Technology and Innovation Support Centers (TISCs) Report 2019
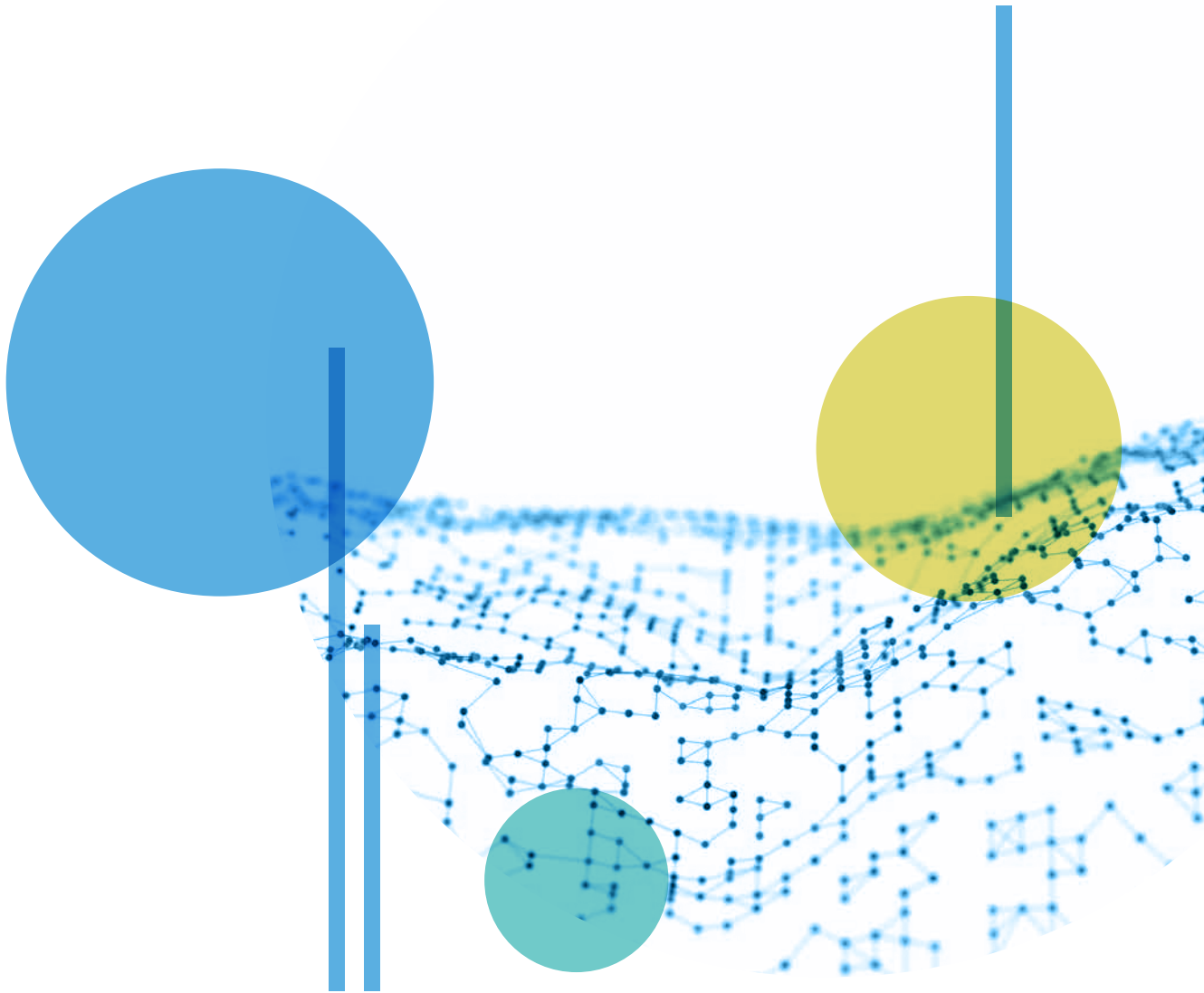
TISCs as a catalyst for
innovation and technology transfer

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Technology and Innovation Support Center (TISC) program

