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Spotlight

National Standardization Work Conference

全国标准化工作会议在京召开

Special Report

Cybersecurity Standardization Conference 2024 held in Belgium

2024年欧洲网络安全标准化会议在比利时召开

Exclusive Interview

SESEC Director Dr. Betty Xu: Building a bridge for standardization communication between China and Europe to achieve win-win cooperation

搭建中欧标准化的沟通桥梁 增进了解 实现共赢
——专访欧盟驻华标准化专家项目总监徐斌博士

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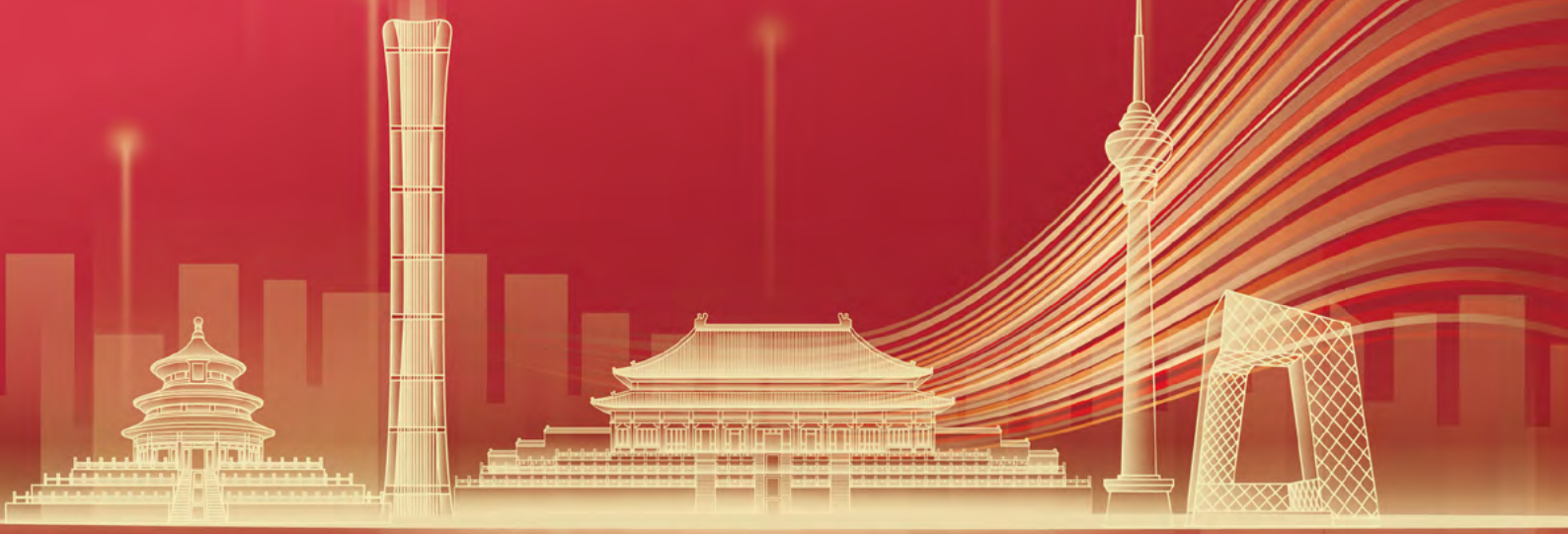
“Two Sessions”

were held in Beijing in March 2024.

全国两会于3月在北京召开



“Two Sessions” refer to the Second Session of the 14th National People’s Congress (NPC) of the People’s Republic of China and the Second Session of the 14th National Committee of the Chinese People’s Political Consultative Conference (CPPCC).

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Spring
the best season
for planning

With the advent of spring, we embraced the annual National Standardization Work Conference, which is most concerned by both domestic and international standardization communities. The conference was organized by Standardization Administration of China (SAC) to gather stakeholders from government agencies, associations and technical committees, report the work progress last year and deploy the national standardization work plan this year.

Tian Shihong, Vice Minister of SAMR and Administrator of SAC, delivered the work report, and announced the priorities of national standardization work in 2024, which is presented in the SPOTLIGHT column.

Another annual event took place in Brussels, Belgium in March, which is the 8th Cybersecurity Standardization Conference with the theme of “Fasting evolving landscape of EU legislation: challenges and opportunities for standardization”. It was hosted by ENISA (the EU Agency for Cybersecurity) and the European Standardization Organizations, CEN, CENELEC and ETSI, attracting more than 1,700 participants from Europe and all over the world on site and online.

The conference provided a communication platform for all stakeholders to understand the new legislation better, and discuss the challenges in standardization, how to develop standards for cybersecurity, and how to encourage more enterprises to participate in the process. You can find more details in the SPECIAL REPORT column.

China and Europe have cooperated for many years, not only in the economic and trade areas but also in the standardization field, thanks to the Seconded European Standardization Expert in China (SESEC). The SESEC project has played a crucial role in facilitating the mutual understanding between China and Europe about standards and systems for more than a decade. We interviewed SESEC Director Dr. Betty Xu, who shared her story with standards and how she promoted the communication and cooperation between China and Europe in this area.

Read the March/April issue and find more interesting things in China and Europe!

THE EDITORIAL COMMITTEE
OF CHINA STANDARDIZATION PRESS

GB 23350-2021,
Requirements of restricting excessive package—Foods and cosmetics
The mandatory national standard of China
has been implemented since August 15, 2023.

Designed by China Standardization Press

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HEADLINE |

MIIT releases guidelines on standards system for carbon peak and neutrality in industrial sector

To facilitate China's carbon peak and neutrality goals, the Ministry of Industry and Information Technology (MIIT) organized relevant industrial associations, research institutions, and standardization technical committees to develop the *Guidelines on Construction of the Standards System for Carbon Peak and Neutrality in the Industrial Sector*. The Guidelines puts forward the framework of the standards system, and provides the development direction of key standards, which will effectively integrate the existing standards system for industrial energy conservation and comprehensive utilization, and the green manufacturing standards system.

By accelerating the development of standards, and continuously improving the standards system, it is expected to turn the development of industrial sector into a low-carbon or zero-carbon model. To boost the development of the standards system, the Guidelines highlights some principles.

First, overall planning will be carried out to cover all relevant fields of industrial low-carbon transition, plan the standards system from various dimensions including manufacturing process, technological development, life cycle, and industrial chains, and comprehensively consider carbon emissions of products, enterprises, industrial parks, supply chains and other levels. Also, efforts should be made to coordinate with existing standards systems.

Second, the standardization work on carbon peak and neutrality will be steadily promoted, focusing on key carbon emission industries and carbon reduction processes of key products. The development and revision of urgently needed standards will be sped up.

Third, adhering to innovation-driven development and digital empowerment, enterprises will be encouraged to achieve innovations in low-carbon technology and management in the industrial sector, which will be written into latest standards for wider application.

Fourth, based on the situation of China's industrial sector, the level of Chinese low-carbon standards will be enhanced by actively learning from the basis and development trend of international standardization work in response to climate change.

According to the Guidelines, by 2025, the standards system for carbon peak and neutrality in industrial sector will initially established, with over 200 urgently needed standards developed. By 2030, a relatively complete standards system will be built, which supports the overall peaking of carbon emission in the industrial sector, and gradually changes the focus of standardization work to carbon neutrality.

Also, China will vigorously participate in the green and low-carbon standardization activities of international standards organizations such as ISO, IEC and ITU, especially the research, development and revision of standards in terms of GHG accounting and verification, low-carbon technology and equipment, GHG monitoring, as well as carbon emission management and evaluation.

Advanced Manufacturing Standards Research Center set up in Beijing

The meeting on the standards internationalization work of advanced manufacturing was recently held in Beijing, with the aim to thoroughly implement the spirits for institutional opening up of the 20th CPC National Congress, and accelerate improving the internationalization of standards in the field of advanced manufacturing.

The Research Center on Internationalization of Advanced Manufacturing Standards was announced to be established at the meeting, where Zhang Xiaogang, former ISO President, and Zhang Gang, Vice Chair of National Industrial Foundation Expert Committee and former Counselor of the State Council, made keynote reports.

Led by China Academy of Machinery Science and Technology Group (CAM), the research center will implement the requirements on improving the opening-up level of standards in the *National Standardization Development Outline*. The research center will keep up with the international development trends of standards worldwide, strengthen practical cooperation with relevant institutions at home and abroad, and contribute to improving the global standards system and the development and promotion of international standards.

The research center will respond to the demands of the international development of standards for advanced manufacturing, focus on the analysis of domestic and foreign standardization front trends, international standards pre-research and building of test and verification capacity, international standardization exchanges and cooperation, and the construction of international standardization service system. It will provide support for promoting the institutional opening up of Chinese standards system and strengthening the cultivation of international standardization talents.

Plenary meeting of SAC/TC 207 held in Beijing

The plenary meeting of SAC/TC 207, *Environmental management*, was held on February 2 in Beijing.

More than 40 participants attended the meeting, including Wu Fengchang, Academician of the Chinese Academy of Environmental Sciences, He Kaitao, Deputy Director-General of the Science and Technology Development Department of Ministry of Natural Resources, Li Qingrui, Director-General of former Department of Policies and Regulations of the Ministry of Environmental Protection, Li Aixian, Vice President of China National Institute of Standardization (CNIS), and committee members.

Li Aixian introduced the development history of CNIS and standardization in the field of environmental management, and expressed her appreciation of all committee members and experts for their support for SAC/TC 207. Holding the secretariat of SAC/TC 207, CNIS will strengthen its management and service to continuously boost the standardization of environmental management, said Li.

The committee should focus on the construction of standards system for environmental management to support the development of the industry and technologies, and actively conduct research on hot topics such as ecosystems, said He Kaitao, Vice Chair of the committee. Also, the committee will make efforts to build a beautiful China, said Li Qingrui, Vice Chair of the committee.

Secretariats of the SC 1 and SC 5, as well as WG 1 and WG 2 of the technical committee reported the overall performance in 2023, introduced the development and revision of national standards system and progresses of international standardization work, and proposed work plans for 2024.

SAC/TC 207 will strengthen the construction of standards systems and platforms for environmental management, promote the harmonization of domestic and international standards, and continuously contribute to the modernization of environmental governance system and governance capacity.

National technical committee on rock and soil mechanics set up in Liaoning

The founding ceremony and the first plenary meeting of SAC/TC 605, *Rock and soil mechanics*, was held on February 26 at the Northeastern University (NEU) in Liaoning province.

The meeting was presided over by Feng Xiating, President of Northeastern University and Academician of Chinese Academy of Engineering (CAE), and addressed by Gao Tao, Deputy Governor of Liaoning, Wei Hong, Deputy Director-General of Standards Technical Management Department of SAMR, and Guo Hai, Party Secretary of NEU. The meeting was attended by Zhen Jie, Director of Liaoning Administration for Market Regulation, Chen Jiabiao, Director of Shenyang Bureau of Market Regulation, Academicians of CAE including Pan Yishan, He Chuan, Zhang Jianmin, Du Shigui, and Du Xiuli, as well as experts in different fields of rock and soil mechanics.

Geotechnics utilizes rock and soil mechanics to solve technical issues in the field of building and civil engineering, which is an important component of national economic and social development. SAC/TC 605 is responsible for the development and revision of national standards for foundation, experiment, monitoring, evaluation, disaster prevention and control, and other aspects of geotechnics, with NEU holding the secretariat. There are 47 committee members, 10 of whom are CAE Academicians, with the largest number among national TCs.

Liaoning will vigorously support NEU to serve the work of SAC/TC 605, said Gao Tao. He expected NEU to give full play to its professional and technical advantages, strengthen research on key technologies, improve the standards system on rock and soil mechanics, build up China's strength in this field, and contribute to the implementation of the Belt and Road Initiative and the overall revitalization of Liaoning.

The establishment of the technical committee marks the new chapter of China's standardization work on rock and soil mechanics, which responds to the demands of high-quality sectoral development, stressed by Wei Hong.

SAMR releases Sharing Economy Standardization Development Report 2023

The sharing economy prospers in China due to people's awareness of resource conservation, and it is often conducted on online platforms.

Recently, the Development Research Center of SAMR released the *Sharing Economy Standardization Development Report 2023*. The report pointed out that in 2023, the sharing economy overcame challenges and continued to grow. Leading the development of sharing economy by standardization has become a widely accepted consensus at home and abroad, and standardization activities have played a bigger role in guiding the development of sharing economy, which continues to support major strategies of China.

As the domestic counterpart of ISO/TC 324 on sharing economy, the Development Research Center of SAMR holds the secretariat of the SAC/TC 587 on sharing economy, and has released the sharing economy standardization development report for four consecutive years since 2020. Except from introducing the development status of China's sharing economy, the report in 2023 focuses on analyzing the current progress of standardization work on sharing economy from both domestic and international perspectives, and predicts the future direction of standardization development, to better serve the high-quality development of sharing economy.

According to the report, 173 new Chinese standards for sharing economy were developed, with a year-on-year increase of 126%. The degree of social participation was significantly improved, and the standardization awareness of enterprises was further deepened, forming a government-led and market-driven pattern.

At the national level, one national standard for sharing economy has been released, with two under development, which plays an important role in catalyzing scientific and technological innovation, improving service quality to meet demands, supporting the construction of a unified national market, and achieving the goals of carbon peak and neutrality. At the international level, China has contributed to the development of one international standard with leading efforts, and submitted four proposals, joining hands with international pioneers of sharing economy.

In 2024, China will accelerate the integration of sharing economy and traditional industries, promote the construction of a modern industrial system, improve the capacity and level of industrial governance, jointly promote the institutional opening up of sharing economy, and promote the high-quality development of the industry.

First national standard for river ecological safety assessment comes out

China has always been upholding the harmonious coexistence between man and nature, and protecting eco-environment at home and abroad. Therefore, the first national standard for river ecological safety assessment, GB/T 43474-2023, *Technical guidelines for river ecological security assessment*, was recently released, which will come into effect on April 1, 2024.

Led by the Chinese Research Academy of Environmental Sciences and CNIS, the standard was jointly drafted by more than 20 units, including research institutes, universities, enterprises and public institutions.

The national standard clarifies the concept of river ecological security and defines the principles, workflow, index system and evaluation methods of river ecological safety assessment. It sets up the index system, which consists of 4 special indexes including river ecological environmental pressure, river ecosystem health, river ecological services and river ecological risk, as well as 12 sub-indexes and 28 evaluation indexes. Also, the grading basis and result expression forms are used to characterize the degree of river ecological security.

The standard can help deal with the problems, such as the lack of uniformity between the index system and method of river ecological security assessment. It provides important scientific and technological support for promoting the protection and management of key basins of the Yangtze River, the Yellow River and other rivers, and maintaining the bottom line of water ecological safety in the construction of a beautiful China.

HIGHLIGHTS |

Tian Shihong attends the 123rd ISO Council Meeting

The 123rd meeting of ISO Council was held on February 20-22 in Switzerland. As the representative of China, a permanent member of the ISO Council, Tian Shihong, Vice Minister of SAMR and Administrator of SAC, led the Chinese delegation to attend the meeting.

The attendees discussed the policies on public fund management and data protection of ISO members, risk management schemes, and governance review programs. They further reviewed the key projects and relevant implementation progresses in fields such as public consultation, sustainable development, machine-readable standards, and quantum technology, and discussed the reappointment of Vice President for Technical Management, Vice President for Finance, Treasurer, and other positions.

Two seminars on artificial intelligence (AI) and business models were held during the meeting. Tian deeply participated in the discussion and put forward suggestions on behalf of China, which were highly recognized by the Secretary-General of ISO and members of the Council.

The Chinese delegation visited the Chinese mission to the WTO, the permanent mission to the United Nations Office at Geneva and other international organizations in Switzerland. Furthermore, meetings were held to communicate with heads of ISO and IEC, and representatives from other ISO Council members such as the U.K., the U.S., France, and Germany, to exchange views on promoting standardization cooperation in fields such as cultural heritage protection, and enhancing governance of international standards organizations.

International academic symposium of ISO/TC 312 held in Beijing

The international academic symposium of ISO/TC 312, *Excellence in service*, was held in Beijing on February 27, which was a part of the 11th plenary meeting of the committee. Directed by SAC, organized by China National Institute of Standardization (CNIS), and supported by China Association for Standardization (CAS) and China Civil Airports Association (CCAA), the symposium was attended by over 20,000 representatives in hybrid forms.

The event aims to promote the exchange of experiences in excellent service, so as to better exert the important role of standardization in promoting the development and improvement of excellent service at home and abroad. Regulators, experts and enterprise representatives in the field from China, Germany, Japan, Russia and other countries were invited to discuss the cutting-edge dynamics and development trends, in response to the global concern for standardization of excellent service.

Zhang Xiaogang, former President of ISO, Tao Xueliang, Director-General of the Policy and Regulation Department of National Government Offices Administration, Huang Li, Director of ISO Liaison Office of Standards Innovative Management Department of SAMR, Wang Ruiping, President of CCAA, and Luo Fangping, President of CNIS, addressed the symposium, which was moderated by Li Aixian, Vice President of CNIS.

