Fig. 7 Poster oficial de la invitacion a la ceremonia de lanzamiento del Centro Internacional de Innovacion en Ciencia y Tecnologia para Latino America y el Caribe (CICITLAC)

El día 09 de noviembre de 2023, representa una fecha histórica para la comunidad científica e investigadora de Latino Americana y del Caribe. Nos

complace comunicarles oficialmente el lanzamiento del Centro Internacional de Innovación en Ciencia y Tecnología para Latino America y el Caribe (CICITLAC). Un proyecto en el cual los participantes de la misma lo han estado realizando por mas de dos años. CICITLAC es el resultado del laborioso trabajo de un equipo de emprendedores de varios paises latino americanos, del Caribe y de China que creen y confian en que la innovación, el desarrollo cientifico y tecnológico pueden traer numeros beneficios a los participantes de las mismas. Los fundaores del CICITLAC son la Ing. Cristina Morataya, el Ing. Manuel Díaz Pantoja, y el Prof. Dr. Marco A. Cabero. Los asistentes registrados en el lanzimiento del CICITLAC pertencen a los siguientes países: Colombia, México, Bolivia, Guatemala, China y El Salvador.

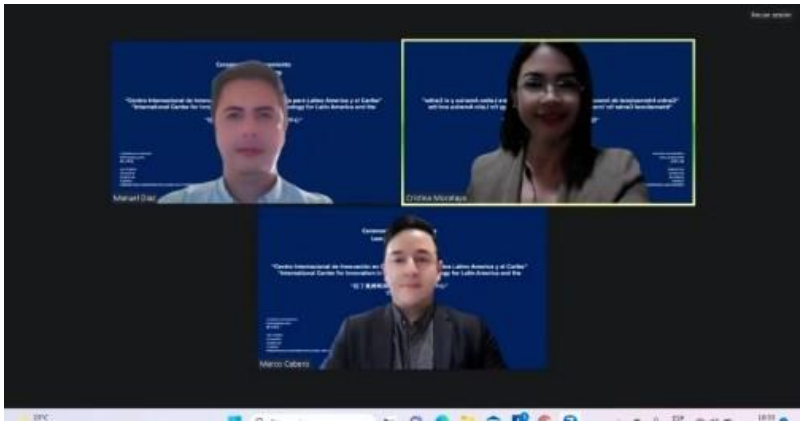


Fig. 8.- Fotografía con los fundadores del Centro Internacional de Innovacion en Ciencia y Tecnología para Latino America y el Caribe (CICITLAC) el 09 de noviembre de 2023, 19:00 horas (El Salvador).

El CICITLAC representa el trabajo de cinco empresas/instituciones comprometidas con alcanzar los objetivos de desarrollo verde sostenible, la popularizacion de la ciencia, y la conservacion de la biodiversidad, brindando soluciones innovadoras en el marco de las metas del desarrollo sostenible. A continuacion se realiza la presentacion de las mismas.

Fig. 9.- Logos de las instituciones miembro del CICITLAC durante la ceremonia de lanzamineto el 09 de noviembre de 2023, 19:00 horas (El Salvador).

Andean Road Countries for Science and Technology (ARCST)
Fundada en 2018, ARCST es una organización científica internacional basada en los principios generales de "consulta conjunta, esfuerzo conjunto e intercambio conjunto" y la promoción del desarrollo compartido y el logro de los ODS de la ONU. Los miembros de ARCST incluyen academias nacionales de ciencias, universidades, institutos de investigación y organizaciones internacionales. El ARCST se compromete a desempeñar un papel eficaz en la catalización y aplicación de iniciativas científicas internacionales innovadoras para construir una comunidad de la humanidad con un futuro compartido. La Ciencia, la Tecnología, la Innovación y el Desarrollo de Capacidades (STIC) son esenciales para el progreso y el bienestar de las sociedades humanas y ARCST está especialmente interesado en cooperar y asociarse con aquellos que deseen colaborar en estos esfuerzos. Promover la divulgación de la Ciencia, el intercambio de conocimientos, la difusión de información, el aprendizaje mutuo y la colaboración. La visión de ARCST es convertirse en una organización científica internacional de impacto global en la catalización e implementación de programas, iniciativas y acciones innovadoras concretas en Ciencia, Tecnología, Innovación y Desarrollo de Capacidades (STIC) para la promoción del desarrollo compartido y el avance de los Objetivos de Desarrollo Sostenible (ODS) de la ONU