The Technology and Innovation Support Center (TISC) program is a global program created in 2009 to enable developing countries, least developed countries and countries in transition to better exploit their innovative potential.
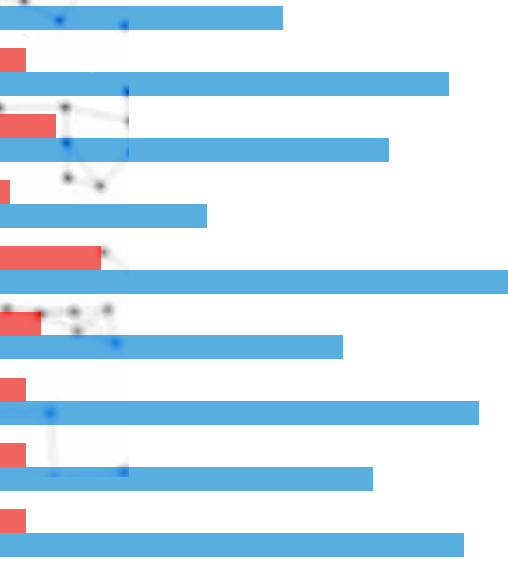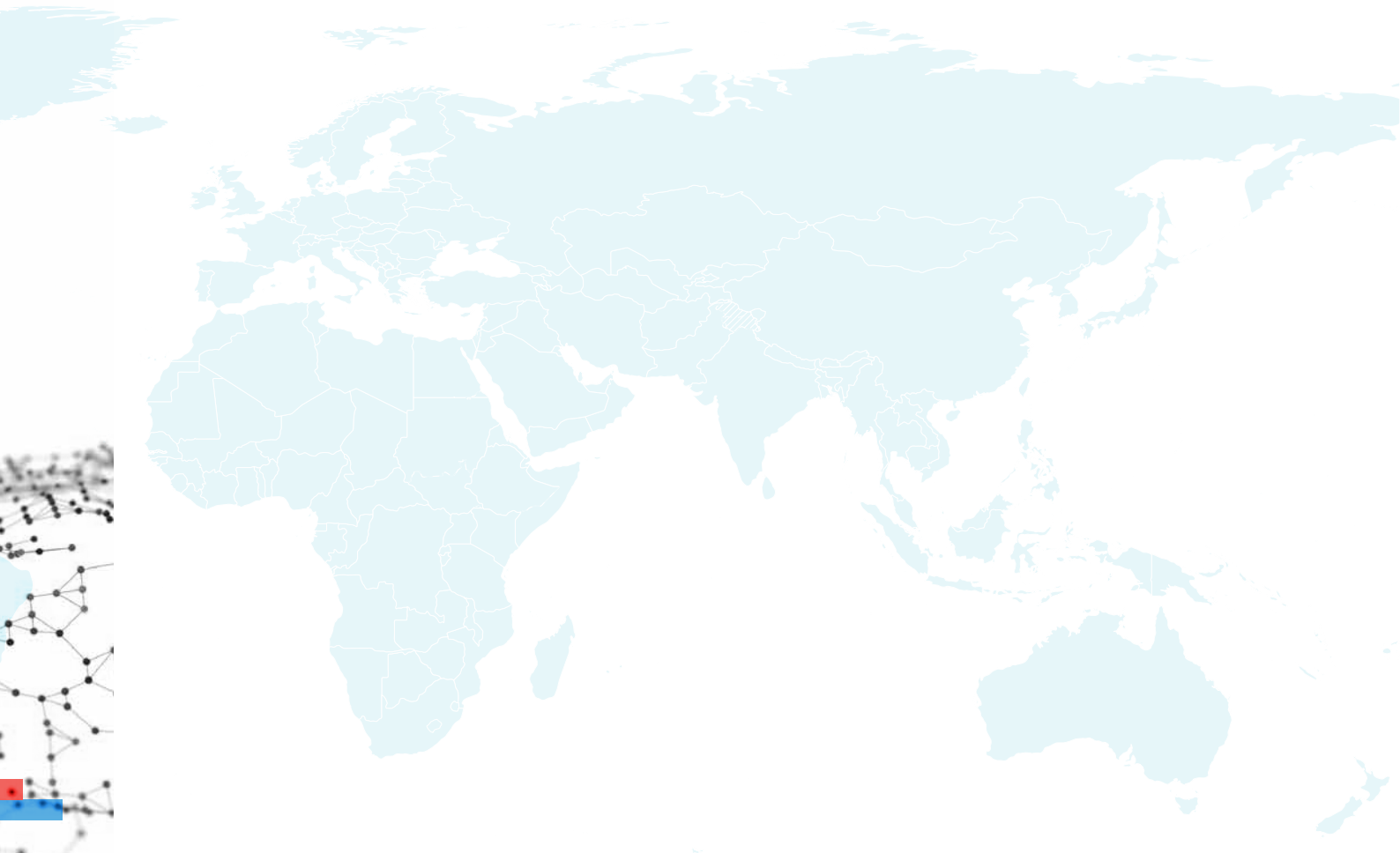
The TISC program helps countries to access patent information, scientific and technical literature and search tools and databases, and make more effective use of it to boost their intellectual property (IP) skills, use and knowledge. It promotes innovation, technology transfer, commercialization and utilization of technologies across 80 countries.