As a common language, standards are the technical foundation of quality, and ISO plays a vital role in the development and implementation of international standards. Therefore, international standards for excellent service are the key to prompt social governance and industrial development, which China has contributed to, said Zhang Xiaogang.

In the new era, there are urgent requirements on standardization of excellent service. Standardization is of crucial significance to facilitate global service and trade, as well as promote the international level of excellent service. CNIS will strengthen the standardization of excellent service, innovation, digital technologies, talent cultivation, and other aspects, according to Luo Fangping.

Matthias Gouthier, Chair of ISO/TC 312, underlined that the core to implement excellent service strategies is to focus on customers and utilize digital operation.

The symposium offers an international platform where global experts shared their experiences and best practices, with joint efforts on international standardization work in this field.

HIGHLIGHTS |

WAA and Informa Tech hold a roundtable meeting in Barcelona

The World WLAN Application Alliance (WAA), a non-profit independent organization, and Informa Tech held the roundtable meeting themed creating a secure and sustainable home Wi-Fi network on February 28 in Barcelona, Spain.

Sponsored by Huawei Technologies Co., Ltd., Changeself Technology (Shenzhen) Co., Ltd., and TÜV Rheinland, the meeting was attended by representatives from WAA, Informa Tech, Huawei, Changeself, TÜV Rheinland, ZTE, ABI Research, Wireless Broadband Alliance, BSI, SoftAtHome, Alliance for Internet of Things Innovation, VMware, and other relevant parties. With Michael Philpott serving as the moderator, who is the Research Director for service provider consumer of Omdia, a brand of Informa Tech, they focused on three issues: performance and experience, safety, and sustainability.

Michael Philppot stressed that household broadband service constrains the development of household terminals, which calls for the improvement of hardware technologies, monitoring and analysis of network status by intelligent service platforms, and enrichment of access to third-party applications. Meanwhile, efforts should be made to tackle cyber attacks. The attendees had a heated discussion of topics including challenges and key elements of establishing a comprehensive security scheme, balance of customer experience and privacy safety to achieve the best business model of security service, and how WAA can promote the global standardization work in this field.

There are a lot of terminals at home. Considering security, which should be upgraded, all devices or the home gateway? Then how do we choose the firewall of different venders? This is where we need standardization and industrial integration, said Vinod Joseph, Field CEO of APAC at VMware. In this case, AI ought to provide personalized service, catering to different types of devices and customer demands.

After exchanges of opinions and analysis of challenges to explore solutions, the roundtable was concluded by Gan Bin, Vice President of 5G Wireless Network Product Line and Director of Standards and Industrial Development Department of Huawei. He praised the innovative and inspiring discussion, and believed that with innovation and collaboration of the whole ecosystem, WAA will realize the goal of “providing the best wireless network experience for the digital world”.

The roundtable, as WAA’s first international symposium held overseas, provides an opportunity for in-depth discussion and cooperation on the development trends of Wi-Fi industry.

ISO releases a standard for a Chinese medicinal material

Rehmannia glutinosa root is one of the most commonly used herbs in traditional Chinese medicine. It has a long history in East and Southeast Asian countries for relieving heat and cooling the blood, nourishing yin and body fluid, and promoting overall health and body fluid circulation. *Rehmannia glutinosa* root is the top ten frequently used Chinese medicinal materials, the international trading amount of which ranks among the top ten Chinese medicinal materials. Its value also attracts attention in oversea markets of Asia, North America, Europe and Oceania.

ISO 9109:2024, *Traditional Chinese medicine—Rehmannia glutinosa root*, was recently released by ISO/TC 249, *Traditional Chinese medicine*. The standard will facilitate the standardized planting, harvest and processing of the medicinal material, as well as the quality control in trading. Therefore, the traceable process of high-quality medicinal materials can be realized to guarantee the quality of compound preparation of *Rehmannia glutinosa* from the source, further boosting international trade.

Haier contributes to the development of ISO 24183:2024

Haier Group, a leading global provider of better life and digital transformation solutions, has participated in the development of the recently published international standard ISO 24183:2024, *Technical communication—Vocabulary*, with leading effort.

Released by ISO/TC 37, *Language and terminology*, ISO 24183:2024 is the first ISO standard that defines terms for the application of technical communication. It prepares the terminological background for all other standards in the field of technical communication by providing precise definitions for basic concepts in this field. Based on this standard, ISO/TC 37 and ISO/IEC JTC 1/SC 42 will cooperate on fundamental standards, which will play a vital role in establishing ontological standards system for global IoT, big data, and artificial intelligence.

Building a bridge for standardization communication between China and Europe to achieve win-win cooperation

Interview with Dr. Betty Xu, Director of the Seconded European Standardization Expert in China

搭建中欧标准化的沟通桥梁 增进了解 实现共赢

——专访欧盟驻华标准化专家项目总监徐斌博士

Thank you for accepting our interview. Please present yourself and your work experience. You've worked in famous big companies such as Haier and Siemens and standardization organizations such as Standards Australia. How does the work experience in companies help you understand and do the standardization work well? What benefits are brought by different work experience?

I am Xu Bin (Betty Xu), Director of the Seconded European Standardization Expert in China (SESEC).

I graduated from the University of Queensland, Australia in 2006, majoring in information technology and electrical engineering, and obtained a doctorate degree in electrical engineering.

After graduation, I came back to China and joined Qingdao Haier Co., Ltd., where I first engaged in the technical development of networking home appliances. Later, based on the research and development results of the team, I led the formulation of several national standards and submitted several international standard proposals. I was a member of several Chinese national standardization technical committees and a registered expert on international standardization technical committees IEC TC 100, IEC TC 59 and ISO/IEC JTC 1/SC 25. As a member of the technical committees and a technical expert at that time, I gained a deep understanding of the formulation procedures and practices of China's standardization work, as well as the working procedures of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).

In the end of 2008, I assumed the role as Technical Regulations and Standardization Director at Siemens Ltd., China, overseeing Siemens' standardization operations in Northeast Asia. My primary responsibilities included monitoring technical regulations and standards, as well as coordinating relevant activities for Siemens in these regions. The main goal was to ensure that the company's products complied with the technical requirements and standards, while also supporting Siemens' involvement in standards development in the targeted areas. This role provided me with valuable insights into the internal management and coordination practices of large multinational corporations in the realm of standardization, as well as their professional training programs related to standardization.

In 2013, I joined Standards Australia in Sydney and took on the role of project manager for various standardization projects, including those related to electric vehicles and smart grid technology. My responsibilities primarily involved overseeing the development and progression of Australian national and international standards in the electrical sector, such as electromagnetic compatibility, EV charging infrastructure, and smart grid systems. Through these projects, I deepened my understanding of the operations of standards development organizations in developed nations and how industry players and stakeholders engage in the development of national and international standards.

In August 2014, I took the position of Director at SESEC. Drawing on my past experiences in standardization efforts within both Chinese and foreign companies, as well as my time at Standards Australia, I am better equipped to provide enhanced support to industry professionals and stakeholders in both China and Europe. The goal is to foster greater comprehension and collaboration in standardization practices between the two regions.

How did you engage in the standardization work? After working in this field, what changes have been made to your career development and personal growth?

As previously mentioned, I completed my doctoral studies in electrical engineering at the University of Queensland, Australia in 2006. Upon graduation, I returned to China and embarked on a career dedicated to the advancement of network appliance technology. By the close of 2006, leveraging the research and development achievements of the team, I spearheaded the

development of ten Chinese national standards. Concurrently, equipped with a robust professional background and proficient English communication skills, I commenced involvement in the development of international standards, assuming the role of an expert in IEC TC 100, IEC TC 59, and ISO/IEC JTC 1/SC 25.

During this period, China commenced active participation in international standardization endeavors, revealing a scarcity of professionals possessing technical acumen, English communication skills, and adeptness in international standardization activities. Against this backdrop, I had the privilege of being delegated to contribute to international standardization within the domain of network appliances while serving in a technical development capacity. My primary objective was to address the evolving standardization requirements in this field. Throughout this journey, I meticulously familiarized myself with the regulations governing ISO and IEC, undertook the drafting of international standards, actively participated in standard formulation processes, and progressively developed into a seasoned expert possessing a solid technical foundation, fluent English proficiency, and comprehensive knowledge of international standardization procedures. This transition marked a pivotal shift in my professional trajectory, transitioning from an academic researcher to a technical development engineer, and ultimately evolving into a standardization professional.

Since 2006, I have held successive positions at esteemed organizations including Qingdao Haier Co., Ltd., Siemens Ltd., China, Standards Australia, and SESEC. Throughout my tenure, I have remained steadfastly committed to standardization efforts, accruing a wealth of knowledge and experience in this domain while achieving significant career advancement.

Please introduce the Seconded European Standardization Expert in China (SESEC). What is the aim of the project? What achievements have been made in recent years? What challenges did you meet during the global Covid-19 pandemic in 2020-2022? How did you overcome these challenges?

The Seconded European Standardization Expert in China (SESEC) project is a visibility project co-financed by the European Commission (EC), the European Free Trade Association (EFTA), the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunications Standards Institute (ETSI).

The overarching goal of the SESEC project is to enhance the visibility of European standardization endeavors, foster communication and collaboration between Chinese and European standardization bodies and facilitate mutual comprehension of regulatory frameworks and standards between Chinese and European enterprises. By doing so, the project endeavors to facilitate market access for European stakeholders. Concurrently, SESEC is dedicated to advancing international standards and promoting global standard harmonization. Its ultimate goal is to diminish technical trade barriers between the EU/EFTA and China, thereby bolstering international trade and catalyzing industrial development in China and the EU.

SAC - CEN bilateral meeting during 2023 Qingdao Forum on International Standardization

Commencing its operations in 2006, the SESEC project undergoes periodic reviews approximately every three years, delineating distinct phases. Having progressed through its inaugural phase (2006-2009), second phase (2009-2012), third phase (2014-2017), and fourth phase (2018-2022), the project is presently situated within its fifth phase. Specific objectives of the SESEC project encompass:

• Fostering understanding and mutual trust among standards development bodies and pertinent organizations in both China and Europe.

• Promoting the visibility and impact of European and international standards within China.

• Strengthening dialogue and cooperation on standards between China and Europe, with particular emphasis on the framework agreement between the three European Standardization Organizations and the Standardization Administration of China (SAC).

Since its inception in 2006, the SESEC project has made significant strides in facilitating standardization exchange and cooperation between China and Europe. Over the past 18 years, notable achievements include the establishment of the EU-China Standards Information Platform in 2011, the facilitation of cooperation agreements between CEN-CENELEC and SAC in 2011, 2016, and 2021, as well as supporting internships for Chinese standardization professionals within CEN, CENELEC, and ETSI, among other endeavors.

Despite challenges posed by the pandemic, which impacted offline cooperation and exchanges between China and the Europe, SESEC adeptly leveraged network and video technologies to transition numerous activities to remote and online platforms, ensuring continuity in project operations amidst unprecedented circumstances.

Dr. Betty Xu in 2023 World Automobile Standards and Innovation Conference in Shenzhen

The 5th phase of the SESEC project has been launched in October 2022. What are the work plan and priorities of the SESEC V? Any difference with the previous four phases?

The fifth phase of the SESEC project is presently underway, focusing on the following key areas:

Horizontal policy domains:

- China Standard 2035 and *National Standardization Development Outline*
- Standardization reform initiatives
- Market access and regulatory frameworks, including China Compulsory Certification

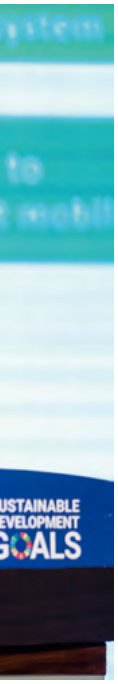
Vertical technological sectors:

- Internet of Things (IoT), 5G, and related communication technologies
- Information technology innovations such as artificial intelligence (AI) and big data
- Information security, encompassing cybersecurity and data security measures
- Intelligent transportation systems
- Medical devices standards
- Energy efficiency, conservation, and other environmentally sustainable technologies

During this phase, the SESEC project aims to bolster its role as a pivotal platform facilitating standardization communication between China and Europe. Going forward, the project endeavors to provide timely updates and recommendations concerning standardization developments to both China and Europe.

The SESEC initiative receives co-financing from five prominent European institutions, representing a comprehensive spectrum of European standardization bodies and stakeholders. Moreover, the project maintains robust communication channels with 44 European national standardization entities, including DIN, DKE, NEN, NEC, NSAI, SIS and AFNOR, among others. Over its 18-year presence in China, the SESEC project has fostered close ties and sustained collaboration with the Chinese standardization community. Widely recognized within the European standardization community, SESEC plays a crucial role in facilitating European understanding of Chinese standardization efforts and serves as a conduit for communication and feedback on China's standardization initiatives.

Looking ahead, SESEC will continue to serve as a conduit for timely communication between China and the Europe regarding standardization activities, facilitating mutual access to each other's standardization landscapes and soliciting relevant feedback for further refinement and collaboration.



You are often invited to give speeches on the European standardization system and European standards in meetings or activities. In your opinion, have the awareness of the Chinese experts and the public about the European standards knowledge been enhanced? What aspects need to be understood more?

With the rapid expansion of China's economy and the deepening of economic ties with Europe, the visibility of the European standardization system and its standards has significantly increased within China. In recent years, the SESEC project has played a pivotal role in this process by consistently disseminating information regarding the European standardization system, its standards, and the evolving European legislative framework.

However, there remains room for improvement, as Chinese experts and the public still lack a comprehensive understanding of the European standardization system and its standards. This includes aspects such as the interplay between European regulations and directives and standards, the nature of European harmonized standards, and the relationship between CE marks utilized for products exported to Europe and European standards of relevancy. Particularly noteworthy is the forthcoming prominence of European standards in advancing European environmental protection and compliance with climate change regulations, as the European Green Deal policy package and regulations have started to be implemented, such as the *Regulation Concerning Batteries and Waste Batteries (EU) 2023/1542*, promulgated in 2023, and forthcoming standards supporting this regulation. Thus, there is a pressing need for heightened awareness and dissemination efforts in the realm of standardization-related publicity.

Moreover, recognizing that the European standardization system and strategy are dynamic and subject to continual evolution, the SESEC project is committed to monitoring future reforms within European standardization and adapting accordingly to ensure ongoing alignment with emerging developments.

As the SESEC Director, how to better combine the SESEC project with China's standardization work to promote the innovative development of standardization in China?

Over the past decade, the SESEC project has forged close ties with the Chinese standardization community. We have maintained robust communication and collaboration with the national standardization technical committees and pertinent standardization bodies, actively engaging in public consultations on revisions to the *Standardization Law of the People's Republic of China* and contributing to the operational endeavors of various technical committees.

Looking ahead, within the framework of the cooperation agreement between the SAC and the CEN-CENELEC, we will facilitate the exchange of information in sectors where conducive conditions and mutual intent prevail. Additionally, we endeavor to facilitate reciprocal visits of high-level personnel involved in standardization between both China and Europe, orchestrating diverse activities such as the China-Europe Standardization Cooperation Forum to foster mutual understanding and facilitate exchanges. For the betterment of our nation, we are committed to

promptly synthesizing insights and lessons gleaned from European standardization development, thereby aiding the ongoing innovation and advancement of China's standardization endeavors.

What experiences and lessons can China learn from Europe in the area of standardization?

European standards stand at the forefront globally, owing to pioneering efforts that have established countries like the U.K., Germany, and France who are among the early countries that establish national standardization bodies. Further, these nations were among the founding members of ISO and IEC, showcasing their commitment to setting international benchmarks. From this point of view, it will be beneficial for China to draw lessons from their standardization experiences.

While Europe once relied on mandatory standards, it later embraced the New Approach, integrating standards into technical regulations to bolster operational efficiency and conformity. Regular revisions of standards ensure the relevance and continuity of regulations, with standards serving as their indispensable support system. China can draw valuable insights from this approach.

European standards development prioritizes factors such as product safety and environmental protection while fostering innovation. The New Approach, followed by the New Legislative Framework (NLF), introduced harmonized standards that industries utilize for presumptive compliance with European regulations. This balance between regulatory adherence and innovation is a model worth emulating.

European industries place significant emphasis on standards, actively engaging enterprises and industrial experts in the standardization process. This collaborative approach ensures that standards remain aligned with cutting-edge technology. Hence, in my view, fostering increased engagement of enterprises and industries in standardization endeavors will yield further advantages for China.

Are there any suggestions concerning the standardization development in China over the past years?

Firstly, European industries expect the wider adoption of international standards from ISO and IEC by China. Embracing these standards not only fosters smoother global trade but also diminishes technical trade barriers.

Secondly, in China, national standards are predominantly published in Chinese. Although the Standardization Administration of China (SAC) has released some national standards in English, their availability remains limited. This linguistic divide poses a considerable obstacle for foreign enterprises seeking to comply with Chinese standards, as they often must independently translate the standards into English. This inefficiency results in redundant translations, with each enterprise undertaking the task separately. For instance, if 10 enterprises seek to apply the same standard, each would likely translate it individually, amounting to a significant waste of resources. To mitigate this, we propose expanding the availability of foreign-language versions of national standards, particularly in English. This initiative would streamline processes, conserve resources, and enhance efficiency, ultimately fostering smoother import and export trade. The SAC has already

begun increasing the publication of foreign-language versions of national standards, signaling a promising step towards greater accessibility and efficiency.