Elektro High Tech Co., Ltd.
ELEKTRO HIGH TECH CO. LTD, fundada en 2020, Elektro tiene la misión de mejorar la vida de las personas mediante una innovación significativa. Al mismo tiempo, tiene la visión de inspirar al mundo con tecnologías, productos y diseños innovadores que enriquezcan la vida de las personas y contribuyan a la prosperidad social creando un nuevo futuro en armonía con la naturaleza.

EIS POWER SA DE CV (EIS),

EIS se destaca como una empresa líder en el mercado eléctrico, especializándose en diversos mercados energéticos de Centroamérica. La empresa opera tanto a nivel regional como local, participando activamente en transacciones en el mercado spot y en el mercado de futuros. Además, EISPOWER ofrece servicios de consultoría en gestión energética, lo que aumenta significativamente los ingresos de los generadores y genera ahorros sustanciales para los usuarios finales.

QUANTUM MOTORS S.A. DE C.V.,

QUANTUM se erige como pionero de la electromovilidad en América Latina, operando en ocho países y destacándose por su dedicación a la innovación y la sustentabilidad. La empresa está fervientemente comprometida con la democratización de la tecnología, con el objetivo de hacer que los vehículos eléctricos sean más accesibles a un público más amplio y así reducir la huella de carbono en la región. Su enfoque va más allá de la producción de automóviles, abrazando la misión de dignificar el transporte a través de programas educativos y de sensibilización que promuevan una movilidad responsable y respetuosa con el medio ambiente. En resumen, QUANTUM no sólo redefine cómo nos movemos sino que también lidera el camino hacia un futuro más sostenible y ecológico para América Latina.

VEKPOWER S.A. DE C.V.

Vekpower es una empresa dedicada a brindar soluciones energéticas inteligentes, apoyar estrategias de negocios sustentables y, sobre todo, acompañar el camino hacia la sustentabilidad a través de acciones concretas como la producción de energía limpia y la movilidad eléctrica. VEK se destaca como una empresa líder en el diseño y construcción de sistemas solares fotovoltaicos, ofreciendo soluciones sostenibles de alta calidad. Además de implementar sistemas solares eficientes, brindamos servicios especializados de capacitación y consultoría. Nuestros programas educativos ayudan a individuos y empresas a aprovechar al máximo la energía solar, mientras que nuestros servicios de consultoría mejoran la eficiencia energética, reducen costos y promueven prácticas amigables con el medio ambiente. En VEK, estamos comprometidos con un futuro más verde y más eficiente energéticamente, transformando la forma en que se genera y utiliza la energía para un mundo más sostenible.

Por medio de sus campañas de difusión masiva han alcanzado un gran impacto, no solo en Latino America sino tambien en otros continentes,

formando acuerdos para llevar adelante acciones de impacto positivo en busca de la sostenibilidad, uniendo varios sectores, entre ellos el público, privado, academico, industrial, y educativo. Es por ello que, motivamos a todos los sectores a sumarse a esta iniciativa. Confiamos plenamente que el desarrollo sostenible de un país está directamente relacionado con su crecimiento cientifíco y tecnologíco, enfocado a brindar soluciones inteligentes para dar atención a las problemáticas actuales relacionadas con el cambio climatico, la reduccion de la huella de carbono, la popularizacion de la ciencia verde, el desarrollo verde, la proteccion de la biodiversidad que se encuentran enmarcadas triple crisis planetaria. A través del CICITLAC, responderemos de forma oportuna a estas necesidades a traves del marco del nuevo paradgima de cooperacion denominado la Construccion de la Culture Cientifica propuesto por el Andean Road Countries for Science and Technology (ARCST) desde el 2018 y que a unido a cientos de expertos e instituciones dedicas al desarollo sostenible en la region latino americana y el mundo.