The TISC program is administered by World Intellectual Property Organization (WIPO). The program addresses WIPO's Strategic Goal IV, Coordination and Development of Global IP Infrastructure, contributing significantly to the ongoing expansion of the WIPO Knowledge Network by providing value-added services and specialized platforms and tools designed for strategic knowledge-sharing and innovation management.

The continued rapid growth to nearly 900 TISCs established at the end of 2019 in 80 countries reflects the increasing demand, especially in the developing world, for access to technical and scientific publications as a basis to support innovation and so contribute to improving peoples' lives. As technologies continue to rapidly develop, TISCs will continue to play an important role in fostering innovation and reducing the knowledge gap between developing and industrialized countries.

Francis Gurry, Director General

Key developments in 2019

By the end of 2019, nearly 900 Technology and Innovation Support Centers (TISCs) were in operation in three regional and 80 national networks, responding to over 1.2 million inquiries.

To keep up with this expanding global demand, capacity development continues to be an important focus for the program.

Over the year, 32 onsite national seminars took place and more than 2,500 TISC staff participated in WIPO Academy online distance learning courses, the latter representing an increase of 23 percent compared to 2018.

The resources, tools and platforms available for TISCs were enriched in 2019 with the launch of a new series of flagship reports, WIPO Technology Trends, at the start of the year. In addition, the e-Tutorial and many other resources were made available in different UN languages, the WIPO INSPIRE platform of specialized patent information reports was developed, and the eTISC platform was redeveloped.

Significantly, 2019 saw more countries move up the pre-defined maturity/sustainability levels, showing the growing impact and sustainability of TISCs as they support and empower the key actors in the innovation value chain with knowledge and expertise.

TISCs as a catalyst for innovation and technology transfer

Innovation can come from any country and takes many forms. However, not all innovators have local access to the technological insight and related IP services they need to fully capture and protect their IP rights. The TISC program assists and empowers inventors and entrepreneurs, building on the rich set of technology information disclosed in more than 110 million published patent documents and scores of scientific and technical publications. Typically located in institutions such as patent offices, universities, research centers, or science and technology parks, TISCs provide on-the-ground information and assistance to innovators where they need it most.

With WIPO's support in building capacity and skills to effectively access and use patent and non-patent scientific and technical information to stimulate research and development, technology transfer and partnerships, TISCs play an important role in strengthening the innovative ecosystem where they are established and essentially act as a catalyst for fostering innovation and encouraging technology transfer. From state of the art to novelty, freedom to operate searches, as well as assistance and advice on IP management and commercialization, TISCs provide a diverse range of services at different stages in the innovation cycle, empowering researchers, inventors and entrepreneurs with the knowledge needed to use this strategic information for technological and economic development.