Having assuming the SESEC Director for almost 10 years, what do you think is the largest value of the career? If going back to 10 years ago for another choice, would you prefer to be a technical R&D expert or a standardization expert?

Engaging in standardization work has been immensely rewarding for me, both personally and professionally. My passion for this field has fueled my dedication over the years, leading to outstanding achievements in my role. In Europe, I've become a go-to resource for insights into Chinese standards, serving as a bridge between the European and Chinese standardization communities.

Drawing on my technical background has been invaluable, particularly in navigating complex standards for cutting-edge technologies like AI and quantum technology. This expertise enables me to grasp the nuances and significance of these standards effectively.

I thrive on staying abreast of the latest developments in standardization, whether it's tracking the standardization progress in China or staying informed about evolving European regulations and standard system. This ongoing pursuit of knowledge also involves collaborative efforts with European colleagues and experts, as some insights can only be gleaned through practical experience.

My involvement in the SESEC project has been instrumental in my professional growth, exposing me to diverse challenges and providing valuable insights and experiences. Sharing this knowledge with Chinese and European stakeholders not only benefits them but also enhances my own sense of fulfillment and reputation within both communities.

If you ask a dozen China domestic standardization professionals: who knows the European standards best? Or if you ask a dozen experts of European standardization: who is the right person to consult when you have problems or questions related to Chinese standards? There is a high possibility that they will recommend me. I am honored and feel sense of achievement in this process of being recognized of both Chinese and European standardization communities.

The recognition I've received from colleagues and experts in both Chinese and European standardization circles is a source of great pride and achievement for me. This recognition is a testament to the continuous learning and dedication that underpins my approach to standardization work.

As the standardization landscape evolves with the advent of new technologies, I remain committed to ongoing learning and growth. I firmly believe that continuous learning is essential for staying relevant and effective in this dynamic field. By accumulating knowledge and putting in the hard work, I'm confident that I can continue to make meaningful contributions to standardization efforts on both a local and global scale.

National Standardization Work Conference held in Beijing

全国标准化工作会议在京召开

By Jin Jili
文/靳吉丽

The National Standardization Work Conference was held in Beijing on January 11 to summarize the standardization work in 2023 and arrange the key standardization tasks in 2024. Luo Wen, Minister of SAMR, Wang Jingtao, Vice Administrator of the Office of the Central Cyberspace Affairs Commission, and Sheng Qiuping, Vice Minister of Commerce, attended and addressed the conference. Tian Shihong, Vice Minister of SAMR and Administrator of SAC, delivered the work report.

Tian Shihong
Vice Minister of SAMR
and Administrator of SAC

According to the conference, important progress has been made in the standardization development in 2023. Standards have accelerated innovative development, played a prominent role in leading industrial development, supported green development in a systematic way, facilitated the steady advancement of urban and rural development and social progress, and also served vigorous and effective opening up.

The conference emphasized the earnest implementation of national decisions and arrangements on standardization work. It called for giving full play to the important role of standards in expanding domestic demands, strengthening opening up and cooperation, and stabilizing industrial chains, enabling a benign cycle in which investment and consumption reinforce each other, steadily boosting the institutional opening up of standards, supporting the building of modern industrial system, and driving the steady and sustainable development of standardization, so as to contribute to the economic recovery and social stability and prosperity in China.

In 2024, the national standardization work will consolidate achievements of theoretical study programs by implementing the *National Standardization Development Outline* with strong sense of responsibility, expand domestic demands by rapidly boosting a new round of standards upgrading, foster new strengths in international cooperation by vigorously implementing projects for the internationalization of standards, build a modern industrial system with major landmark standards projects on stabilizing industrial chains, accelerate the establishment of a unified national market with optimized new standards system and enhanced standards implementation, build a new system for a higher-level open economy by steadily expanding the institutional opening up of standards, and realize the high-quality development of standardization with solid foundation and increased efficiency.

During the event, speeches were given by representatives from the Ministry of Science and Technology, Ministry of Agriculture and Rural Affairs, Guangdong Administration for Market Regulation, Hubei Administration for Market Regulation, and secretariats of relevant standardization technical committees.

The event was attended by the officials in charge of standardization work from related government departments, people's organizations, market regulation departments across the nation, and relevant departments of SAMR, as well as representatives from relevant industry associations, national standardization technical committees, and technical bodies of international standards organizations.

Selected keynote speeches

Empowering high-quality standardization development with high-level technological innovation

以高水平科技创新赋能标准化工作高质量发展

Zhang Jun
Deputy Director-General of Department of Basic Research, Ministry of Science and Technology

The Ministry of Science and Technology (MOST) has carried out a series of work in the areas such as strengthening the building of technological supporting system for technical standards, deploying the development of standards on new technologies and products, and pushing forward the internationalization of standards, so as to actively drive the integrative development of standardization and technological innovation, and promote the high-quality standardization development with technological innovation.

Fully understanding the significance of standardization

With the faster reconstruction of global innovation landscape under a new round of technological revolution and industrial transformation, foreign countries have paid more attention to the interactive development of standardization and technological innovation in recent years. For example, the U.S. and European countries have introduced relevant policies and measures at different levels.

The U.S. government released the *National Standards Strategy for Critical and Emerging Technology*, taking the coordinated development of scientific research and standards as the first strategic measure. The *Code of Practice on Standardization for Researchers*, issued by the European Commission, proposes that innovators ensure standardization as part of a project when developing breakthrough technologies. These new requirements, changes and trends all require us to comprehensively enhance the standardization work and systematically promote the integrated development of technologies and standards.

Jointly promoting technological innovation and standards development

The *Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and the Long-Range Objectives Through the Year 2035 of the People's Republic of China* puts forward "improving national quality infrastructure, enhancing the system and capacity building of standards,

metrology and patents, and further carrying out actions for quality improvement". The *National Standardization Development Outline* proposes "strengthening the effective interaction between standardization and technological innovation". The *National Plan for Medium- and Long-Term Scientific and Technological Development (2021-2035)* and the *National Plan for Scientific and Technological Innovation in the 14th Five-Year Plan Period (2021-2025)* make arrangements for the integrative development of technologies and standardization.

According to related plans and arrangements, in the period from 2021 to 2025, MOST has set up the special project of national quality infrastructure system under national key R&D plans, and systematically made the layout of standards development with whole flow optimization and integrated implementation at three levels including basic research, key technologies and integrated demonstration. It has deployed the development of technical standards synchronously in technological tasks such as the major projects of Sci-Tech Innovation 2030 Agenda on new-generation artificial intelligence and quantum communication and computer, and the key special projects under national key R&D plans on transportation equipment and intelligent transportation technology as well as diagnostic equipment and biomedical materials.

With continuous efforts, the working system for standardization development supported by science and technology has taken initial shape, a batch of important standards achievements has continuously emerged, and the basic technological conditions for serving standardization work have gradually improved, playing an important supporting role in building China's strength in quality development.

Focusing on key and emerging technologies to advance standards internationalization

In the areas such as data element basis and key technologies, high-end technologies in manufacturing, and cutting-edge low carbon technologies, MOST together with SAC has supported 256 international standards to be developed and released, advanced 83 Chinese standards to be referenced and converted into foreign standards, and cultivated a batch of proposals for international standards with independent core technologies. In the area of intelligent manufacturing, MOST has supported the publication of IEC international standards suitable for discrete wireless communication technology. In the area of civil unmanned aircraft, it has promoted the release of a series of international standards on core system design specifications, quality testing and evaluation and other aspects, turning the strength of technologies into the strength of standards.

MOST has also positively guided relevant organizations to participate in international standards development, and supported experts to get involved in activities of international standards organizations. With its support, the University of Science and Technology of China has established the first platform on research and coordination of international standards for quantum information.

Under new global circumstances, the Department of Basic Research of MOST will further deepen the coordinated development of technological innovation and standardization, constantly advance breakthroughs in core technologies, and empower the high-quality standardization development with high-level technological innovation.

Providing strong support for boosting China's agricultural strength with standards

着力提高标准质量和深度 为加快建设农业强国提供有力支撑

Xiao Fang
Director-General of Department of Agro-product Safety and Quality, Ministry of Agriculture and Rural Affairs

In recent years, guided by the *National Standardization Development Outline*, the Ministry of Agriculture and Rural Affairs (MARA) has striven to meet the "four strictest" benchmarks for food safety, and constantly improved the quality of standards, providing support for comprehensively driving rural revitalization and rapidly boosting China's strength in agriculture.

Top-level design improves the service capability of standards

Focusing on the central tasks of agriculture, rural areas and farmers, MARA has actively planned the new measures for agricultural standardization work. In 2019, the *Guidelines on Strengthening Agricultural and Rural Standardization Work*, released by SAMR and MARA, vigorously pushed forward the agricultural standardization work across the country.

In 2021, "rapidly improving the standards system for the full industrial chain of modern agriculture" was first included in the policy statement of the CPC Central Committee and State Council, and the standardization demonstration project for high-quality agricultural development was established and approved to be included in the list of national projects for creating demonstration activities.

In 2023, to well implement the Outline, MARA together with SAC and the Ministry of Housing and Urban-Rural Development released the Action Plan for the Standardization of Rural Revitalization to establish a coordinated promotion mechanism for the standardization of rural revitalization with cross-department efforts.

Up-to-date actions improve the quality of standards system

MARA has implemented the action for improving agricultural standards to accelerate the building of the standards system for high-quality development. First, to strengthen weak points, MARA has formulated the plan for building the agricultural standards system in 2021-2025 period, developed 4,457 standards for residue limits for agricultural and veterinary drugs in 2021-2023 period, developed 969 new sectoral standards, and made great efforts to improve the standards for modern seed industry, high-quality farmland, and green development.

Second, to optimize current standards, MARA has organized the review of 639 national standards, and launched the review of more than 4,300 sectoral standards, and eliminated a batch of outdated standards not suitable for the requirements of high-quality development based on the arrangements of SAC.

Third, to expand working scope, MARA has developed the mandatory national standards for excessive packaging of edible agricultural products, accelerated the development of more than 100 sectoral standards for quality evaluation, quality grading and cold-chain logistics, developed 10 standards in the field of rural affairs, and actively promoted the standards development in emerging business forms such as high-quality agricultural products and fresh-cut vegetables to facilitate quality upgrading.

High-level products and geographical indications promote standards implementation

By means of pollution-free agricultural products, green food, organic agricultural products and geographical indications of agricultural products, MARA has established the new mechanism for standards implementation.

In terms of agricultural production, MARA has facilitated the standardization in full industrial chain, launched the establishment of 178 national standardization demonstration bases for modern agriculture, strengthened the linkage of standards with major agricultural projects on scientific research, industrial integration and other aspects, and promoted the integration of standards, technologies and industries.

In terms of products, MARA has implemented four actions on base construction, quality improvement, consumption promotion, and issuing certificates to compliant agricultural products, and established the government-led, market-oriented publicity model that features the involvement of main bodies. It has driven the development of excellent agricultural products, the number of which reaches 75,000, and established 748 standardization production bases of green food raw materials, covering an area of 11.3 million hectares. MARA has further carried out a three-year action to crack down on violations and propel the compliance, safety and improved quality of products with strictest regulations.

In the next step, with the guidance of SAC, MARA will promote the agricultural standardization work with greater efforts and more effective means, providing more powerful support for rapidly boosting China's strength in agriculture.

Facilitating effective ecological progress with standardization

强化绿色发展标准化支撑 助推湖北生态文明建设增势见效

Liu Rongshan
Director-General of Hubei Administration for Market Regulation

Under the leadership of SAMR, the Hubei Administration for Market Regulation (HAMR) has put forth effort to set an example of ecological conservation according to the requirements of Hubei province on advancing all fronts of modernization in a coordinated way based on comprehensive river governance.

Improving three sets of systems to enhance the leading role of standards

• Improving the standardization supporting system for green development. The Hubei provincial government has released the implementation opinions of the Outline, specifying the requirements and specific arrangements for enhancing the standardization support of green development. Combined with actual conditions, local governments across the province have successively released implementation opinions, working measures and plans to put the Outline in place.

• Building the standards system for regional management of ecological environment. Hubei has proactively included standardization work in the *Outline for Integrated River Basin Management and Coordinated Development of Hubei*, taken the regional management of ecological environment of three rivers, four mountainous areas and two reservoirs as the priority, and established a standards system composed of 5 subsystems, covering 1,188 standards in 13 key areas.

• Systematically preparing the standardization work system of ecological progress. Together with provincial bureaus on ecological environment and water conservation, HAMR has formulated and released a three-year action plan for local standards on ecological environment and a five-year plan on standardization of water conservation, and developed standards for pollutant discharge control of major rivers and industries, providing comprehensive standardization technical support for ecological environmental protection in the middle reach of the Yangtze River.

Establishing three platforms to strengthen the foundation of standards

• Establishing the regional coordination platform. HAMR has organized the Second Joint Conference on Standardization Cooperation for Ecological Conservation in Yangtze River Economic Belt, released the *Wuhan Initiative for Standardization Cooperation* and the *Guidelines for Building*

Local Standards System for Regional Coordination in Yangtze River Economic Belt and two standards for ecological protection regional sharing, and further smoothed the working mechanism for resource sharing, standards development and pilot building among the 11 provinces and municipalities.

• Establishing the industrial collaboration platform. With concerted efforts, the industrial collaboration platform has been established with the joint governance of industries such as ecological environment, natural resources, agriculture and rural areas, water conservation, housing, transportation and forestry. Competent departments and industrial experts are mobilized to deeply participate in standardization activities, converting new technologies and experience into standards in time. Over the past three years, more than 160 local standards have been developed in the areas of green development and ecological conservation.

• Establishing the intellectual support platform. Hubei has taken the lead in carrying out the education pilot program of courses integrating majors with standardization in universities to cultivate talents for standardization research and application. Eight provincial standardization technical bodies in relevant fields of ecological environment and carbon peak and neutrality led by academicians have been established, and five standards have received the China Standards Innovation and Contribution Award.

Focusing on three priorities to exert the supporting role of standards

• Supporting the technological innovation with pollution reduction and efficiency improvement. Hubei has taken the lead in developing local standards and association standards on the harmless treatment technique of phosphogypsum, and expanded the application scenarios of phosphogypsum. So far, the comprehensive utilization ratio of phosphogypsum in the province has reached 69%.

• Supporting the carbon reduction and green extension with efforts on carbon peak and neutrality. Shiyan city has established a demonstration area for green and low-carbon development, built the standards system for carbon reduction and green extension, led the green industries on new energy and intelligent networked vehicles and health programs in an eco-friendly way, strengthened the comprehensive governance of rivers, and ensured the sustainable diversion of its clear waters to the north.

• Supporting modern urban construction with green development. Xianning city has vigorously advanced the construction of comprehensive pilot programs for urban standardization, integrating standardization ideas and methods deeply into the full process of urban planning and development. It has developed and implemented 1,028 standards in areas of green system, green architecture and green industry, and ranked the 8th across the country for its ecological urban competitiveness, making green industry account for over 90% of the added value of its GDP growth.

In the next step, Hubei will better exert the supporting and leading role of standards, and make more contribution in the practices of enhancing ecological conservation and promoting the Chinese modernization drive.

Advanced standards facilitate high-quality development of GBA

先进标准助力粤港澳大湾区高质量发展

Liu Guangming
Director-General of Guangdong Administration for Market Regulation

Based on the strategic positioning of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), Guangdong province has thoroughly boosted national pilot programs for innovative development of standardization, and promoted new breakthroughs in standardization work, providing strong support for spearheading the Chinese modernization drive across the country.

System and mechanism innovation bolsters advanced standards systems building

By strengthening overall planning, the governor of Guangdong has assumed the head of the leading group for fully implementing standardization strategies, defining the responsibilities of 36 provincial departments to vigorously put standardization work in place.

Through enhancing policy supply, the Guangdong provincial government has released several measures for building standards systems for high-quality development, specified 14 key tasks including the project of stabilizing and strengthening industrial chains in key sectors with standardization, and provided the roadmap for building advanced standards systems.

Following the guidance of the *National Standardization Development Outline*, Guangdong has thoroughly implemented the Outline, promoted the implementation of the *Regulations on Standardization in Guangdong*, and led or participated in the development of 15,000 national standards, rapidly establishing advanced standards systems with Guangdong characteristics suitable for high-quality development.

Unified national market drives integrated development of GBA

To further advance the linkage of rules and mechanisms, Guangdong, Hong Kong and Macao have signed the MoU on jointly promoting the development of GBA standards, and released 161 GBA standards, which have been widely concerned by all sectors of society.

Guangdong has advanced the organizational structure of GBA standards, jointly established the GBA Standardization Research Center, GBA Standardization Strategy Consulting Expert Committee, and Guangdong GBA Standards Promotion Center, and improved the mechanism for harmonizing the rules of GBA standards.