Como primera actividad del CICITLAC les invitamos a participar de la celebracion dia mudial de la ciencia verde (World Green Science Day – WGSD – 2023) que se llevara a cabo el 9 de Diciembre de forma virtual a traves de la plataforma Zoom. Durante la celebracion del WGSD -2023, se explorarán las investigaciones, prácticas, ideas innovadoras y acciones tomadas por diferentes organizaciones alrededor del mundo para involucrar a la sociedad en la acción contra el cambio climático, la proteccion de la biodiversidad y el desarrollo verde.

Desafiamos a la comunidad académica a adoptar nuevas perspectivas y construir nuevas amistades sólidas que se extiendan por todo el mundo. El WGSD será inspirador a través de nuestras sesiones de oradores invitados y temas brillantes. El tema de este año es “El nuevo paradigma de la cooperación: la construcción de la cultura científica que fomenta la innovación y el desarrollo verde”, especialmente centrado en “La ciencia verde y el desarrollo sostenible en la práctica”.

Esté atento a nuestras noticias, dentro de poco vendrán más sorpresas.

Gracias,
A nombre del CICITLAC: Cristina, Manuel, y Marco A.
Edicion: Korn, Grace, Paul, Dimitri, Sunshine.

A New Blueprint of Collaboration the Science Culture Construction fostering innovation and green development

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Abstract

In an era defined by the urgency of environmental challenges, a transformative paradigm is emerging—a fusion of collaboration and science culture construction that catalyzes innovation for sustainable green development. This abstract explores the dynamic interplay between collaboration and science culture, emphasizing their collective impact on fostering groundbreaking solutions to propel us into a greener and more sustainable future. The new paradigm of collaboration transcends disciplinary boundaries, encouraging the convergence of diverse perspectives and expertise. This abstract contends that the cross-pollination of ideas and skills, facilitated by collaborative efforts, cultivates an environment ripe for innovation. The synthesis of collective intelligence and the establishment of a collaborative ecosystem become essential drivers for addressing complex environmental issues, leading to novel solutions in the realm of green development. At the core of this transformative paradigm is the construction of a vibrant science culture. As individuals and communities embrace a culture deeply rooted in scientific principles, curiosity becomes a guiding force, and a shared commitment to environmental stewardship takes root. This abstract highlights the role of science culture construction in nurturing a mindset that values sustainability, resilience, and the pursuit of knowledge—a mindset that is fundamental to driving innovation in the context of green development. The abstract further underscores the positive feedback loop between collaboration, science culture, and innovation. Collaborative endeavors are shown to amplify the impact of science culture by fostering an open exchange of ideas and knowledge. Simultaneously, the construction of a robust science culture nurtures an environment conducive to effective collaboration, creating a symbiotic relationship that accelerates progress toward sustainable, green solutions. This abstract delves into the advent of a new era where collaboration and science and culture construction converge to shape the future of green development. The collaborative spirit, coupled with a strong foundation in scientific principles, emerges as a powerful catalyst for transformative innovation. As we navigate the complexities of our environmental landscape, the promise of this harmonious synergy offers a hopeful vision for a world where collaboration and science culture propel us toward unprecedented levels of sustainability and innovation. The Science Culture Construction

(SCC) is a new blueprint of collaboration that aims to foster innovation and green development. This blueprint is based on the idea that green development can become a cultural aspect of society to make it more sustainable in the future. The SCC is dynamic and requires a collaborative effort between different sectors of society that can work together to create new solutions to some of the world's most pressing problems in the field of green development and biodiversity conservation. In this chapter, the focus is drawn to green science popularization, green development as well, technologies and applications developed within the SCC. The connection between the SCC, green development, biodiversity conservation, and green science is explained, providing more hints on how the SCC paradigm is helping us to create a more sustainable future for all.

Introduction

Scientific progress and its applications, and the science culture construction are two interconnected paradigms. Although it has been common to hear about women's rights, children's rights, the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, and the right to work and education, few were heard about the right to enjoy scientific progress and its application which is a fundamental human right that is recognized by the United Nations in the Article 15 of the International Covenant on Economic, Social and Cultural Rights. This right ensures that everyone has access to the benefits of science and its applications necessary to live a dignified life, including scientific knowledge. It also guarantees opportunities for all to contribute to science and scientific research, and the information necessary for individuals and communities to engage in decision-making regarding areas of research and development (United Nations, 2021).