Key milestones of the TISC program

2009

Launch of the TISC project

Launch of ARDI

2010

Launch of ASPI

Conclusion of first Service Level Agreements (SLAs) to implement a TISC network

2011

ARDI joins Research4Life partnership

Publication of the first *WIPO Patent Landscape Report*

2012

Launch of interactive eTutorial

Inauguration of eTISC knowledge management platform

2013

First ASEAN Regional TISC meeting

First "Ask the expert" session on eTISC

2014

TISC and Patent Landscape Report projects become WIPO regular activities

First use of open-source tools in a WIPO Patent Landscape Report

2015

Publication of *Guidelines for Preparing Patent Landscape Reports*

2016

Launch of Development Agenda Project on the Public Domain

Launch of the Inventor Assistance Program (IAP)

Launch of TISC training on patent analytics

Online publication of *Manual on Open Source Tools for Patent Analytics*

2017

First TISCs start providing patent analytical services

Approval of new Development Agenda Project on Technology Transfer and IP Management

2018

First workshops on the guides for identifying and using information in the public domain

Launch of the Patent Register Portal

2019

Launch of *WIPO Technology Trends: Artificial Intelligence*

First workshops on targeted technology transfer training and IP management

Providing value-added support services

TISCs provide a diverse range of technology and innovation support services, from basic services to value-added services, that help inventors, researchers and entrepreneurs unlock their innovative potential.
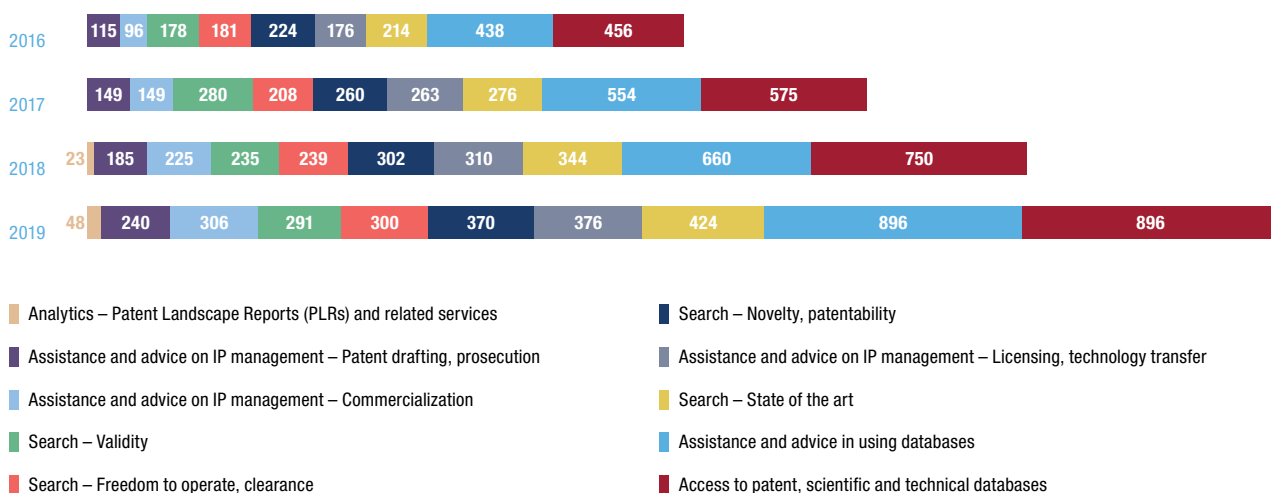
Figure 1 indicates the growth of TISCs in recent years offering services ranging from basic access and support in effectively searching scientific and technical databases and carrying out different types of patent searches such state of the art and patentability searches, through to assistance and advice in many other aspects of IP management such as patent drafting, filing, licensing, due diligence and commercialization. These latter services, which also include the drafting of patent landscape reports illustrating technical and business trends for specific technologies, have also allowed TISCs to charge nominal fees to recuperate their additional efforts and expenses in offering such value-added services.

Indeed, it is these value-added services which have seen the largest growth amongst the growing diversity of services offered by TISCs. For example, the number of TISCs offering advice on commercialization increased from 96 to 306, an increase of nearly 320 percent between 2016 and 2019. This is also a direct reflection of the growing demand of local TISC users needing support in specific steps later in the innovation process as their idea moves to market.

This expansion of valued-added TISC services has been supported by the many new resources, tools and platforms developed by WIPO described on p. 19.