The province has vigorously facilitated the implementation of GBA standards, with nearly 900 enterprises in the area declaring the use of GBA standards and the pilot practices in Foshan, Shantou and other cities, which have greatly driven the circulation of elements and resources and enhanced the market integration level in the area.

New-type industrialization leads high-quality development of manufacturing

To further promote the "standardization plus" actions, Guangdong has released and implemented 12 plans and roadmaps for industrial standards systems in manufacturing industry such as high-end new electronic information, LED lighting, and electric vehicles, carried out 20 research projects for high-quality development of advanced manufacturing industry with standardization efforts, and received the approval of establishing six national technical standards innovation bases and four national standards verification sites.

The province has greatly implemented the project for improving the standardization of carbon peak and neutrality, and released the plans and roadmaps for relevant standards system, providing standards support for Guangdong manufacturing. It has innovatively promoted the coordinated development of patents and standards, deeply pushed forward the project for patent standards, established the platform of international standard essential patent service on 5G and AI, and explored the guidance for standard and patent integration in AI industry, boosting productivity with technological achievements.

Institutional opening up comprehensively raises the international level of standards

Guangdong has optimized the layout of international standardization work especially in the cutting-edge technological areas such as 5G, high-definition videos and unmanned aerial vehicles, and established the WLAN Application Alliance (WAA). The province has successfully built Guangzhou, Shenzhen and Zhuhai into innovation-oriented cities for standards internationalization, established international standardization talent training bases in Guangzhou and Shenzhen together with SAC, and successfully held the summit forum on international standardization.

Guangdong has aligned with international standards systems, assumed the secretariat of six technical bodies of international standards organizations, with six experts serving as the chair of technical bodies in ISO and IEC and 781 experts serving as registered experts internationally. It has actively driven the going global of Chinese standards, facilitated the standardization cooperation with Belt and Road countries and RCEP countries, guided the South China Agricultural University and Laotian counterpart to develop 10 agricultural standards such as the *Rules for production technique for high quality rice*, and rapidly established the pilot areas for high-level opening up and cooperation.

In the next step, Guangdong will comprehensively implement the Outline, play an active role in rapidly establishing the national pilot programs for standardization innovative development, striven to build the standards system of GBA, and facilitated the regional interconnectivity with unified GBA standards, contributing to the innovative development of national standardization work.

High standards lead the high-quality development of non-ferrous metals industry

高标准引领有色金属行业高质量发展

Ma Cunzhen
Chair of SAC/TC 243 on non-ferrous metals, and Director-General of China Non-ferrous Metals Industry Standards Measurement and Quality Research Institute

The standardization work of non-ferrous metals aims to meet national strategic deployment, market demands, and enterprise demands, to build and improve a new-type standards system. Remarkable achievements have been made in serving the high-quality development of the industry, ensuring the safety of industrial and supply chains, and enhancing China's competitiveness.

Standards serve the high-quality development of the industry

To implement the *National Standardization Development Outline*, over 300 standards on non-ferrous metals, including aluminum and copper, have been released, promoting the occupation of the middle and high-end markets for related products. China has contributed to the development of 16 international standards with leading efforts, accounting for 31% of the total international standards released during the same period. It has also intensified adoption of international standards with the conversion rate of 91.2%. A total of 96 green manufacturing standards have been developed, achieving the full coverage of green factory standards in the field of non-ferrous metals; 28 standards on energy consumption quota have been developed or revised, completing the full coverage of energy consumption limits of key products; the development and revision of standards for aluminum industry carbon emissions, carbon footprints, green-power aluminum, and low-carbon aluminum evaluation are also carried out, in response to the EU Carbon Border Adjustment Mechanism, to remove carbon barriers.

To secure the national resource supply, the first batch of standards on recycling materials for copper and aluminum has been developed to expand the effective supply of strategic metal resources. The development of standards for recycling materials such as lithium, cobalt, and nickel is accelerated, and the *Guidelines on Standards Implementation of Recycling Materials for Copper and Aluminum* has been jointly released by SAC/TC 243 on nonferrous metals and relevant regulatory authorities, to effectively promote the implementation of standards.

Standards ensure the stability and competitiveness of the industrial chain

In terms of the large aircraft industry, 64 standards for aluminum materials for civil aircraft were

jointly developed in collaboration with enterprises such as Commercial Aircraft Corporation of China (COMAC), AECC Beijing Institute of Aeronautical Materials, and Nanshan Aluminium. This supported the increase of domestically produced aluminum products in the C919 aircraft assembly to 68.2%, promoting the self-reliance and controllability of high-end aluminium materials for civil aircraft and addressing the shortcomings in the industry chain. In terms of the semiconductor and integrated circuit industry, key material standards such as electronic-grade polysilicon and high-purity metal target materials were developed to enhance quality, ensure material supply, and increase domestic substitution. The domestic substitution rate of high-purity copper target materials has reached 40%, ensuring the safety and stability of the supply and industrial chains. In terms of the new energy vehicle industry, over 170 standards for special materials and supporting components have been developed, significantly improving the safety performance, energy density, and charging efficiency of lithium batteries. This effectively promoted the lightweighting of structural materials for new energy vehicles.

Standards facilitate international competition of the industry

In the non-ferrous metals sector, "standards going global" and "substantive participation" have consistently been the core strategies to participate in international standardization. The English versions of national standards such as GB/T 5237.1-2017, *Aluminum alloy extruded profiles for architecture—Part 1: Mill finish profiles*, and GB/T 20928-2020, *Seamless inner grooved copper tube*, have been widely used in international trade, underlying China's position as a trade powerhouse of aluminum alloy extruded profiles for architecture and copper tubes for air conditioning and refrigeration. Their global market shares have reached 75% and 80% respectively, demonstrating how standards contribute to the global recognition of Chinese competitive products.

In terms of participating in the development of international standards, the philosophy of serving the world has guided the successive release of important standards in ore concentrates, rare earths, lithium and other areas, including ISO 3483:2023, *Copper and zinc sulfide concentrates—Determination of thallium—Acid digestion and inductively coupled plasma-mass spectrometry*. These standards have been globally accepted and used. Close attention has been paid to the development of approximately one hundred international standards. Chinese technical requirements and content have been incorporated into relevant standards, actively participating in international standardization work.

Looking ahead, the standardization work in the non-ferrous metals sector will align with the industrial development requirements of "high-end supply, rational structure, green development, digital transformation, and system security". The sector will collaboratively advance standards development to meet the needs of high-end, green, and intelligent material development.

Efforts will be made to optimize work processes, stimulate innovation among business entities, leverage the role of technical exchange platforms, and uphold confidence in Chinese standards in the new era, leading the high-quality industrial development with high standards.

Promoting Chinese medical cold storage equipment to set sail internationally

抓住机遇，多措并举 推动中国医用低温存储设备扬帆出海

Huang Wenxiu
Secretary of IEC/PC 130 and Chief Expert at China National Electric Apparatus Research Institute Co., Ltd.

China National Electric Apparatus Research Institute Co., Ltd. (CEI) is a research institute affiliated to China National Machinery Industry Corporation (Sinomach) with a history of over 60 years. CEI has undergone transformation and remained dedicated to serving the nation's needs. It has consistently focused on standardization work in the electrical appliance industry, and held the secretariats of 11 national standardization technical committees/subcommittees (TCs/SCs) and 16 domestic technical counterparts of IEC TCs/SCs. The institute has established a national technical standards innovation base for international standardization of home appliances and electric accessories.

Since 2010, the institute has led or participated in the development and revision of over 600 standards. Among which, it has led the development and revision of nearly 20 international standards, and participated in the development of more than 100 international standards. This has effectively promoted the high-quality development of the electrical appliance industry and helped Chinese products enter the global market. In 2023, it successfully held the secretariat of the IEC project committee on cold storage equipment for medical use (IEC/PC 130).

In recent years, the global demand for medical cold storage equipment used for reserving medical reagents, vaccines, and other pharmaceuticals has been steadily increasing, and the cold and freezing transportation and storage for medical use has become the key link of ensuring hygiene and health. When assessing the quality and safety of such equipment, CEI realized that there was a lack of international standards and TCs/SCs in ISO and IEC for such equipment. So under the guidance and support of SAC, CEI carried out research, prepared materials and submitted a proposal to the IEC in early 2022 to establish a new project committee for medical cold storage equipment.

Finally, with the great efforts of SAC and CEI, the IEC project committee on cold storage equipment for medical use (IEC/PC 130) was approved to be established. Its secretariat is held by CEI, I serve as the Secretary and the Chairman is held by Li Jiang, President of Hefei General Machinery & Electrical Products Inspection Institute, an affiliate of Hefei General Machinery Research Institute (HGMRI).

The successful establishment of IEC/PC 130 reflects the concerted efforts of various stakeholders in each stage. SAC has actively implemented the directives of the central government and the State Council to enhance standardization's openness level and improve the internationalization of standards. Sinomach has always attached great importance to international standardization work, with the guidance from academician Chen Xuedong. Guangdong Administration for Market Regulation has also provided strong support for CEI's standardization work, with its leadership paying several visits to CEI to provide guidance. Over the years, CEI and HGMRI have accumulated profound technical expertise in the field of low-temperature refrigeration.

With decades of experience in international standardization, CEI has cultivated a team of internationally competent professionals who understand business, international rules, standards, excel at English, and have good communication skills. This team includes one chair of IEC technical body, two secretaries of IEC technical bodies, 12 IEC working group conveners, and recipients of four IEC 1906 Awards and one IEC Thomas Edison Award.

The establishment of IEC/PC 130 not only reflects the international recognition of relevant Chinese industries and technologies but also demonstrates China's commitment to safeguarding global public health and safety. Holding the secretariat of IEC/PC 130, China will contribute more to the development of international standards for cold storage equipment for medical use.

The journey ahead is long and arduous, but with determined steps, we will reach our destination. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, CEI takes the undertaking of the IEC/PC 130 secretariat as an opportunity, integrates resources along the medical cold storage equipment industry chain, creates collaborative forces for international standardization work, and will contribute more Chinese wisdom and solutions to the high-quality development of the global medical cold storage equipment industry.

编译/靳吉丽 曹欣欣

(Edited and translated by Jin Jili and Cao Xinxin based on the speeches at the conference)

Priorities of national standardization work in 2024

2024年全国标准化工作要点

The year 2024 is crucial for China to further implement the *National Standardization Development Outline* and achieve the development goals by 2025. The overall requirements of the national standardization work in 2024 are as follows: under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we will fully adhere to the spirit of the 20th CPC National Congress and the Second Plenary Session of the 20th CPC Central Committee, and earnestly put the deployments of the Central Economic Work Conference in place.

Achieving high-quality development is the top priority of the new era, and advancing Chinese modernization is the most important task. We will implement the new development philosophy in a complete, accurate and all-round way, strengthen the supporting role of quality and guiding role of standards, and thoroughly push forward the implementation of various major tasks in the Outline.

To meet the requirements of the National Market Regulation Work Conference, we will use standards to vigorously lead the modern industrial system building, expand domestic demand, raise the level of opening up, and balance development and security. We will make standardization better serve the high-quality economic and social development, and realize the development of standardization undertakings, contributing to the establishment of a strong nation and the rejuvenation of the Chinese nation in all respects with Chinese modernization.

1 Putting effort into expanding domestic demand, and accelerating a new round of standards upgrading

1. Lose no time in revising a batch of mandatory national standards for energy consumption limit and energy efficiency of products and equipment, develop and revise the standards for pollutant discharge in major industries such as pesticide, starch, petrochemical and uranium mining and metallurgy, and lead the upgrading and transformation of traditional industries.

2. Strengthen the development and implementation of mandatory national standards for security-related key industrial products and special equipment, and achieve the goal of "maximizing the number of mandatory standards when it is necessary".

3. Drive the standards upgrading in the fields including agricultural machinery equipment and numerical control machine tools, and promote the upgrading and transformation of equipment and materials in a high-end, intelligent and green way.

4. Prepare in advance a batch of new standards in new energy storage, hydrogen energy, security emergency equipment and other areas to lead the development direction of industries, and actively create new business forms and new models.

5. Accelerate the upgrading of quality and safety standards for household appliances, furniture, decorative materials and other products, and develop standards related to energy and water efficiency of household appliances and recycling of waste and used household appliances to facilitate the upgrading of consumer goods.

6. Upgrade the standards on intelligent, green and service-oriented manufacturing, improve the standards system for the integration of informatization and industrialization, and expedite the development of standards on digital transformation.

7. Promote the standards on new infrastructure including new data centers and electric vehicle charging facilities.

8. Enhance the standards development in the areas such as high-end consumer electronic products and green products to meet the demands of high-end and green consumption.

9. Improve the standards on elderly-oriented products including furniture, household appliances, equipment and internet appliances, and rehabilitative assistive devices to ensure that the elderly live a comfortable life.

10. Perfect the standards in catering, housekeeping, tourism, culture, entertainment, fitness and other areas to boost the confidence of service and consumption.

2 Cultivating the new edges of international competition and cooperation, and vigorously implementing the project for improving the internationalization of standards

11. Actively participate in the governance of ISO, IEC, ITU and other international standards organizations, and contribute Chinese wisdom in the aspects such as the implementation framework, evaluation framework and roadmap of strategies.

12. Revise the *Administrative Measures for Participating in International Standardization Activities of ISO and IEC*.

13. Encourage various parties to participate in more activities of international professional organizations.

14. Push forward the establishment of new technical bodies within international standards organizations in cultural heritage protection, digital marketing and other areas.

15. Submit a series of international standards proposals in the fields such as climate change, financial services, digital economy, new energy, aerospace, shipping, and Chinese medicine.

16. Focus on key and emerging technology areas including carbon peak and neutrality, artificial intelligence, quantum technology, and increase the number of experts registered in international standards organizations.

17. Explore the team building for international standardization innovation in key areas such as new energy vehicles, new power systems and new-generation information technology to strengthen the establishment of international standardization talent pool.

18. Implement a batch of cooperation projects on standardization capacity building, carry out standardization training and cooperation with a focus on regions including the ASEAN, Central Asia, South Asia and Africa, to enhance the mutual learning and reference of standards among countries.

19. Strengthen the communication and dialogue on standards information, further improve the Standard Information Platform Contributed by the Belt and Road Countries, carry out the interconversion of standards, and continuously promote the mutual recognition and cooperation of Chinese and foreign standards in electric vehicles, agriculture, electric power and other fields.

20. Promote the organization of the Parallel Session on International Standardization at Hongqiao International Economic Forum to establish the high-end standardization dialogue platform.

3 Making great efforts to build the modern industrial system, and focusing on launching major landmark projects on stabilizing industrial chain with standards

21. Improve the industrial basic standards systems on core parts and components, key basic materials, advanced basic industry, industrial technological basis and other aspects, and expedite the development of industrial software standards on industrial design, industrial simulation, database and others, to lay a solid foundation for high-quality industrial development.

22. Accelerate the development of standards for special materials in additive manufacturing, testing of key metal parts and others to boost the popularization and use of additive manufacturing.

23. Release and implement the standards for rare earth concentrate, rare earth smelting and extraction, high-end rare earth processing, and recycling of rare earth resources, and speed up the development of standards for recycled materials such as recycled raw materials of iron and steel, raw materials of recycled high temperature alloy, recycled plastic and rubber.

24. Focus on the development of standards for integrated circuits such as core interconnection interfaces, electronic design automation tools and others, and accelerate the standards system building for full industrial chain covering the design, manufacturing and closed beta test of integrated circuit.

25. Promote the development of standards for the information safety of robot reliability, requirements of typical scenario application and others to promote the scenario application of industrial and agricultural robots.

26. Develop a batch of national standards on large-scale application of BeiDou Navigation Satellite System (BDS), and extend the value chain of large-scale application of BDS.

27. Carry out the development of standards for new-generation information technologies such as cloud computing, block chain and big data to cultivate and expand emerging industries.

28. Centering on the safety of generative artificial intelligence, enhance the development of safety standards for key links such as service safety, manual label safety, pre-training, and optimizing training data safety.

29. Centering on the safety of aided driving of intelligent connected vehicles, develop and implement the serial safety standards on advanced driver assistance system (ADAS).

30. Develop the standards for the electrification of construction machinery such as excavators, loaders and dump trucks to drive the transformation of construction machinery electrification.

31. Develop the standards for interconnection framework, cloud-edge collaboration, local interconnection, product evaluation and other aspects of smart home to achieve the interconnection of smart home.

32. Coordinate the national standardization pilot and demonstration programs in a well-planned manner, and synchronously promote technological breakthrough, standards development and industrial promotion.

33. Step up the coordination and interaction of upstream and downstream standardization technical bodies, and comprehensively apply the standards at various levels to build the chain of standards suitable for the industrial chain.

34. Release a batch of typical achievements for stabilizing the industrial chain with standards, organize and hold meetings for experience sharing and on-site promotion, and provide the standardized paradigm that can be replicated and promoted.

4 Speeding up the establishment of the unified national market, continuing to improve the new standards system, and laying emphasis on standards application.

35. Continue to improve the national standards system and sectoral standards system by carrying out the pilot project of optimizing standards systems in key areas such as non-ferrous metals, plastic, earth-moving machinery, metal-cutting machine tools and wind power equipment, and making greater efforts to integrate, revise, develop and abolish a group of standards combined with the development demands of sectors.