Therefore, It is almost imperative to propose a paradigm to provide others with the right to enjoy scientific progress, especially for those from developing countries. The paradigm explained here is the Science Culture Construction (SCC) proposed by the Andean Road Countries for Science and Technology (ARCST) in November 2018.

The SCC refers to the promotion of science and technology as a cultural value, which aligns perfectly with Article 15 of the International Covenant on Economic, Social, and Cultural Rights. The SCC helps to foster a culture of innovation and creativity, which is essential for the development of new technologies and the advancement of society (The Science Culture Construction, 2023). The SCC is a new paradigm of collaboration that aims to bring together scientists, policymakers, and the public to address complex problems. This approach can be particularly useful in promoting green development and green science, which are essential for addressing environmental challenges, and green development, which is the process of promoting sustainable development and addressing environmental challenges in a region.

Green Science is the is the application of eco-friendly thinking to scientific disciplines. It involves all the scientific disciplines on which research and innovation rely to respect the "planetary boundaries" defined by the scientific

community. Green science refers to the preservation of natural resources and biodiversity and our global eco-design approach while offering safe and effective products to consumers. Green Sciences represent a complete revolution in the way we approach science. From Advanced Research to the formulation in laboratories, from the sustainable cultivation of ingredients and their extraction to their transformation through biotechnology or green chemistry. Green science is entirely rethinking our research to disrupt scientific innovation. Green science is a term that refers to the application of scientific knowledge and methods to address environmental problems and promote sustainable development.

Why is Green Science the focus of the Science Culture Construction in Latin America?

Latin America and the Caribbean (LAC) regions face multiple environmental challenges, such as desertification, biodiversity loss, pollution, and natural disasters. These challenges pose serious threats to the economic, social, and environmental development of the region, as well as to its human well-being and resilience. According to the OECD (2022), climate change could significantly worsen long-term economic prospects and exacerbate inequalities in LAC. Therefore, It is urgent to advance towards a comprehensive green agenda to address its consequences and improve the well-being of all.

The Green science can contribute to the green transition of LAC by providing innovative solutions for mitigating greenhouse gas emissions, enhancing energy efficiency, promoting renewable energy sources, conserving natural resources, adapting to climate change impacts, and improving environmental quality. Green science can also foster social inclusion, equity, and justice by involving diverse stakeholders in decision-making processes and ensuring that the benefits of green development are shared by all. However, green science development in LAC faces several challenges that need to be overcome. Some of these challenges are:

- Lack of adequate funding and resources for research and innovation in green fields. According to the World Bank (2021), LAC receives only 0.2% of global public investment in research and development (R&D), which is insufficient to meet its potential for growth and development.

- Lack of coordination and integration among different sectors and levels of governance for implementing green policies and programs. According to the OECD (2022), there is a need for more effective collaboration among ministries of environment, energy, agriculture, health, education, trade, and finance, among others.

- Lack of capacity building and skills development for green professionals and entrepreneurs. According to the World Bank (2021), there is a gap between the demand for skilled workers in green sectors such as renewable energy, biotechnology, waste management, etc., and the supply of qualified human resources.

- Lack of awareness and participation of civil society organizations (CSOs) in green initiatives. According to the OECD (2022), there is a need for more engagement of CSOs such as NGOs, community groups, indigenous

peoples' organizations (IPOs), etc., in co-designing, co-delivering, and co-evaluating green solutions.

Despite these challenges, green science development in LAC also offers several opportunities that can be exploited to achieve sustainable development goals (SDGs) that are the current focus of the SCC. Some of these opportunities are:

- Leveraging existing strengths and potentials of LAC countries in terms of natural resources, diversity, innovation, and entrepreneurship. According to the World Bank (2021), LAC has abundant renewable energy resources, such as solar, wind, hydro, biomass, etc., that can be harnessed to reduce dependence on fossil fuels and lower greenhouse gas emissions. LAC also has rich biodiversity and ecosystem services that can be protected and restored to enhance resilience and adaptation capacity. LAC has a vibrant culture of innovation and creativity that can generate new ideas and technologies for solving environmental problems. LAC also has a dynamic entrepreneurial ecosystem that can support new businesses and markets in green sectors.