Fig. 1 - Number of TISCs providing different types of services
(Source: TISC Directory, 2020)

Legend:
- Analytics – Patent Landscape Reports (PLRs) and related services
- Assistance and advice on IP management – Patent drafting, prosecution
- Assistance and advice on IP management – Commercialization
- Search – Validity
- Search – Freedom to operate, clearance
- Search – Novelty, patentability
- Assistance and advice on IP management – Licensing, technology transfer
- Search – State of the art
- Assistance and advice in using databases
- Access to patent, scientific and technical databases

Overview of TISC services

- Access to patent and non-patent databases

- Networking and exchange of experiences

- Awareness-raising on IP

- Patent search and analysis

- Patent filing and drafting support

- Training on access to and use of patent information

- Commercialization and technology transfer support

Not only has the number of national TISC networks and institutions hosting TISCs in those networks continually grown since the launch of the TISC program in 2009, but the quantity and quality of services offered by TISCs have also considerably expanded and improved.

Fig. 2 - Number of national TISC networks over time
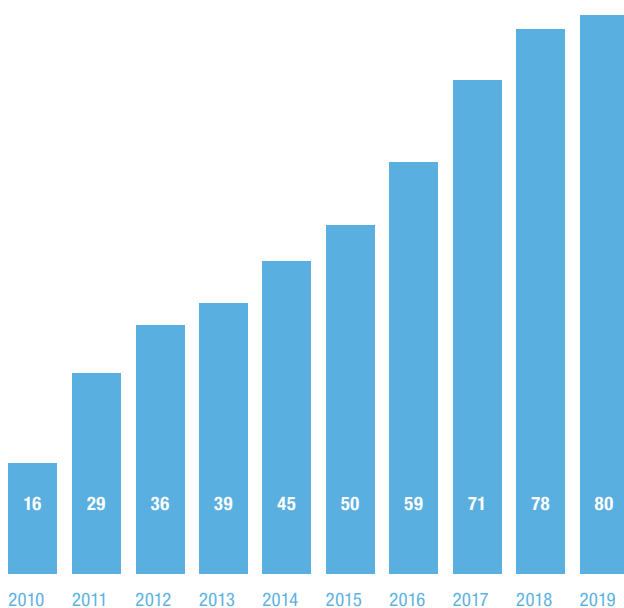(Source: Service Level Agreements, 2019)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
16	29	36	39	45	50	59	71	78	80

Fig. 3 - Number of TISCs and growth over time
(Source: TISC Directory, 2019)

2014	2015	2016	2017	2018	2019
	+65.50%	+78.55%	+7.95%	+17.55%	+19.47%
200	331	591	638	750	896