36. Normalize the development and application of local standards, sort out existing standards, strictly control new standards, examine and rectify the problems of local policies that improperly cite local standards and influence fair competition, and clear up local standards that are developed out of scope or with non-compliant technical contents.

37. Develop national standards for credit commitments of operating entities, classification of untrustworthy information, and credit evaluation of individual businesses, promote the orderly sharing and efficient use of evaluation information, and support multi-departmental joint supervision of untrustworthy behaviors.

38. Optimize the standards system for product defect and safety management, and strengthen the development of key standards for the safety assessment and defect analysis of cutting-edge technologies.

39. Promote the construction of a coordinated and supporting national standard reference material system, increase the development of standard reference materials in key fields such as green ecology, biotechnology, metal and non-metallic materials, and energy, and enrich the types and quantities of standard reference materials.

40. Develop national standards for the fair competition and compliance management of operators to provide guidance for fair competition and compliance management.

41. Improve the standard and specification system of integrated platform network on market regulation, and develop the management specifications for institutions with access to the integrated platform network.

42. Carry out the survey of standards implementation data, make an assessment plan for statistical analysis points of mandatory standards implementation, and establish a dynamic management mechanism.

43. Promote the regular statistical analysis of the implementation of mandatory national standards in all regions, departments, and statistical analysis stations.

44. Establish and improve the incentive mechanisms of the citation of standards in laws and regulations and standards implementation, strictly implement the self-declaration disclosure and supervision system of enterprise standards, and enhance the basic supporting role of standardization in economic and social development.

45. Strengthen the management of national standardization pilot and demonstration projects, coordinate the layout and system construction, and strengthen goal orientation and effect evaluation, to make the pilot projects play a strong leading and demonstration role.

46. Vigorously promote the evaluation of standards implementation effect, form a batch of evaluation methods and models for standards implementation effect, and promote a number of typical examples of standards implementation effect.

47. Establish a standardization innovation activity index model, and publish the national, local and enterprise standardization innovation development reports in phases.

48. Explore the establishment of the standards system for ecological protection and high-quality development in the Yellow River Basin and the ecological civilization standards system in the Yangtze River Economic Belt, promote the development of mandatory standards for water quota of high water-consuming industries in the Yellow River Basin, and improve the "3+2" standardization strategic collaboration mechanism in North China, improve the regional coordinated local standards management system of the Yangtze River Delta, and release a batch of regional coordinated local standards.

49. Focus on food, transportation, modern service industries, water-related affairs and other areas for the common needs in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), and publish a batch of GBA standards.

50. Build a common service platform for cross-Strait standards to provide standards information services to people on both sides of the Taiwan Strait.

51. Carry out urban standardization actions, and promote the construction of international standardization innovative cities and comprehensive pilot projects for urban standardization innovation.

5 Building a new open economic system at higher level and steadily expanding the institutional opening up of standards.

52. Focus on key areas such as consumer goods, manufacturing, new infrastructure, and carbon peak and neutrality, actively adopt advanced and applicable international standards, and improve the consistency of domestic and international standards.

53. In line with the cooperation needs of countries along the Belt and Road in the fields of industry, trade, science and technology, and engineering construction, speed up the translation of foreign language versions of Chinese standards, and increase the overseas application and mutual recognition of Chinese standards.

54. Accelerate the coordination with relevant rules such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Digital Economy Partnership Agreement (DEPA), and promote the integration with international high-standard economic and trade rules.

55. Study and formulate the guidance on steadily expanding the institutional opening up of standards, and promote the high-level opening up with high standards.

56. Improve the correspondence between national standardization technical committees (TCs) and international TCs, and increase the proportion of Chinese TC members serving as experts involved in international standards development.

57. Support free trade pilot zones/ports to carry out the pilot work for institutional opening up of standards, and prioritize the construction of institutional systems and regulatory models that are geared to international high-standard economic and trade rules.

58. Promote the international development of China's association standards organizations, and support enterprises, social groups, research institutions and others to actively participate in and cultivate international standards organizations.

59. Give better play to the role of multilateral and bilateral mechanisms between China and

Europe, Northeast Asia, Russia, ASEAN, Germany, France, and the U.K., and carry out the practical cooperation on standardization.

60. Actively expand cooperative partnerships with relevant countries in the Arab region, Africa, America and other regions, and sign more standardization cooperation documents.

61. Establish the Sino-U.S. intergovernmental standards and conformity assessment dialogue mechanism to strengthen standardization cooperation and exchanges.

62. Propose more standardization cooperation issues on cooperation platforms such as APEC, Shanghai Cooperation Organization, and BRICS. Plan to achieve more standardization results under the mechanisms and frameworks such as the Belt and Road Forum for International Cooperation.

6 Realizing the high-quality development of standardization undertakings, consolidating the foundation of standardization development, and expanding the influence of standardization.

63. Revise the *Administrative Measures for National Standardization Instructional Technical Documents*, *Administrative Measures for Agriculture and Rural Affairs*, and *Administrative Measures for International Standards Adoption*, and promote the development of measures to manage association standards.

64. Explore to establish the annual report system of sectoral standard codes.

65. Vigorously implement the plan on cultivating excellent association standards, carry out the evaluation of the capability of association standards bodies.

66. Formulate and implement administrative measures to reinforce the supervision of standards implementation, continuously promote the administrative mode of "random spot check, random selection of inspectors, and public disclosure of results" for association standards and enterprise standards, as well as reinforce the supervision and spot check of sectoral standards and local standards.

67. Implement the *Measures to Promote Standardization in Enterprises*, and deeply promote the self-declaration disclosure and supervision of enterprise standards.

68. Accelerate the development of guidelines on prompting the interactive development of standardization and technological innovation.

69. Comprehensively establish and scientifically manage various standardization technical bodies at all levels, and cultivate a batch of standardization project research groups and standardization technical organizations for cutting-edge technologies and emerging fields such as ESG.

70. Vigorously promote the research on digital standards, and carry out the pilot work of digital standards.

71. Deeply implement the liaison mechanism for technical organizations, and smooth the communication among and within technical organizations.

72. Keep carrying out the evaluation of national standardization technical committees and domestic counterparts of international standards organizations, strengthen the application of results, and achieve their dynamic management.

73. Organize the selection and commendation activities of China Standards Innovation and Contribution Award.

74. Foster over 300 standards innovation enterprises.

75. Continue to hold the Private Economy Standards Innovation Week.

76. Encourage enterprises to actively become the forerunners of enterprise standards, and launch the action of standards comparison and conformity.

77. Make efforts to build national standardization pilot and demonstration projects in fields including agriculture and rural affairs, intelligent manufacturing, circular economy, services, and social administration.

78. Fully utilize the resources of think tank, the China Standardization Expert Committee, to bolster fundamental theoretical research on standardization, design of technical paths, and research on development trends.

79. Thoroughly implement the *Special Action Plan on Standardization Talent Cultivation (2023-2025)*, perfect the vocational classification system and vocational standards related to standardization, and promote the vocational construction of standardization talents.

80. Initiate the classified statistics of standardization talents nationwide, and build a national talent pool for classified cultivation.

81. Bolster the development of majors related to standardization in China's higher education institutions, support qualified vocational colleges to set up the major of standardization technology, and strengthen the cultivation of talents for standardization application; put more efforts in the cultivation of international standardization talents, expanding the talent pool; select and train standardization directors in enterprises.

82. Organize the professional training for standardization managers to enhance the promotion and interpretation of standardization policies.

83. Enrich the course resources of online standards lessons and online lectures for committee members, devote more efforts to the compilation and publication of standardization textbooks, and cultivate the professional talent team for standardization.

84. Comprehensively utilize various media and platforms, and promote achievements of standardization work through expert forums, internal publications, Weibo accounts, public WeChat accounts, and applications.

85. Continue to bolster the implementation of the Outline, and summarize and promote innovative practices and useful experiences of the implementation.

86. Carry out the publicity and interpretation of key national standards, and strengthen the authority and influence of national standards by diverse forms including illustrations and videos.

87. Hold activities for the World Standards Day, and widely advocate standardization to create a sound atmosphere for standardization work.

88. Approve the establishment of a batch of national technical standards innovation bases, revise the *Administrative Measures for National Technical Standards Innovation Bases*, enhance the establishment and management of the bases, simultaneously advance the technological breakthroughs, standards development and industrial promotion, and include advanced and applicable technological achievements in standards to improve the level of standards.

89. Approve the establishment of a batch of national standards verification stations, and formulate measures for their construction and management.

90. Consolidate and deepen the achievements of theoretical study program, and facilitate the in-depth implementation of the Outline with a strong sense of responsibility.

翻译/靳吉丽 曹欣欣 方洛凡

(Translated by Jin Jili, Cao Xinxin and Fang Luofan based on the document in Chinese)

CYBERSECURITY STANDARDIZATION CONFERENCE 2024 held in Belgium

2024年欧洲网络安全标准化会议在比利时召开

By Cao Xinxin
文/曹欣欣

The Cybersecurity Standardization Conference 2024 took place in Brussels, Belgium in hybrid forms on March 5, 2024, with the theme of "Fast evolving landscape of EU legislation: challenges and opportunities for standardization".

The annual event is hosted by ENISA (the EU Agency for Cybersecurity) and the European Standardization Organizations including CEN (the European Committee for Standardization), CENELEC (the European Committee for Electrotechnical Standardization) and ETSI (the European Telecommunications Standards Institute), which has been successfully organized for seven consecutive years. This year's conference attracted around 200 participants from government, organizations, associations, and enterprises on site and more than 1,500 online participants from all over the world.

The one-day conference included four sessions, which focused on different topics: Shaping the future of European standardization; Standardization challenges related to new legislation; Standards for new requirements on digital products; Standardization of security of supply chains and their components.

As cybersecurity related technologies are developing fast and the new EU legislation is being implemented, the supporting role of standards is needed to provide more security, fair playing fields and legal certainty. The meeting is aimed at building the communication platform for all stakeholders to understand the new legislation better, and discuss the challenges in standardization, the standards needed for cybersecurity, how to develop such standards, and how to encourage more enterprises to participate in standardization work.

Raluca Stefanuc, Deputy Head of Cybersecurity & Digital Privacy Policy Unit of European Commission, Ewa Zielińska, Vice-President (Policy) of CENELEC, Luis Jorge Romero, Director General of ETSI, Andreas Mitrakas, Head of Market Certification Standardization Unit of ENISA, together with other 18 officers and experts from the European Commission, the European Standardization Organizations, and enterprises were invited to give insightful views about the new legislation, European standardization and cybersecurity.

Here, we present the highlights of some presentations and discussions to help our readers understand the new EU legislation, the European needs for cybersecurity standards, and their concerns.

Session 1: Shaping the future of European standardization

Standards support the implementation of European legislation

Raluca Stefanuc

Deputy Head of Unit - Cybersecurity & Digital Privacy Policy, DG CONNECT, European Commission

The regulatory intervention is necessary for ensuring legal certainty and security. I think that the European legislative framework is complete, especially with the Cyber Resilience Act (CRA). The key of the successful implementation of the CRA is that we should work together with industry and European civil organizations, and also with international partners. It is essential for us to collaborate and find ways to efficiently support the policies and the implementation of the legislation to facilitate the compliance with this legislation for our manufacturers.

Standardization is a complex process. I think that the CRA will be a game changer, not only for how standardization works but also for how it can serve the implementation of the legislation.

The EU issued its new standardization strategy in 2022 that is now being implemented, and it has builded on identifying a number of areas that need further improvement. One of them is how to more effectively prioritize and serve the EU legislation, and provide standards that can support new legislation in a more timely way. This is unique for the EU to have technical standards that support the implementation of the legislation and actually have legal value in itself because European harmonized standards can provide the presumption of conformity.

The priorities of the European Commission in 2024 was published in February. Cybersecurity is among the priorities, and the standardization process for the cyber resilience is extremely important.

We have been engaged with European standardization organizations in the mapping process of international standards, existing standards and future needs. We work very closely with ENISA, and the joint research center also helps us from the very beginning with the mapping of existing standards and building on the approach for the further standardization of the CRA.

Ewa Zielińska

Vice-President (Policy) of CENELEC

What CENELEC has done to ensure cybersecurity

As economic and industrial process change, the standardization needs of our stakeholders and users evolve as well, and CEN and CENELEC adjust to the changing needs and expectations of our customers to continue to provide user-friendly, state-of-the-art European standards.

It is especially important that products, systems and services are mutually compatible and interoperable so that information can be shared, and people can communicate with each other using different devices. Relevant standards help to ensure that products made by different companies can work together seamlessly. The standards are very handy tools for regulators and conformity assessment as they help to prove the products fulfill legal requirements, and they are safe.

European standardization plays a key strategic role in strengthening Europe's collective resilience against cyber threats and ensuring that all citizens and businesses can benefit from trustworthy and reliable product services and processes. The relation between CEN, CENELEC and its international counterparts ISO and IEC is also an element to be taken into account to foster the most resilient and secure single market.

Artificial intelligence represents a major technological challenge given its rapid development and numerous applications. There is a need to address the challenges for AI standardization and innovation. CEN and CENELEC have established the JTC 21 on artificial intelligence to produce standardization deliverables in the field of AI, and to consider for the adoption as European standards of those relevant international standards. This technical committee liaises with many other technical committee as AI is a horizontal topic. The JTC 13 dealing with cybersecurity and data protection has done the work on the finalization of standards supporting the Radio Equipment Directive. Those standards are developed to respond to standardization request issued by the European Commission.

In terms of data standardization, we have established a focus group on data space and cloud, and the kickoff meeting will take place in March. So if anyone is interested in this work, you can join in. All in all, a lot of work has been done and all is to respond to the needs of our stakeholders.

Cooperation is the key

Luis Jorge Romero

Director General of ETSI

The standardization system in Europe is very solid and works very well. Thanks to the system, we can now be happily sitting here connected to our homes easily. The system is based on the volunteer contribution.

Gathering consensus is extremely important because it is the only way in which we can have products in the market acceptable to all. We cannot do it alone, and we need to come together. Collaboration is great because it is helping our European market a lot. We are able through our standards to export our products, technologies, and values.

When we talk about cybersecurity, it is also about cooperating. In one of the ETSI's conferences, one expert said, cooperation in standards is extremely important because the guys who want to hack our systems are cooperating to attack us, so the only way that we defend ourselves is cooperating globally.

ENISA's progress in cybersecurity standardization

Andreas Mitrakas

Head of Unit - Market Certification & Standardization, ENISA

ENISA now works concretely on three standardization requests issued by CEN and CENELEC, which are about the guidelines on sectoral cybersecurity assessment, security objectives and requirements for cloud services, and requirements for conformity assessment bodies certifying cloud services.

We were concerned about the security requirements for cloud services because when we cannot find any in certification and the conformity assessment requirements for cloud service providers. And now we have the first success, that is CEN/CLC/TS 18026:2024, *Security objectives and requirements for cloud services*, which can be referenced on the forthcoming cloud related acts.

Session 2: Standardization challenges related to new legislation

Sławomir Górniak

Senior Cybersecurity Expert, ENISA

The landscape of EU cybersecurity legislation

When we organized this conference for the first time, there was literally no legislation on cybersecurity. There were only some projects, and ENISA was established, but that's all.

In the past few years, there were many new legislative acts, legislative proposals, and initiatives that popped up, and the whole cybersecurity landscape of EU legislation has changed enormously. Now, the cybersecurity landscape of EU legislation includes two strategies and a few acts and directives as follows:

Two strategies

- EU Cybersecurity Strategy
- Digital Single Market Strategy

Acts and directives

- EU Cybersecurity Act
- Data Act
- General Data Protection Regulation
- EU Cyber Solidarity Act
- eIDAS Regulation
- Cyber Resilience Act
- EU Chips Act
- Artificial Intelligence Act
- Radio Equipment Directive
- Digital Operational Resilience Act
- Network and Information Security Directive

Collaborating to address the challenge

Markus Mueck

Principal Engineer and Director, Intel Labs; Board Chair, ETSI

In Europe, we are very lucky to have the new legislative framework (NLF), which exactly allows a tight integration of stakeholders in this legislative process. I think this is one of the jewels of Europe. In this way, we have the stakeholders and industries that in the end need to implement and meet the criteria of the legislation being deeply involved in collaboration with the European Commission and policy makers, to define the standards that are used to demonstrate the presumption of conformity.

If you look at what is happening, it is clearly challenging. For example, some domains were previously separate, such as ICT. But it is getting closer together, and almost converging into one. This requires all talents and all resources that we have in Europe to get together, and collaborate closely in order to address this challenge.

Developing cybersecurity standards faster

Cinzia Missiroli

Director – Standardization, CEN-CENELEC

When it comes to cybersecurity, it is about very fast technology and the evolving threat landscape. Hence, we need to develop standards faster. We are certainly aware of that, but we should do that without compromising the key values such as the openness and transparency and make sure that the experts properly contribute to the work.

And we also need to ensure that once the standards are made available to our members, they remain fit for purpose. Cybersecurity standards might require a faster review and revision process. Even so, we cannot have 100% legal certainty and 100% secure products when it comes to cybersecurity. All these need to be taken into consideration when developing standards in this aspect.