- Benefiting from regional cooperation and integration for advancing green transition in LAC. According to the OECD (2022), LAC has established several regional initiatives such as the Pacific Alliance, the Community of Latin American and Caribbean States (CALC), the Union of South American Nations (UNASUR), etc., that aim to promote trade, investment, infrastructure, energy security, environmental protection, etc., among member countries. These initiatives can facilitate knowledge sharing, technology transfer, capacity building, policy harmonization, and joint action for implementing green policies and programs, but they require an articulator that can join all the stakeholders at once.

- Contributing to global leadership and cooperation for addressing climate change in LAC. According to the World Bank (2021), LAC has committed itself to take action on climate change under various frameworks such as the Paris Agreement on Climate Change (2015), the Sustainable Development Goals 2030 Agenda (2015), the Convention on Biological Diversity Strategic Plan 2016-2030 (2016), etc., which require collective action from all countries regardless of their level or capacity. By participating actively in global negotiations, cooperation projects, capacity-building activities, knowledge dissemination platforms, etc., LAC can demonstrate its commitment, leadership, and responsibility for addressing climate change in LAC as well as globally.

How could the paradigm of the SCC address the environmental challenges in the Latin American region?

Although many initiatives and policies aim to promote green development and address environmental challenges in LAC, many challenges need to be addressed to promote green development in the region. Some of these challenges were mentioned above and include reducing greenhouse gas emissions, improving environmental governance, enhancing innovation and competitiveness in emerging sectors, and promoting social inclusion and equity among different groups (OECD, 2022). In that aspect, the SCC is

fostering collaboration between scientists and policymakers. By sitting the shareholders together, these groups can develop policies that are based on scientific evidence and that promote sustainable practices toward a nature-positive world.

Another way that the SCC can help promote green development and green science in LAC is by engaging the public in the process. By involving the public in discussions about environmental issues, scientists and policymakers can help raise awareness about the importance of sustainable development and encourage people to take action. Organizing public forums or workshops joining experts from different areas of the green science to discuss environmental issues and promote sustainable practices. Spreading the interest in Green Science among high school and university students and young professionals, etc. (UNESCO, 2021). Some researchers have suggested that is important to involve early-career, mid-career, and late-career/senior climate scientists interested in contributing to the green science in LAC (Cuellar-Ramirez, 2021).

Additionally, the SCC can help promote green development and green science in LAC by fostering collaboration between different sectors. By bringing together scientists, policymakers, private and public organizations and representatives from industry and civil society, the SCC paradigm can help promote sustainable development across different sectors.

The SCC paradigm can help promote green development, and biodiversity conservation in LAC. By fostering collaboration between scientists, policymakers, and the public, and by promoting collaboration across different sectors, this approach can help promote sustainable development and address environmental challenges in the region.

How is the paradigm of the SCC addressing the environmental challenges in the Latin American region?

The exchange of knowledge and the promotion of green science involves verbal communication. So far, linguistic barriers have built a wall to access scientific advances, in countries that have no English as their mother tongue.[1] This is not to blame the English-speaking countries or the English-speaking researchers but it is important to find mechanisms to share the green science knowledge not only in English but also in Spanish, considering the current situation of LAC countries where the most spoken language is Spanish. Therefore, it is important to create avenues for the exchange of knowledge and green science information with Spanish-speaking audiences, not only from the educational, research, and scientific fields, but also with society in general, once again, fulfilling Article 15 of the International Covenant on Economic, Social and Cultural Rights of the United Nations.