Nearly 900 centers across 80 countries

Since the TISC program was launched in 2009, 80 countries, of which 26 are least developed countries (LDCs), have signed Service Level Agreements (SLAs) with WIPO to develop national TISC networks. By the end of 2019, a total of 896 TISCs had been established.
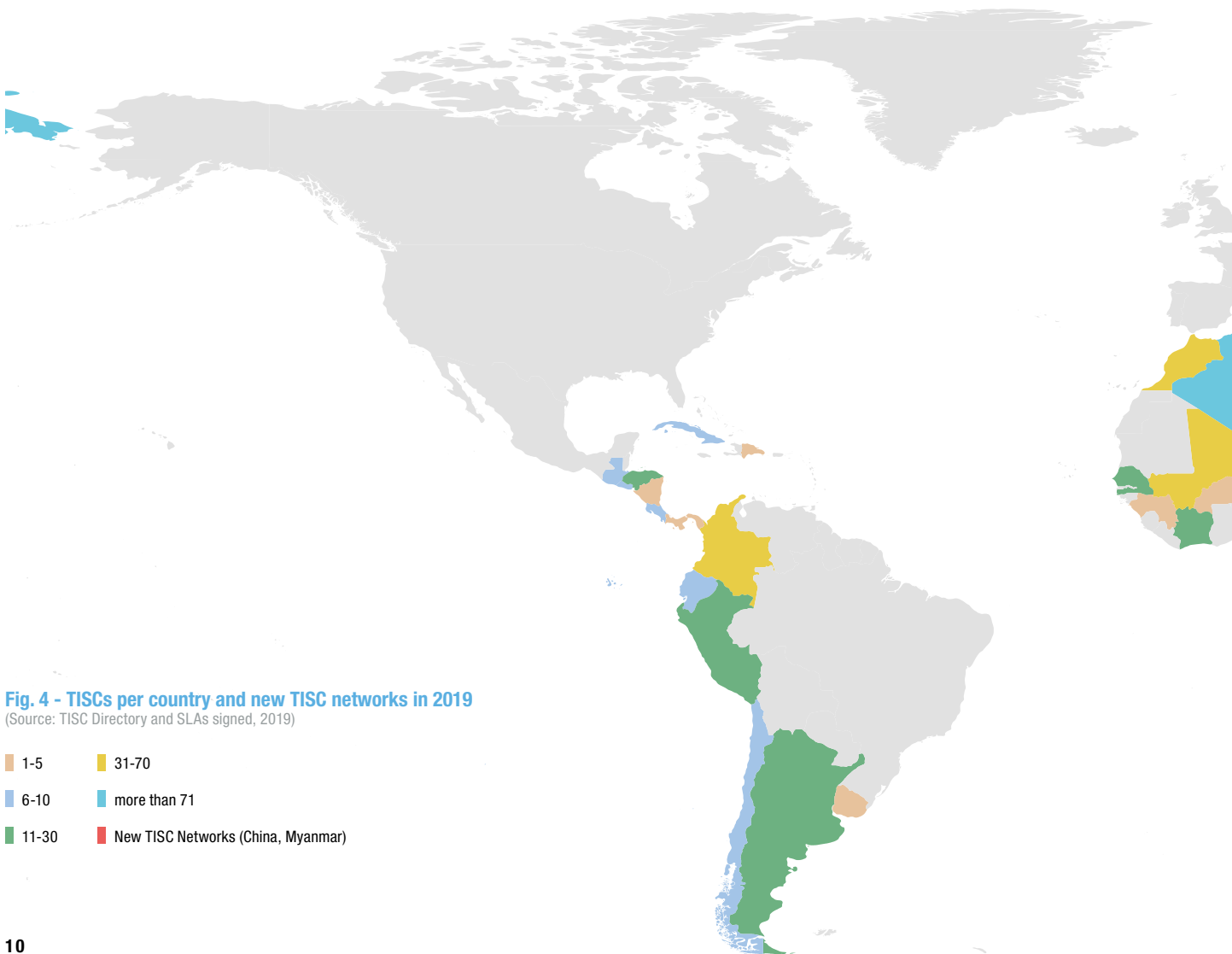
TISC networks continue to grow

In 2019, two new countries joined WIPO's global TISC network, **China** and **Myanmar**.

In **Algeria**, 30 new institutions joined the TISC network, making it now one of the largest TISC networks in the region, with 77 members.

In **Argentina**, the national network has grown to 48 institutions from the previously reported 30 institutions.

In **China**, the China National Intellectual Property Administration (CNIPA) launched the newly established TISC network during World IP Day and signed agreements with seven TISC host institutions, later followed by 10 more institutions. It identified 35 additional potential TISC host institutions during the year and plans to reach 100 TISCs by 2021.

Nine TISCs were established to date in **India** with six more approved with only the formal signing of institutional agreement to be done to confirm their

Fig. 4 - TISCs per country and new TISC networks in 2019
(Source: TISC Directory and SLAs signed, 2019)

- ▮ 1-5
- ▮ 6-10
- ▮ 11-30
- ▮ 31-70
- ▮ more than 71
- ▮ New TISC Networks (China, Myanmar)