Filipe Jones Mourão

Cybersecurity & Digital Privacy Policy, DG CONNECT, European Commission

More engagement of civil society

As more new legislation comes out, there is an increased engagement of civil society, media, and the European Commission. The regulators try to be open and to communicate with the stakeholders. I think there are a variety of places where you get information. Journalists have played a crucial role in informing the public and keeping the public informed. I think everybody has appreciated that a lot, including the regulators.

Machiel Bolhuis

Director, Standards & Technology Policy EMEA, Oracle

How can we better involve private sector in standards development?

Private sector involvement in standards development is crucial, but it is hard to find the experts to work on this. How can we involve the private sector better and make it worthwhile for them? I think it is very simple, and it is self-interested.

The presumption of conformity that standards give is a good incentive to participation, which gives the access to the European market. It is also a good incentive to being able to participate in the drafting of standards, you can have a seat on the table and give comments on this draft. So I think there are plenty of incentives for private companies to participate. It is an open process, so everybody can join.

George Sharkov

European Software Institute, Bulgarian Academy of Sciences; ETSI TC CYBER

It is important to help SMEs be aware of standards

In a 2021 survey, 80% of the companies in Europe are SMEs. 80% of them said that they have cybersecurity challenges, and it is a big issue for them. More than 50% claimed that they will shut down the business if they cannot persevere.

The weaknesses of SMEs include the lack of awareness of standards, affordability, and accessibility to standards. So we need to improve their awareness about standards and the applicability of standards, which is not a straightforward process.

Session 3: Standards for new requirements on digital product

An introduction was given by Igor Nai Fovino, Deputy Head of Cybersecurity and Digital Technologies Capabilities Unit, Joint Research Centre (JRC), European Commission.

Based on a study that the JRC and ENISA did together last year, Igor mapped out the Cyber Resilience Act (CRA) requirements against cybersecurity standards as a brief introduction, and drew the following conclusions:

· All requirements are at least partially covered by a standard;

· The "Universal Standard" for the CRA does not exist today;

· There is a good existing base for future standardization activities despite gaps;

· The duality between horizontal and vertical standards is not a burden but an added value and an occasion that makes something new, more agile and effective.

Igor Nai Fovino

Deputy Head of Cybersecurity and Digital Technologies Capabilities Unit, Joint Research Centre, European Commission

What are your biggest concerns about the Radio Equipment Directive (RED) and the CRA?

Hugo Lenssen: The RED Article 3.3 (d), (e), and (f) put forward requirements on cybersecurity. We have already been investigating and learning internally because we need to build an IT lab for inspections. We have debated what is horizontal and vertical. Though we have the RED, we are lack of corresponding standards and information updating. My biggest worry is how to build a product or service that meets security requirements even without standardization.

When we talk about the General Data Protection Regulation (GDPR), there are two strategies that organizations take. One is to make everybody aware, and the other is to do your thing and go as far as you can. Which approach of these two do you take when it comes to cybersecurity?

Jens Guballa: We are trying to improve the awareness for cybersecurity. We have the framework for training. For example, we had a cybersecurity week where we were talking about different topics for cybersecurity throughout the whole company.

From left to right: Rogier Elshout, Moderator; Hugo Lenssen, Program Manager, Digital Safe Equipment - IoT, Dutch Authority for Digital Infrastructure; Philippe Proust, Cyber Segment Manager, Thales Group; Ben Kokx, Director, Standardization Product Security, Philips; CEN-CENELEC JTC 13/WG 9; Katerina Megas, Program Manager, Cybersecurity for Internet of Things, NIST; Jens Guballa, Cyber Security - Governance Product IT, Bosch.

Your understanding about horizontal and vertical standards.

Ben Kokx: I think we need to distinguish between process related standards and technical standards. And process standards can be applied horizontally. For technical standards, it makes more sense to have them vertically.

Philippe Proust: For me, one of the key things about horizontal and vertical standards is how to set up the whole framework? In my view, we need to start with the horizontal, so we have something out there to work with because if the focus is having the fully vertical, we're talking about hundreds of standards that will not be delivered in time. In the end, you want to move as much as possible to the vertical side, recognizing that you cannot address all different types of products.

For example, if you want to develop standards for a niche product with narrow acceptance, it will take very long time or simply doesn't worth it considering the input and output. Moreover, the standards perhaps will conflict with the current standardization work. Therefore, I think we have to start on the horizontal side, then over time we can move more towards the vertical.

In Europe, we often say we are the biggest market on earth. So if we lead the way, our standards will become global standards. Is that how you think in the U.S. as well?

Katerina Megas: The U.S. is complicated. We have a lot of forces even within the market. So I don't think we are the largest market and what we do everyone will follow. In fact, at NIST, when we started the IoT cybersecurity program, I used to talk to stakeholders about fragmentation. When we approach requirements, we always try to strike a balance between understanding where is the majority of the market, because it's never been in our interest to create special requirements. It's more expensive and you lose on innovation.

When facing lack of human resources, it's clear that we shouldn't lower the quality of the standards, but it leads to more time of standards development.

Hugo Lenssen: Yes, I think so. But still I don't know if it's possible to do it step by step. At this moment, a lot of products and services on the market and even the basics are not there. And security is also a complete challenge for many manufacturers.

When a standard is good enough?

Katerina Megas: Any standard is part of the marketplace. If it can meet the needs of the marketplace then is good enough. I think it's the market decides whether it is good enough.

Philippe Proust: I would like to highlight the importance of the work done by ENISA to make the mapping of existing industrial standards. Now, the landscape for regulation, standards and industrial needs is quite complex. And I think that the industry should work from now on to adjust and fill the gap in standards. I think in the end, the market will decide whether standards are good enough. The market will make you know whether you have made the right choices.

Session 4: Standardization of security of supply chains and their components

Philippe Blot

Head of Sector - Certification, ENISA

Philippe Blot introduced the adoption of the EU Cybersecurity Certification (EUCC) and further commented on the scheme.

The EUCC scheme is a comprehensive set of rules, technical requirements, standards and evaluation procedures, which is defined at the EU level and can be applied to the certification of specific ICT products, services or processes. An EUCC attests that an ICT product, process or service has been certified in accordance with such a scheme and it complies with the specified cybersecurity requirements and rules.

The European Commission is publishing the implementing act dedicated to the EUCC. Implementing acts contain mandatory requirements in their core part and annexes. They are supported by a series of state-of-the-art guidance documents to facilitate their understanding and implementation. The EUCC could serve conformity to the CRA and that's the work we will go on. There are other possible application fields of the EUCC, such as AI certification.

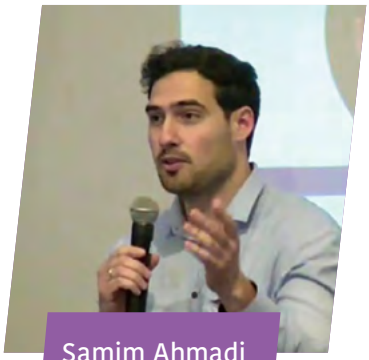
The question is how to make standards ready for supply chain certification within the global scheme, because when you create candidate scheme, you need to know on which standards you can build.

Why do we need to talk about supply chain security standards today?

Samim Ahmadi: I think it's a very important topic, but maybe not very much covered yet. There are multiple reasons. The supply chain consists of a lot of links, including suppliers, manufacturers, distributors, retailers, and consumers, where possible attacks could appear. We already have some standards available, but some of these links should be paid more attention to. Also, emerging technologies shall help us to improve processes throughout the supply chain, which also needs standards.

When we talk about supply chains, there are two points we start at. One is the supply chain of digital products. For example, products are made of small components provided by various supplies, and when products are brought to the market, venders need to be responsible for the cybersecurity of products. The other is the cybersecurity of supply chains. If I am an importer and my routers get hacked, that also means that my suppliers, customers and the port authority might get affected, because my computer is connected to them.

As the supply chain covers all the aspects in the society, it is really helpful to implement safety measures to ensure everyone is safe.



Samim Ahmadi

Senior Manager, EY; ETSI TC CYBER

Sonia Compans

Security Standardization & Lobbying Senior Manager, STM

Jakub Dysarz

Policy Officer, DG CONNECT, European Commission

Roberto Cascella

Head of Sector - Technology, Supply Chain & Strategic Autonomy, ECSO

Santino Foti

Product Innovation Professional, INFOCERT; ETSI TC ESI

When you look at the standardization of supply chains, what is important to you and how can we standardize supply chains?

Sonia Compans: The CRA is a triggering action that forces us to look at our supply chain alongside the needs of directive. As chip manufacturer, we are an important entity. From the standpoint of ICT or global IT infrastructure, the CRA covers our products, which is very important. Though we are chip producers, we also have our own supply chain, and the chip is not just made by us. So we have to deal with the cybersecurity of supply chains.

I think we need general principles that are applicable to most companies. And then companies will transform them into actual concrete actions regarding our specificity. Relying on some standards is really vital. Also, there are some de facto standards, which are already used widely by us. It is very important that we can use what's already deployed no matter it's really formal standards or not. We need to leverage those existing specifications or usages.

The supply chain is a really big thing containing multiple aspects. Do you basically have the same thing in mind for cybersecurity?

Jakub Dysarz: The idea of the supply chains is that whatever you are doing, you are expecting that your suppliers have the same level of cybersecurity as you. If you are, for example, producing chips for the military, you will expect that whoever supplies you with software and hardware has the same level as you or as high as the military.

So depending on your customers, your risk appetite and other elements, you need to balance this out. It is a bit problematic. In terms of digital products, you have a lot of stakeholders and vendors, you cannot dictate what the security level will be. Instead, you need to adhere to the market standards. This is how we reach the key words here. We need standards and certification to make sure that everyone has appropriate security level.

The European Cyber Security Organization (ECSO) recently had a report on the cybersecurity of supply chains. What are your key findings?

Roberto Cascella: The focus of the report is on software. The fact is that the supply chain is very complex and global. We have different kind of actors and stakeholders. We have decided especially to focus on the software because it raises up a lot of challenges. There are already some best practices on software that could be used, then we need to enforce this kind of best practices.

The first question is how to provide clarity of showing the way that software is developed, to understand what could be the source of the attacks. So the idea is to provide some clarity to the community.

The other important aspect is what we need about software. It's important to have an understanding of the different dependencies of your software code. We need to have an understanding of what the risk is, how we can manage it, and what different factors are involved. The document will be published in the next couple of weeks. We are just finalize internal procedure within ECSO, and for us it is an element to build up a dialogue with the community.

What can we do for the cybersecurity of supply chains?

Santino Foti: I would like to say something from the angle of the standards. On the topic of the supply chain, ETSI TC ESI provides our contribution to the definition of standards and specification that are relevant to the security policy of the trust services. Through collaboration with many teams, working groups and technical committees, we contribute to improve and maximize the reliability of standards. Does a supply chain branch undermine the reliability? And I'm strongly interested to find new approaches through standardization activities at many levels, in order to study, understand and provide possible new tools that are relevant to the weak points of supply chain.

编辑/曹欣欣 方洛凡

(Edited by Cao Xinxin and Fang Luofan based on the speeches at the conference)

New Chair of IEC/TC 88 blows wind of change

Jonathan Hughes has been nominated Chair of IEC Technical Committee 88, one of the IEC key standardizing committees for the renewable energy industries.

He currently works in the development, testing and validation of renewable energy technologies (both marine and wind power) for ORE Catapult in the United Kingdom. He started his career in instrumentation systems, having graduated from the University of Newcastle upon Tyne with a Masters of Engineering in Electrical and Electronic Engineering. He spent some time working in the Research and Development team, looking at the validation requirements for remote sensing systems such as floating lidars. He then moved into a more validation focused role, looking at ground based test and certification routes for the world's largest wind turbine blades, power converters, bearings and other major components.

He has also been involved in the IEC Conformity Assessment System IECRE, the IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications, and has produced work for which he was awarded the IEC 1906 Award in 2023. He takes over TC 88 at a time when the delivery of secure and environmentally sustainable energy has never been as high on the global agenda.

"So much of the work undertaken in TC 88 and the wider renewable community is at the heart of the UN Sustainable Development Goals, and as such, I believe that wind generation technology will continue to be at the forefront of global efforts to reduce climate change. I look forward to working with all of the experts within TC 88 and the wider standards family to ensure that the IEC 61400 series remains at the forefront of wind generation technology."

(Source: IEC)

The launch of European technical committee on carbon capture, utilization and storage

The Dutch Standardization Institute (NEN) has initiated the establishment of a European technical committee (CEN/TC 474) that will develop European Standards across the CCUS (carbon capture, utilization and storage) value chain. With broad participation from CEN Members and European organizations, the committee kicked off in Brussels and finalized its scope and first work programme.

European (EN) Standards are a key component of the European Single Market. They are crucial in facilitating trade and hence have high visibility among manufacturers inside and outside Europe. Standards provide individuals, businesses and all kinds of organizations with a common basis for mutual understanding. European standardization has also proven to be an effective tool to support European legislation and policy. Standards can be developed either as an alternative for legislation (i.e. self-regulation) or to support legislation (e.g. presumption of conformity). The CEN/TC 474, *CO_2 capture, transportation, utilization, storage and carbon accounting*, will fulfil this role in the field of CCUS.

On the day of the CEN/TC 474 plenary meeting, the European Union launched its communication on an Industrial Carbon Management (ICM) Strategy, in which it states the need for standards within the field of the committee. The ICM emphasizes the importance of ensuring minimum CO_2 stream quality and other issues, such as composition, purity, pressure and temperature. In addition, common guidelines are needed regarding "incidental associated substances from the source, capture or injection process" that can be accepted in CO_2 storage permits.

(Source: CEN-CENELEC)

6GSymposium Spring 2024

April 9-11, hybrid forms

6GSymposium comes at a vital time in the development of telecoms. There are drastically different visions for what 6G needs to do and to be, and interests pulling stakeholders in many different directions.

How do we avoid the mistakes of the past? Only by a deliberate evolution of mindsets, business relations, strategies and industry processes alongside technology and policy evolution. Perhaps then we can build commercially successful future services which deliver the societal impact governments need.

Join the event in debate about some of the most important issues and controversies facing telecoms' development. The symposium includes: Interactive conversations and debates on essential policy, commercial and technology issues; A day focusing on 6GFlagship and Hexa-X II innovation projects hosted by Business Finland and 6G Finland; Networking with a wide variety of stakeholders from across Europe and beyond; Meetings with other vertical industries undergoing transformation; Live demonstrations of cutting-edge technology; General and VIP social activities to make the most of the area.

For more information on the event website: **https://www.6gworld.com/6GSymposium-Spring-2024/**

Webinar on ISO 14083 in the context of new EU proposal CountEmissions and other relevant EU legislation

April 16, virtual

CountEmissions EU will ensure better comparability and transparency of GHG emissions of passengers and freight transport services thereby incentivising behavioral change among businesses and customers towards reducing GHG emissions and making transport services more efficient. ISO 14083, newly published in 2023, provides an internationally recognized basis upon which can be used for this.

The webinar will provide an introduction to the principles and approach of ISO 14083, followed by the main building blocks of the proposed CountEmissions EU regulation, which include:

- A common method to calculate GHG emissions of transport services, as provided by the new international standard EN ISO 14083;
- A harmonized set of input data for GHG emission calculation;
- Rules on communicating GHG emission data;
- Verification of the of GHG emission data and calculation processes;
- Accreditation procedures for conformity assessment bodies performing the verification of the GHG data and processes.

For more information on the event website: **https://www.cencenelec.eu/news-and-events/events/2024/2024-04-16-webinar-en-iso-14083/**

Workshop "Navigating the Transition: Standards Powering the Journey of Alternative Fuel Infrastructure"

April 18, Brussels, Belgium

In light of recent significant regulatory changes within the European Union impacting the transport sector, such as the Alternative Fuels Infrastructure Regulation (AFIR), ReFuelEU and FuelEU Maritime, the role of European standardization becomes increasingly critical in facilitating the transition towards the deployment of alternative fuels.

On the April 18, 2024, CEN and CENELEC will be organizing a workshop to gather key stakeholders and sectoral experts from the road, maritime, aviation, and railways industries to delve into the challenges, opportunities, and solutions surrounding this transition.

Topics are as follows: What are the impacts of these new EU legislations? What are the challenges in the deployment of AFI for road vehicles, aviation, maritime & inland navigation, and railways? How can standardization play a role in this new framework? What is the state of play of standardization of alternative fuels infrastructure and what are the new needs?

For more information on the event website: **https://www.cencenelec.eu/news-and-events/events/2024/2024-04-18-afi-workshop/**

Regional Digital Financial Services Security Clinic for Asia Pacific Region

April 24-25, Seoul, Republic of Korea

The International Telecommunication Union (ITU) is organizing the Regional Digital Financial Services Security Clinic for Asia Pacific Region on April 24-25, 2024 in Seoul, Republic of Korea. The event is being jointly held with FNSV Korea and the Korean Fintech Center.