Access to scientific advances and particularly to green science knowledge has a higher cost in LAC. This is an issue that poses concerns among researchers of developing countries due to the higher fees that they need to pay to download scientific papers or even publish their research in some

[1] https://www.nature.com/articles/s41562-021-01137-1

journals.[2] This does not mean that journals should be always open source. However, finding some ways to reduce journal's subscription cost or finding other publishing alternatives for LAC could result in the increase of the publication of scientific papers, have a large number of researchers writing scientific articles, create a culture of writing, and open opportunities for them to find partners and collaborators based on their publications, areas of inters, etc . In the same regard, reducing or waving the subscription plans to download papers could be beneficial for authors in LAC to stay up to date on the recent scientific progress, methods and results and above all opportunities to make green science more popular. That is why the SCC has established the Journal of Latin American Sciences and Culture (JLASC).

There is a large gap in different areas of science between scientist from LAC and other continents. The research topics between developed and developing countries in some cases are not always synchronized.[3] While researchers in developed countries are creating androids, using artificial intelligence, cloning, and breaking atoms into smaller particles, researchers in developing countries are dealing with problems related to lack of infrastructure, lack of funds, agriculture, poverty, energy access, clean water access, fighting desertification, and others.That is why, the SCC requires the active participation of LAC members to unfold the current technological and innovation needs and propose them.

Latin America suffers from the lack of private and collective science centers. The means/facilities/laboratories in developing countries to carry out top-notch research are very scarce. The problem lies in the lack of funds, and equipments fundamentally. Fundraising might seem such a daunting and time-consuming task. It is quite difficult to carry out advanced research due to the lack of equipments, infrastructure, or access to facilities. Therefore, international cooperation through the SCC could serve as a platform to canalize and leverage resources for the establishment of green science centers, research and innovation centers, etc. At the same time, the centers could provide an avenue to allocate multidisciplinary research projects, open more collaboration opportunities, and promote a generation of scientific figures that can serve to inspire the scientific spirit of future generations.

The development of the SCC to foster innovation and Green Development in Latin America through the Andean Road Countries for Science and Technology

To complete its mission, the SCC paradigm requires a systematic approach. A step-by-step process to ensure that the building blocks are correctly interconnected and cemented to erect a solid and meaningful endeavor and fulfill Article 15 of the International Covenant on Economic, Social, and Cultural Rights of the United Nations.. The SCC is the acquisition of ideas, habits, and actions that permeate the walls of scientific and academic institutions, influence society, and establish pathways to disseminate

[2] https://open-access.network/en/services/news/article/elsevier-protest-against-excessive-publication-fees

[3] https://link.springer.com/article/10.1007/s11205-020-02488-4

knowledge, promote innovation, biodiversity conservation, and technological and green development.

The SCC started in 2018 when several LAC experts in the Space technology field gathered with Chinese professors and businessmen to discuss the current status of space technology development in Latin America.[4] This meeting was quite informative with a flow of ideas and knowledge that was summarized in an article presented at the International Astronautical Congress (IAC) in Washington, 2020.[5] Although its origins are related to space science, it has gradually converged into the multidisciplinary and dynamic area of green science.

The SCC paradigm is currently promoting green science popularization and the exchange of knowledge in three languages, English, Spanish, and Chinese. With the guidelines of UNESCO Media and Information Literacy, and the Andean Road Countries for Science and Technology (ARCST), the Journal of Latin American Sciences and Culture (JLASC) was launched in 2019 with the idea of promoting the scientific landscape in LAC, pushing conventional boundaries to include issues, perspectives, and methods relevant to education, science, technology, and culture.[6] JLASC intends to truly internationalize these areas through the journal's attention globally. JLASC seeks to explore not only the diversity and richness of LAC scientific issues, but also perspectives, research methods, and evidence of the many creative flows of influence that exist between LAC, Sino-American cultures, and other peripheries. Therefore, education, science, and technology can be powered by wide-ranging ideas from many cultures and research areas. JLASC welcomes submissions that focus on empirical research, theoretical analyses, or literature and book reviews. JLASC promotes scientific literacy, science popularization, media and information literacy (MIL) following the guidelines of UNESCO. Special attention is given to the use and promotion of the Spanish Language for these purposes. With the help of JLASC, ARCST Is providing LAC researchers the possibility to show their work, ideas, and advances in three different languages and increase their visibility beyond geographic and linguistic barriers.