joining the national network. Complementing this, over 140 IPR Cells have also been established in academic institutions across India.
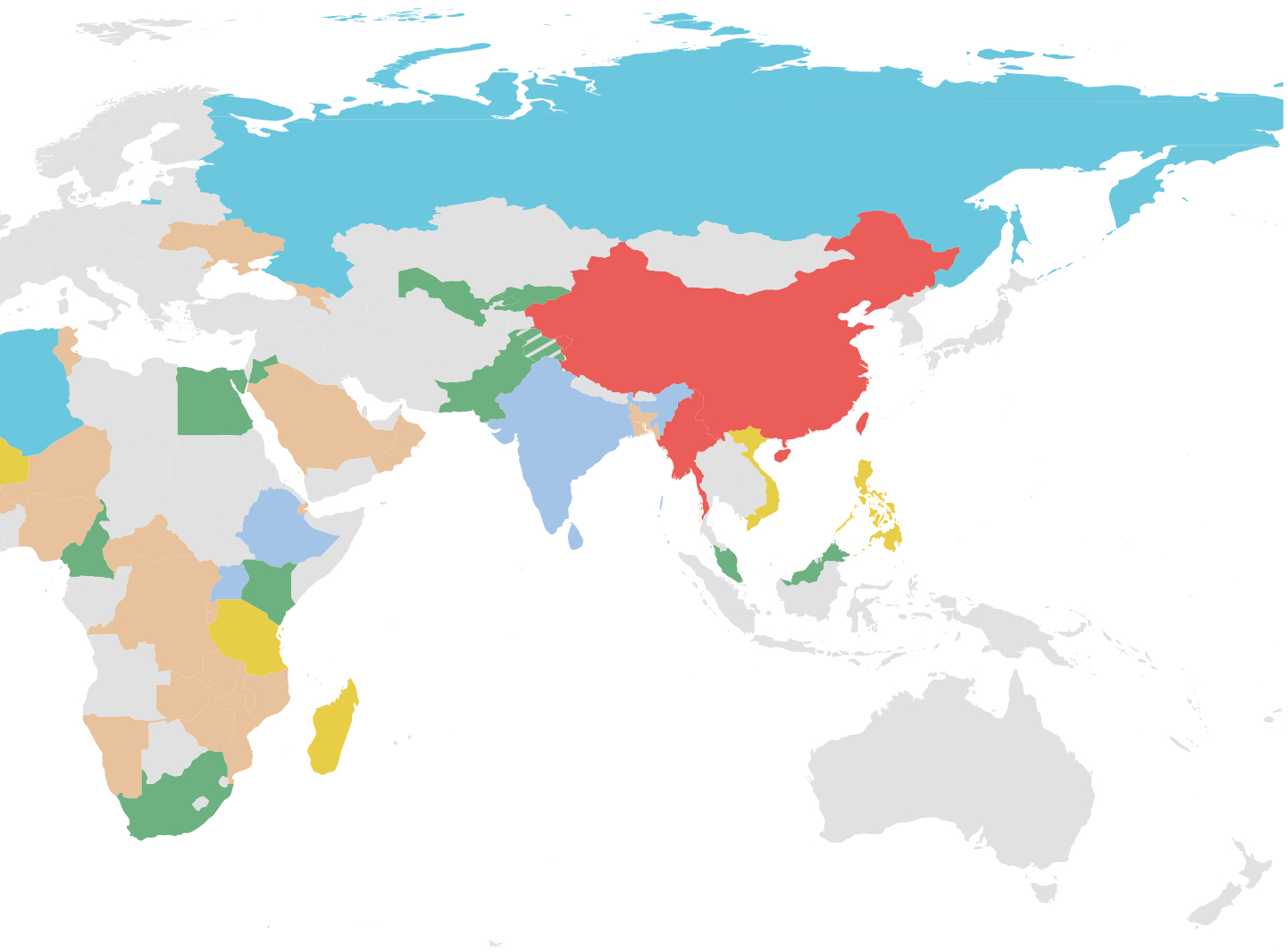
The TISC network continued to grow strongly in **Mali** with nine new members joining in 2019 making a total of 47 centers in the national TISC network.

In **Pakistan**, 17 more institutions have joined the national network during the last year, which now comprises 44 TISCs.

In **the Philippines**, the number of Innovation and Technology Support Offices (ITSOs), as TISCs are referred to in the Philippines, reached 98 institutions in all administrative regions of the country.

In **Uganda**, the national TISC network reached 28 institutions by the end of 2019, adding a further three institutions last year.