In recent years, regulators and financial sector supervisors have become increasingly aware that financial services aimed to address financial inclusion challenges around the world are becoming vulnerable to cyber threats, primarily due to the increasing role of digital services in the delivery of financial services. As financial services become increasingly digitized, the volume of sensitive digital data grows exponentially and with it, the potential for personal and system impacts of data breaches. As such, the need for safeguards from cybersecurity threats to this data becomes increasingly important.

The workshop is targeted at representatives from telecommunications regulators, national cybersecurity agencies, central banks, financial service providers, banks, ministries, service and IT security solution providers, Strong Authentication vendors, academia, R&D institutions and other organizations working on matters related to fintech security and digital financial inclusion. Participation is free of charge and open to all stakeholders.

For more information on the event website: **https://www.itu.int/en/ITU-T/webinars/dfs/sc/20240424/Pages/default.aspx**

RESEARCH & EXPLORATION
BETTER COMMUNICATION | GREATER VALUE

Analysis of Mongolia's standardization development in 2021-2022: Focusing on fields and quantities of approved standards

2021–2022年蒙古标准化发展分析：基于获批标准涉及领域的统计

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Abstract: Mongolia, a key partner in the Belt and Road Initiative, is fully dedicated to fostering regional cooperation and connectivity. Standardization has emerged as a vital field with far-reaching influence for regional trade cooperation. This paper makes an in-depth analysis of the standards approved in Mongolia in 2021 and 2022, offering a fresh perspective of the past two years' standardization development in the country. The primary objective is to present an updated account of Mongolia's standardization efforts and to facilitate regional cooperation and exchange in standardization.
Keywords: Mongolia, standardization, standards development, approved standards, fields and quantities

1. Introduction

As one of the key countries of the Silk Road Economic Belt and the 21st Century Maritime Silk Road Initiative, Mongolia plays a core role in promoting regional cooperation and enhancing regional connectivity. The Belt and Road Initiative (BRI), with infrastructure construction, trade facilitation and investment cooperation as its core, aims to achieve deep integration and common prosperity of the regional economy. In this process, standardization is regarded as a key link of the BRI.

As the initiator of the BRI, China regards standardization as an important way to promote international trade and cooperation. As a partner of the BRI, the development of standardization work in Mongolia is of great significance for strengthening economic, trade and technological cooperation between China and Mongolia. Therefore, an in-depth study of the status and development trend of Mongolia's standardization work will have a far-reaching impact on promoting regional connectivity and cooperation under the initiative.

This paper analyzes the number of standards adopted by Mongolia in recent years and its development trend under the framework of the initiative, so as to provide reference for countries along the Belt and Road to establish standardization cooperation. It discusses how Mongolia's standardization work can be integrated with China's standardization, so as to promote trade, technology and investment exchanges between China and Mongolia under the framework of the BRI.

This paper is expected to provide theoretical and practical support for promoting China-Mongolia cooperation in the field of standardization and promoting regional economic cooperation under the initiative.

2. Materials and methods

Data collection: The annual standards information of Mongolia is downloaded from the official database of the Mongolian Agency for Standardization and Metrology (MASM)[1] and the China Standards Information Platform from 2021 to 2022 (as of November 2023). The data is loaded using the "read.csv()" function in R (the R Project for Statistical Computing, version 4.2.2), and visual charts is drawn using R packages such as ggplot2[2], ggsci[3] and ggpubr[4]. Unless otherwise specified, all standards mentioned refer to those developed independently by Mongolia or standards of other organizations adopted by Mongolia, and the classification of these standards is based on the International Classification for Standards (ICS).

* Corresponding Author

Statistical Analysis: The data is uploaded into R, and specific columns are chosen for analysis. Column names are modified, and any abbreviations or codes are replaced using the "which()" function. The number of standards published or consulted by each organization is calculated, and the results are organized in descending order. Similarly, the count of national standards in Mongolia is determined and also sorted in descending order. Finally, the proportion is computed using the "percent()" function from the scales package.

Visualization: Charts are created using "ggbarplot()" and "ggpie()". These include designated fill colors, color palettes, and label presentations. Titles, x-axis variables, y-axis variables, value positions, and label color sizes are all specified. Labels are added using the symbol combination graphics in the patchwork package. The image is saved using the "ggsave()" function, with designated output file names, file types, widths, and heights.

3. Results

The development of standards in Mongolia: extensive scope with a significant proportion of self-developed standards.

During 2021-2022, the MSMA approved 310 new national standards, encompassing various fields such as agriculture, food technology, building materials and construction, healthcare technology, and electrical engineering (Figure 1A). Among these standards, 181 were developed by the Mongolian national standardization organization MNS, accounting for 58.39% of the total. Sixty-eight were adopted ISO standards, accounting for 21.94% of the total. Standards of other organizations such as ASTM, OIML, and GOST occupied a relatively smaller number. The national standards development rate was 58.39%, higher than the foreign standards adoption/acceptance rate of 41.61%.

The analysis of MNS standards in various fields revealed that MNS developed standards in 24 different fields during 2021-2022 (Figure 2). Notably, healthcare technology field had the largest number of standards with 43, which was followed by food technology field with 23 standards. The third one was information technology and office equipment field with 20 standards. Additionally, both agriculture field and general terms, standardization, and documentation field had 17 standards. Overall, MNS standards cover multiple fields with healthcare technology, food technology, information technology and office equipment, and agriculture as the main focuses.

Furthermore, the standards of non-national standardization organizations adopted or accepted by Mongolia in various fields were analyzed (Figure 2). Based on the data, Mongolia primarily approved standards developed by non-national standardization organizations across 28 fields. Notably, healthcare technology field had the largest number of standards with 47. This was followed by food technology field with 39 standards. The field ranking the third was social science, services, company organization and management, and transportation field with 25 standards. Additionally, standards in information technology and office equipment fields numbered 24. And standards in general terms and documentation fields numbered 23. Overall, approved non-national standardization organizations standards in multiple fields are mainly in the healthcare technology, food technology, social science, services, company organization and management, transportation, information technology and office equipment, and general terms and documentation fields.

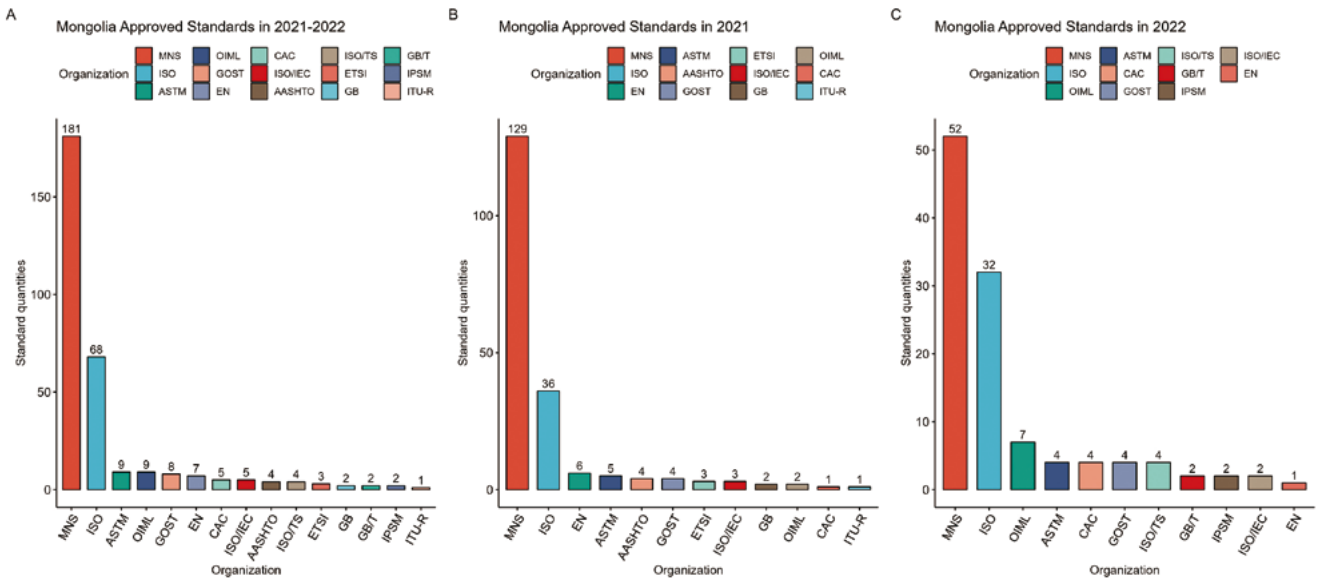

Figure 1: Standards adopted by Mongolia from 2021 to 2022, classified by the organizations responsible for development

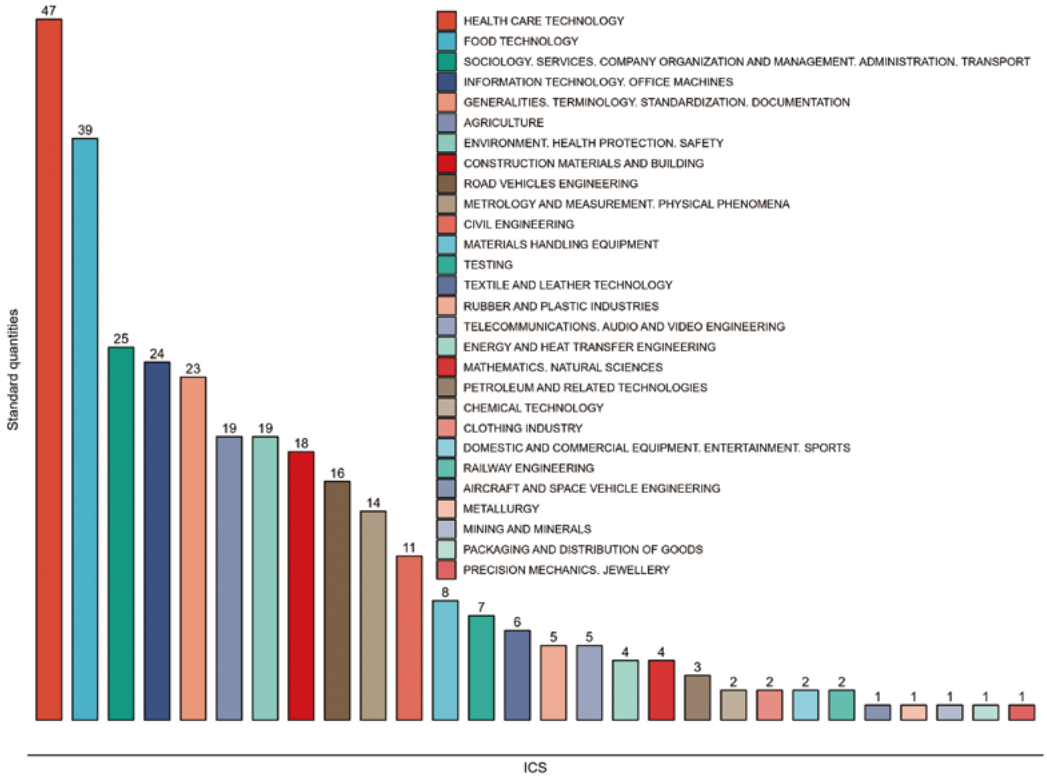

Figure 2: Field statistics on the standards adopted by Mongolia in 2021-2022

Compared to 2021, the number of standards approved in Mongolia in 2022 showed a downward trend.

MNS dominated the standards development activities in both years. Specifically, in 2021, MNS adopted 129 standards, accounting for 65.81% (Figure 1B). However, in 2022, this number decreased to 52, and the proportion also decreased to 45.61% (Figure 1C). This may indicate a decrease in the standardization demand or a slowdown in the work progress in some areas in Mongolia. ISO ranked second in both years, accounting for 18.37% and 28.07% respectively, showing that ISO maintained a stable influence in the standardization process of Mongolia. It is worth noting that the number and proportion of approval of Chinese standards (GB or GB/T) remained stable. Two Chinese standards were approved in both 2021 and 2022, accounting for 1.02% and 1.75% respectively. The specific standards include MNS GB 5009-14:2021, *Determination of zinc in foods*, MNS GB 5009-90:2021, *Determination of iron in foods*, MNS GB/T 531-1:2022, *Rubber pressure injection hardness test method*, and MNS GB/T 9867:2022, *Rubber wear resistance test method*. Although the number did not change significantly, it can be found that the proportion of adopted Chinese standards has been improved. Other organizations' standards such as EN, ASTM, GOST had relatively small proportion in 2021, but their total proportion increased in 2022, which may indicate that other organizations' standards are increasingly being considered in Mongolia's standardization work.

In terms of the distribution of standards by field, the number of standards related to food technology increased from 13 to 26 in 2022. The number of agricultural standards increased slightly from 7 to 12. Environmental standards remained stable at nine in both years. It is worth noting that "health care technology" field had the largest number of approved standards in 2021 (Figure 3A), with MNS converting 42 standards, accounting for 91.3%, indicating MNS' dominant position in this field. In 2022, "food technology" field became the field with the highest number of approved standards (Figure 3B). Although the number and proportion of MNS standards decreased, they still accounted for half of the total (50.0%).

Fluctuations in standardization: Annual trends of standardization in Mongolia

Based on the statistical analysis of the monthly approved standard quantity in the past two years, it is found that the standardization work in Mongolia showed certain fluctuations during the year (Figure 4). In the first few months of 2022, the number of approved standards increased compared to 2021. However, from June onwards, the number of approved standards sharply decreased, which was in sharp contrast to the 46 approved standards in June 2021. Although the number of approved standards remained stable in July, after August, the number of approved standards decreased again, with

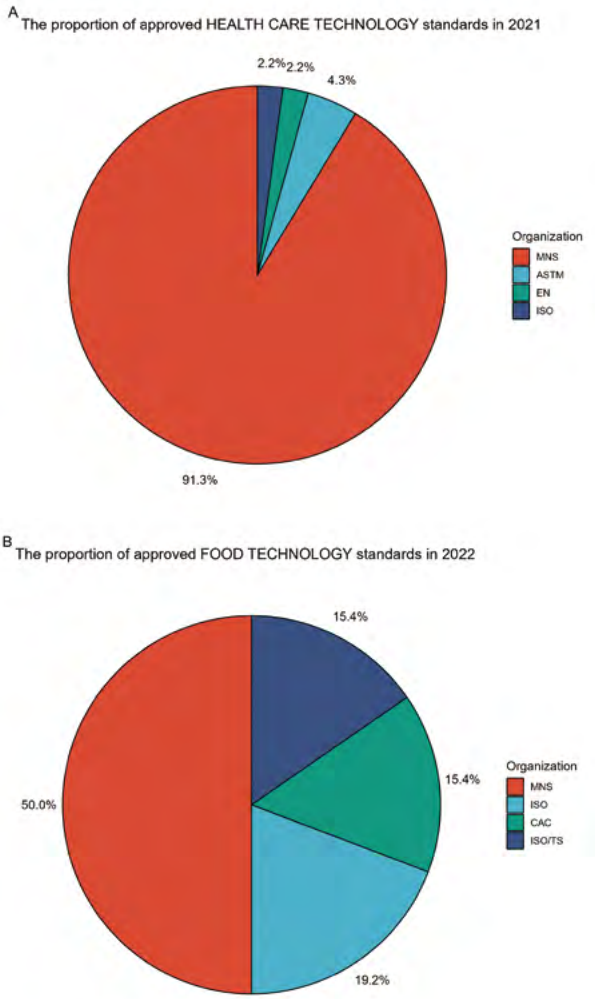

Figure 3: Statistics on the proportion of development organizations in the fields with the largest number of standards adopted by Mongolia in 2021 and 2022

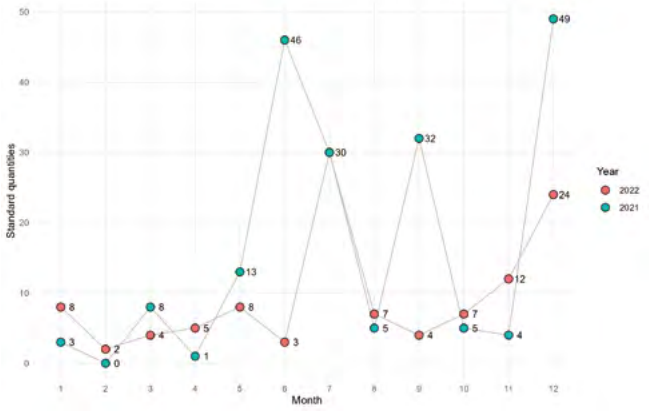

Figure 4: The monthly approved standard quantities in Mongolia in 2021-2022

the most significant decrease in September and November. However, in the last few months of 2022, the number of approved standards increased again. The number of approved standards in December increased by 45 compared to the same period in 2021, indicating that the standardization work in Mongolia achieved significant results at the end of the year.

Taken together, these data indicate that Mongolia's standardization work exhibits some fluctuations during the year. However, from these data, it is tentatively inferred that the middle of the year (June) and the end of the year (December) in Mongolia appear to be the periods with the largest number of standards, which may reflect a concentration of standardization work or a concentrated release/presentation of standardization results during these periods. In order to more accurately understand this trend, future research can further explore the specific activities and influencing factors of standardization work during these periods.