The SCC has received support from different Universities, and academic institutions, from China and abroad. During the "1st Annual Meeting on Science Literacy 2021: A Prerequisite for Stimulating Climate Change Engagement" organized in November 2021 in LAC countries around 16 experts from China participated for the first time in the First Annual Meeting on Science Literacy.[7] This event marked the opening of more opportunities for collaboration between China and LAC. This celebration gathered experts from different fields around the world. During the Annual

[4]https://spacegeneration.org/arcst#:~:text=Under%20this%20premise%2C%20the%20Andean,Latin%20American%20countries%20and%20offers

[5] https://medcraveonline.com/AAOAJ/effective-communication-in-science-and-technology-for-the-space-workforce-development-in-latinamerica.html

[6] https://journalasc.org/

[7] https://journalasc.org/annual_meeting/

Meeting, there was consensus to promulgate the First Declaration on Science and Climate Literacy across LAC (DSCLAC).[8] In 2021 as well, ARCST launched a much-needed science platform for China and Latin America, as reported by China Daily.[9] In 2022, a second version of the declaration was prepared, and in 2023, the third version was published.[10] Several Chinese experts and institutions, as well as other international experts and organizations, have manifested their support. The declaration invites the whole community to work together to promote the harmonious development of science and technology, to contribute to the improvement of public science literacy, climate literacy, biodiversity conservation, green science, and green development. To create a better future for the whole of human society.

ARCST has promoted the SCC focused on Green Science and the Sustainable Development. This work has been supported by China Biodiversity Conservation and Green Development Foundation (CBCGDF). The South-South Biodiversity Science Project (SSBSP) of CBCGDF and the Green Science Project of ARCST converged into several occasions to stablish different science popularization activities. One of the most relevant projects is the organization and celebration of the First World Green Science Day (WGSD) on December 9th, 2022. The main purpose of the celebration was to raise awareness of the role that science plays in societies that are peaceful and sustainable.[11] "Green Science for and with Society" was 2022's theme for World Green Science Day (WGSD). It emphasized how the sciences are inclusive and equal and how they can help to achieve important environmental goals. The WGSD focused on important adaptations to mitigate the adverse effects of biodiversity loss, climate change, pollution, and water calamities. ARCST made an effort to support crucial international scientific collaborations and bring science closer to society. Several Chinese and foreign experts participated on the event and discussed contemporary issues that are crucial to the ongoing exchange of information related to human health, the economy, food security, climate, biodiversity conservation, green development, and people's well-being. This celebration was one of a series that reached out to schools, universities, the general public, the private sector, and other groups to mobilize open sciences. During the celebration of the WGSD 2022 the tool called "Quantum Leap to green actions (QLGA)" was launched. QLGA was proposed by a multidisciplinary team of researchers from ARCST, CBCGDF and Unidad Central del Valle del Cauca (UCEVA) to engage the public in a broader sustainability mission.[12] QLGA offers an opportunity to impact society in general and promote commitment to action against climate change, fostering biodiversity conservation and green development. Equally important, during the WGSD celebration, the International

[8] https://journalasc.org/2023/01/25/science_lac/
[9] http://epaper.chinadaily.com.cn/a/202107/07/WS60e4ecdea3106abb319fbbd2.html
[10] https://journalasc.org/2023/01/25/science_lac/
[11] http://www.cbcgdf.org/English/NewsShow/5008/21612.html
[12] http://www.cbcgdf.org/English/NewsShow/5008/21612.html

Green Science Academy Network (IGSAN) was launched.[13] IGSAN is a platform composed of experts from several countries that seek to empower individuals, especially the youth, to lead in the response to biodiversity protection, green development, and environmental challenges facing the globe.[14] By establishing partnerships, we develop, implement, and oversee educational programs and workshops that promote environmentally sustainable behaviors among all age groups. IGSAN was born as a conjunction of two initiatives, the South-South Biodiversity Science Project (SSBSP) and the Green Science Project (GSP). ARCST attaches great importance to working on topics and solutions that are appropriate for the context of different countries.