4. Discussion

1) The influence of MNS and ISO on Mongolian standardization work

From 2021 to 2022, the number of MNS standards reached 58.39% of the total, clearly demonstrating Mongolia's significant ability to independently develop standards. More importantly, this highlights the core position of the MNS organization in the field of national standards development. In addition, adopted ISO standards also accounted for 21.94% of the total, further verifying Mongolia's ability to accept and adopt international standards.

In terms of specific areas, the MNS standards cover 24 areas, with health care technology, food technology, information technology, and agriculture being the focuses. This indicates that Mongolia attaches great importance to standardization in these areas. The standards developed by other organizations are more diverse, not only covering multiple areas but also overlapping with MNS in some areas.

2) Trends of standardization work in Mongolia in 2021-2022

Compared to 2021, the number of standards adopted by Mongolia in 2022 decreased, which may indicate a decrease in the standardization demand or a slowdown in the work pace in some areas. Among them, although MNS dominated the number of standards approved in 2021, this number decreased in 2022, further verifying the above trend. However, it is noteworthy that ISO standards maintained a stable influence in the number of standards in both years, proving its continuous importance in the standardization process in Mongolia. At the same time, the adoption of Chinese

standards and proportion in both years were quite stable, showing Chinese standards stable position in Mongolia's standardization work.

From the perspective of standards distribution, the number of standards adopted in the field of food technology decreased in 2022, while the number in the agriculture field remained relatively stable. The number of standards related to the environment also remained stable.

3) Monthly fluctuations in Mongolia's standardization work

Through the statistics and analysis of the number of standards approved in Mongolia every month within the two years, it can be observed that its standardization work showed certain fluctuations within the year. In particular, in the first half of 2022, the number of standards adopted was relatively high, but there was a sharp decline since June. Although the number remained stable in July, a new round of decline began in August, with the most significant decrease in September and November. However, by the end of the year, especially in December, the number of standards adopted showed a significant increase, with an increase of 45 compared to the same period in 2021. This volatility may be influenced by a variety of factors, including but not limited to policy adjustments, the number and energy input of staff, and technological development. Preliminary observations also suggest that the middle of the year (June) and the end of the year (December) appear to be the periods when Mongolia adopts the largest number of standards, which may reflect the centralized implementation of standardization work or the centralized release of standards results during these two periods.

These findings have important reference value for Mongolia and other relevant countries in formulating standardized policies and strategies. For example, they emphasize the importance of stability and continuity in standardization work and remind us to pay attention to possible fluctuations in a specific period of time. In order to gain a deeper understanding of the characteristics and trends of standardization work in Mongolia, further research on the causes and influencing factors of these fluctuations is highly valuable.

5. Summary

This paper highlights Mongolia's importance in standardization and its key partnership in the Belt and Road Initiative. The analysis of Mongolia's approved standards from 2021 to 2022 reveals a balance between independent development and adaptation from other organizations. The impact of standardization on regional trade cooperation is analyzed and recent advancements in Mongolia's standardization journey are explored. In essence, the research on Mongolia's standardization progress provides a basis for fostering regional cooperation, connectivity, and trade.

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Enlightenment from e-commerce standardization in ISO/TC 321 for developing countries in Africa

ISO/TC 321电子商务标准化工作对非洲发展中国家的启示

By Liberty Artwell Mareya, Song Mingshun, Wu Hongkuan
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Abstract: This paper draws on the experience of the eighth plenary meeting of the ISO/TC 321, *Transaction assurance in e-commerce*, held in Hangzhou of China in November 2023, and explores potential ways in which developing countries in Africa can drive their development and contribute to global industrial progress by leveraging ISO/TC 321 standards. It provides practical recommendations for utilizing e-commerce standardization and related standards to stimulate economic growth and enhance business practices.
Keywords: ISO/TC 321, e-commerce, transaction assurance, China, developing countries, Africa

1. Introduction

The rapid evolution of e-commerce has significantly changed the global industrial landscape. China has emerged as a global leader in e-commerce, with a rapidly growing market and an emphasis on standardization. The eighth plenary meeting of ISO/TC 321, *Transaction assurance in e-commerce*, held in Hangzhou of China in November 2023 provided a comprehensive understanding of the potential of e-commerce standardization to drive the development of developing countries in Africa and contribute to global industrial progress. This paper delves into the strategies for implementing ISO/TC 321 standards to foster economic growth and enhance business practices.

In many developing countries across Africa, the risks of buying and selling on the internet are often left unattended. The adoption of e-commerce standardization principles derived from ISO/TC 321 presents an opportunity to propel economic growth and refine practices. The digital revolution has sparked a wave of entrepreneurial innovation and has the potential to create new job opportunities, stimulate trade, and enhance consumer experiences. There is a need to propose potential ways for the effective implementation of e-commerce standardization.

By exploring the practical application of ISO/TC 321 standards, this paper aims to shed light on how African countries can leverage e-commerce standardization to foster sustainable development and actively participate in the global digital economy, and offer valuable insights for policy makers, businesses, industry professionals, and stakeholders, ultimately contributing to the economic growth and prosperity of these developing countries.

2. Overview of ISO/TC 321

ISO/TC 321 is a technical committee within the International Organization for Standardization (ISO) that is responsible for developing standards for e-commerce to facilitate secure and efficient transactions. The committee was established in 2018 with its secretariat held by SAC and AFNOR. The scope of ISO/TC 321 covers the assurance of transaction processes in e-commerce, the protection of online consumer rights including both the prevention of online disputes and resolution processes, the interoperability and acceptability of commodity quality inspection results in cross-border e-commerce, the assurance of e-commerce delivery to the final consumer, and other critical components that underpin the reliability and trustworthiness of digital transactions.

2.1 China's role in e-commerce standardization

Yin, L. (2015) mentions the importance of the implementation of e-commerce standards in China which have been instrumental in shaping e-commerce practices, and ensuring transparency, security, and seamless cross-border transactions. E-commerce plays a crucial role in the economic growth in China, which boasts the world's largest online retail market. The chairmanship of ISO/TC 321 allows China to influence the direction of standards development and potentially promote national standards as international benchmarks. Developing countries in Africa can learn from China's experience in e-commerce standardization, as this can potentially lead to unprecedented economic growth and competitiveness.

China has actively participated in the development of ISO 32111:2023, *Transaction assurance in e-commerce—*

Principles and framework, offering its expertise to shape global e-commerce practices. Zhu Hongru (Judy), Vice President of Standardization Department in Alibaba Group has hinted at how Alibaba's accessibility standard, AI model training standard, MiniApp standard, and open source community standards have contributed to China's technical innovation.

Developing countries in Africa can draw valuable lessons from China's practice in e-commerce standardization. Participating in the development of these standards, these countries can create a conducive environment for economic development and global industrial progress. Implementing ISO/TC 321 standards can enhance security and interoperability in e-commerce transactions, build trust among consumers and businesses, align with policies and regulatory frameworks, attract investments, increase competitiveness, and foster inclusive economic growth.

2.2 Leveraging ISO/TC 321 standards for economic development

Developing countries in Africa stand to gain immensely from adopting ISO/TC 321 standards to drive economic development. By implementing these standards, they can establish a robust e-commerce ecosystem that promotes inclusivity, enhances consumer protection, facilitates international trade and increases consumer trust in e-commerce.

Key standards of ISO/TC 321 such as ISO 32111:2023, *Transaction assurance in e-commerce—Principles and framework*, can contribute to sustainable development by promoting transparency, accountability, and ethical business practices within the e-commerce ecosystem by providing a framework for addressing critical challenges such as data protection, security, and legal frameworks, thus ensuring a level playing field for all participants.

In conclusion, the practical application of ISO/TC 321 standards can drive economic growth, particularly in the developing countries in Africa and emerging digital economies.

3. Recommendations for leveraging ISO standards

Sustainable development is a pressing concern for developing countries as they strive to achieve economic growth while minimizing the negative impact on the environment and society. According to Gueorguiev et al (2021), there is a need to recognize the importance of sustainable development by leveraging ISO standards to guide organizations in implementing sustainable practices. This section focuses on exploring the potential ways for developing countries in Africa to drive sustainable development and contribute to global industrial progress by leveraging ISO/TC 321 standards.

3.1 International standards developed by ISO/TC 321

While still under development, several ISO/TC 321 standards hold immense promise for promoting sustainable development in developing countries. Here is a list of some key standards:

1) ISO 32110:2023, *Transaction assurance in e-commerce—Vocabulary*, provides terms and definitions in the field of transaction assurance in e-commerce.

2) ISO 32111:2023, *Transaction assurance in e-commerce—Principles and framework*, specifies the principles and framework for e-commerce transaction assurance, including participants, activities and assurance elements. It does not describe specific e-commerce transaction assurance requirements or methodologies in detail. It is intended to be used by organizations and individuals engaged in e-commerce transactions.

3) ISO/DIS 32112, *Transaction assurance in e-commerce—Relevant factors of evaluation and selection of indicators*, provides the description of relevant factors for evaluating e-commerce transactions, which can help in identifying indicators, evaluation toolkits, and approaches for the selection of indicators. It focuses on e-commerce transaction assurance by providing the relevant factors of evaluations including the quality of e-commerce transaction platforms and sites, the quality of e-commerce transaction services, the local external environments for e-commerce transactions, and the sustainability of e-commerce transactions.

4) ISO/DIS 32120, *Transaction assurance in e-commerce—Guidelines on the sharing of goods quality assurance related traceability information in e-commerce supply chains*, is intended to provide guidelines for sharing traceability information related to goods quality assurance in e-commerce. It illustrates the generic process for establishing traceability for goods quality assurance, addresses critical tracking events and key traceability information in the e-commerce context and provides methods for sharing the collected traceability information.

5) ISO/DIS 32122, *Transaction assurance in e-commerce—Guidelines for offering online dispute resolution services*, gives guidance on online dispute resolution (ODR) for e-commerce transactions including basic principles of ODR, technical conditions and operational manuals to e-commerce operators (including e-commerce platform operators), who aim to develop their own ODR services, and ODR service providers that are outsourced by e-commerce operators.

3.2 Practical recommendations for e-commerce standardization

To drive economic growth and improve cross-border and local business practices, developing countries in Africa can adopt the following practical recommendations:

1) Awareness and training: Developing countries in Africa should invest in raising awareness about ISO/TC 321 standards and provide training to businesses and individuals. This will ensure a broad understanding of the benefits and implementation processes of these standards.

2) Policy support: Governments should develop policies

that incentivize the adoption of ISO/TC 321 standards. This can include tax incentives, grants, and subsidies for organizations that implement sustainable practices in line with these standards.

3) Capacity building: Developing countries in Africa should focus on capacity building in terms of infrastructure, technology, and human resources. This will enable organizations to effectively implement and comply with ISO/TC 321 standards.

4) Collaboration and partnerships: Developing countries in Africa can strengthen their position by collaborating with international organizations, academia, and industry experts. This will facilitate knowledge sharing, technology transfer, and the development of best practices in sustainable development.

Leveraging ISO/TC 321 standards is crucial for developing countries in Africa to overcome challenges and seize opportunities for sustainable development in the field of transaction assurance in e-commerce-related upstream/downstream processes. By addressing the challenges of easier access to e-platforms and e-stores, the protection of online consumer rights, the interoperability of inspection data, the assurance of e-commerce delivery, building trust and credibility, capacity building, enhancing cross-border trade, promoting sustainable development, and fostering innovation and technological advancement, these countries can enhance their e-commerce ecosystem, drive economic growth, and contribute to global industrial progress. By adopting these recommendations and investing in sustainable practices, these countries can pave the way for inclusive and sustainable growth in the digital economy.

3.3 Challenges and opportunities faced by developing countries in Africa

Developing countries in Africa face unique challenges and opportunities in the realm of e-commerce. Limited infrastructure, low internet penetration, and inadequate payment systems are just a few of the hurdles that hinder the growth of e-commerce in this region. Risks associated with the internet are often left unattended that ultimately diminishes online consumer trust in e-commerce and deters the adoption of e-commerce, Mayayise, Thembekile et al (2014).

However, with e-commerce standardization, market expansion, innovation and collaboration, financial inclusion, and enhanced competitiveness as potential benefits, developing countries in Africa have the opportunity to harness the power of e-commerce to drive economic growth and improve the livelihoods of their citizens. These challenges and opportunities include:

Easier access to e-platforms and e-stores: Developing countries in Africa may face challenges in ensuring easier access to e-platforms and e-stores for their businesses and consumers. Limited internet connectivity, lack of digital infrastructure, and regulatory barriers can hinder access. However, leveraging ISO/TC 321 standards can create opportunities for these countries to enhance their e-commerce ecosystem, promote digital inclusion, and facilitate business growth. For example, by implementing ISO/TC 321 principles for online platform accessibility and usability, countries can enable businesses to reach a wider customer base and enhance the online shopping experience for consumers. Understanding the evolution of China's standardization policy system is also crucial when implementing ISO/TC 321 standards for sustainable development, You-hong et al (2023).

Protection of online consumer rights: Nagpal, P. (2022) emphasizes that developing countries in Africa often struggle with protecting online consumer rights, including preventing online disputes and resolving conflicts. Inadequate legal frameworks, lack of awareness, and limited enforcement mechanisms can be challenging. However, embracing ISO/TC 321 standards such as ISO/DIS 32122 can enable these countries to establish robust consumer protection mechanisms, build trust in e-commerce, and enhance their reputation in the global market. For instance, by implementing ISO/DIS 32122 standards for online dispute resolution processes, these countries can provide efficient and fair mechanisms for resolving conflicts between consumers and e-commerce platforms.

Interoperability of inspection data: Developing countries in Africa engaged in cross-border e-commerce may face challenges in ensuring the interoperability and admissibility of inspection result data on commodity quality. Diverse regulatory requirements, varying inspection protocols, and a lack of standardized data formats can impede trade efficiency. Nonetheless, adopting ISO/TC 321 standards can facilitate harmonization, interoperability, and mutual recognition of inspection data, thereby streamlining cross-border e-commerce processes and promoting fair trade practices. For example, by implementing ISO/DIS 32120, developing countries in Africa can ensure seamless exchange and acceptance of inspection result data, thus enhancing trust and efficiency in cross-border trade.

Assurance of e-commerce delivery: Developing countries in Africa may encounter obstacles in ensuring the reliable and timely delivery of e-commerce products to the final consumer. Inefficient logistics, inadequate infrastructure, and limited capabilities for tracking and tracing can be significant challenges. However, leveraging ISO/TC 321 standards such as ISO/DIS 32112 and ISO/DIS 32120 can help develop robust delivery systems, optimize supply chain processes, and enhance customer satisfaction in e-commerce transactions.

Building trust and credibility: Developing countries in Africa may face challenges in building trust and credibility in their e-commerce practices. Concerns about data security, privacy, and counterfeit products can hinder consumer confidence. However, by adhering to the international standards for transaction assurance, these countries can establish transparent and secure e-commerce practices,

thus ensuring the authenticity and safety of products and protecting consumer rights.

Capacity building: Developing countries may lack the necessary capacity and expertise to implement ISO/TC 321 standards effectively. This includes knowledge gaps, training needs, and institutional capacity constraints. However, it presents an opportunity to invest in awareness-raising campaigns, capacity-building programs, and partnerships with international organizations to enhance the understanding and implementation of these standards. By providing training and support for businesses and regulatory bodies, developing countries in Africa can develop the necessary capabilities to implement ISO/TC 321 standards and benefit from the associated improvements in e-commerce practices.

Enhancing cross-border trade: Developing countries in Africa engaged in cross-border e-commerce may face challenges in meeting diverse regulatory requirements and ensuring compliance with international standards. However, by aligning their e-commerce practices with ISO/TC 321 standards, these countries can enhance their competitiveness and facilitate smoother cross-border trade. This can lead to increased market access, improved trade efficiency, and greater participation in the global economy.

Promoting sustainable development: Developing countries in Africa can leverage ISO/TC 321 standards to promote sustainable development in e-commerce practices. By adopting standards that prioritize environmental sustainability, resource efficiency, and social responsibility, these countries can contribute to a more sustainable and inclusive e-commerce ecosystem, Gueorguiev et al (2021).

Fostering innovation and technological advancement: Developing countries in Africa can leverage ISO/TC 321 standards as a catalyst for innovation and technological advancement in e-commerce. By adopting these standards according to their specific contexts, these countries can foster entrepreneurship, encourage the development of local e-commerce platforms, and promote the use of innovative technologies to enhance their competitiveness in the global market.

4. Conclusion

In conclusion, the adoption and implementation of ISO/TC 321 standards for sustainable development in developing countries serve as a crucial mechanism for achieving economic growth while mitigating negative environmental and social impacts. By embracing these standards, developing countries in Africa can effectively address challenges such as limited resources, inadequate infrastructure, and socio-economic disparities, while simultaneously capitalizing on opportunities for innovation and collaboration. However, it is crucial to remember and understand that the successful implementation of these standards hinges on the collaborative efforts, contextualization, and the capacity of building initiatives. By embracing these standards and addressing challenges to implement these standards, developing countries in Africa can leverage e-commerce as a catalyst for sustainable development and a brighter socio-economic future.

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