A topic that connects several fields is green science. In 2022, ARCST in coordination with UCEVA, CBCGDF, UNESCO, and ELEKTRO launched the first phase of the SCC in Colombia.[15,16] In 2023, the International Green Science Center for Latin America and the Caribbean (IGSCLAC) was.[17] Just recently, in November 2023 the Centro Internacional de Innovacion en Ciencia y Tecnologia para Latino America y el Caribe (CICITLAC acronym in spanish) was launched in El Salvador (Cicitlac, 2023).

Nowadays, mutual collaboration is essential for the development of science and technology. We emphasize the importance of collaboration, mutual understanding, friendship and utilizing mechanisms of science popularization, and the promotion of technology and innovation in different areas of knowledge. IGSCLAC longs to connect the community of researchers, professors, students, and the community in general between LAC and the world. It aims to engage society in actions that favor the well-living and well-being in harmony with nature, utilizing scientific, technical, and educational methods for this purpose. We aim to accelerate the communication, cooperation and development of science and technology oriented to the real needs of the LAC countries. ARCST focuses on providing access and opportunities for people to engage in positive climate change action.

ARCST and its collaborators are conscious that one action followed by many people could produce big effects. The same is true if many actions are followed by many people. This can be simply summarized in the equation of the quantum leap into green action:[18]

$$E = P \cdot A$$

Where E is the effect, P is the number of people and A is the number of actions. If the efforts are focalized and combined with effective communication and motivated actors, it is possible to produce the "quantum leap." Scientific

[13] https://journalasc.org/2022/11/17/international-green-science-academy-network-igsan-an-initiative-of-the-south-south-biodiversity-science-project/
[14] https://journalasc.org/blog/igsan/
[15] http://z.cbcgdf.org/nd.jsp?id=580&_sc=3@Mark
[16] http://www.cbcgdf.org/English/NewsShow/5009/22413.html
[17] https://mp.weixin.qq.com/s/Mcb8XLZ792l6iXGt8l02Zw
[18] https://journalasc.org/2023/02/22/ssbspscc/

progress can only be achieved if there is clear communication and direct collaboration between different stakeholders from private to public sectors.

A new paradigm has emerged that is inclusive, participative, and focused on providing the rights to enjoy scientific progress and its applications, especially in developing countries. ARCST looks to further strengthen the collaboration in Science, Technology, Biodiversity Conservation and Green Development between China, LAC and more countries around the world. We believe that integration across geographical, cultural and linguistical barriers is essential for the sustainable development of humanity in harmony with nature. ARCST looks to continue to promote the exchange of knowledge, the diffusion of information, biodiversity conservation, and green sustainable development.

Outlook for the future

The construction of a robust science culture is paramount for steering the course of green development in a sustainable direction. As we grapple with the complex challenges posed by climate change, resource depletion, and environmental degradation, fostering a scientific mindset becomes not just an option but a necessity. A culture deeply rooted in scientific principles empowers societies to make informed decisions, implement innovative solutions, and adapt to the evolving demands of a planet in flux.

The importance of SCC in the realm of green development lies in its ability to promote a holistic understanding of the intricate web of ecological systems. It encourages collaboration among scientists, policymakers, and the public, fostering a shared commitment to environmental stewardship. By instilling a sense of curiosity and inquiry, a science-centric culture can drive technological advancements, policy reforms, and behavioral changes that are indispensable for achieving a harmonious coexistence with the natural world.

Looking ahead, the prospects for the future hinge on the continued cultivation and expansion of this science culture. The journey toward green development demands ongoing research, education, and advocacy to stay ahead of emerging challenges. As we embark on this collective endeavor, there is a promising outlook for technological breakthroughs, policy innovations, and a heightened global consciousness regarding sustainable practices.

In the coming years, we can anticipate a society that places an even greater emphasis on integrating scientific principles into everyday decision-making processes. This shift will not only contribute to mitigating environmental crises but also lay the foundation for a more resilient and equitable world. By embracing the ethos of the new paradigm of collaboration, the SCC, we can navigate the complexities of the 21st century with confidence, secure in the knowledge that our actions today are shaping a greener and more sustainable tomorrow.

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