Regional TISC networks were created to provide a formal platform for TISCs to exchange experiences and best practices, and to build on national and regional strengths, in order to provide even more targeted support and services. Regional networks have been established among the member states of the **African Regional Intellectual Property Organization (ARIPO)** and the **Association of South East Asian Nations (ASEAN)** and in **Central America and the Dominican Republic (CATI-CARD)**.
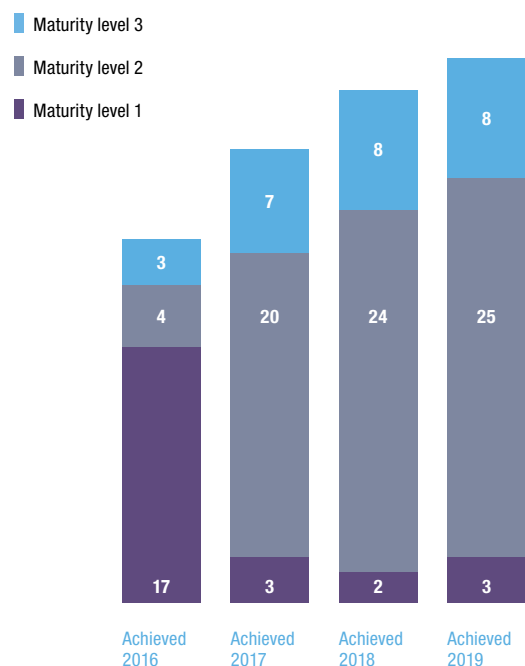
Increasing maturity and sustainability

Because sustainability and impact of national TISC networks is critical to their continuous development, maturity levels have been defined to reflect each national network's current status of development and level of service provision, as well as provide insights into its future requirements for further development and correspondingly increasing impact. The sustainability of TISCs is measured by the following levels of maturity:

- **Maturity level 1**: countries that have signed a Service Level Agreement with WIPO, that have signed institutional agreements at national level between the TISC national focal point and TISC host institutions, and which provide at least an annual report on national TISC activities.

- **Maturity level 2**: countries that meet maturity level 1 standards and which provide basic patent information searches, e.g. state-of-the-art patent searches.

- **Maturity level 3**: countries that meet maturity level 2 standards and which provide value-added IP services, e.g. drafting patent landscape reports.

Ultimately, TISCs are financially and technically self-supporting institutions to which WIPO provides advice on demand.

By the end of 2019, 36 countries out of 80 had reached some degree of sustainability, with 25 countries providing basic patent information search services and eight countries providing additional advanced value-added services. As highlighted in the figure below, the evolution of TISC networks' maturity, from seven networks meeting maturity level 2 and 3 standards in 2016 to 33 networks meeting these advanced maturity levels in 2019 - representing a 370 percent increase in the space of three years – is a testimony to the growing sustainability of TISCs and their capacity to respond to the needs of local innovators and to support them increasingly in all stages in the innovation process.

Fig. 5 - TISCs networks by maturity level

Maturity level 3
Maturity level 2
Maturity level 1

	Achieved 2016	Achieved 2017	Achieved 2018	Achieved 2019
Level 3	3	7	8	8
Level 2	4	20	24	25
Level 1	17	3	2	3

TISC growth generates more services for local users and fosters innovation

TISCs continue to face increasing demand for their services

The growth in the number of TISC networks and increasing maturity and sustainability of TISCs worldwide has been mirrored by a similar surge in the demand for TISC services from local researchers, inventors, and entrepreneurs, who are the main beneficiaries of the support provided by TISCs.

Following the annual end-of-year survey completed by TISCs around the world, it was estimated that TISCs had received an estimated 1.2 million enquiries in 2019. This represents a 32 percent increase from the reported figures for 2018, and a more than 450 percent increase since 2014.

It is worth noting that the demand for TISC services has been expanding not only in quantity but also in scope, with notable increases in the demand for value-added services such as patent drafting, filing, technology searches and patent analysis: This is showcased by TISCs in Peru, for example, where more than half of the demand received in 2019 concerned such value-added services. The rise in

patent applications filed with the support of TISCs and in commercialization support initiatives, as highlighted by selected TISC networks in figure 6, is another testimony to the growing impact of TISCs as catalysts for innovation.

Belarus
Around 350 people visited the Republican Library for Science and Technology of Belarus on a monthly basis in 2019. Steps were also initiated to open new TISCs in 11 universities and regional branches of the Science and Technology Library.
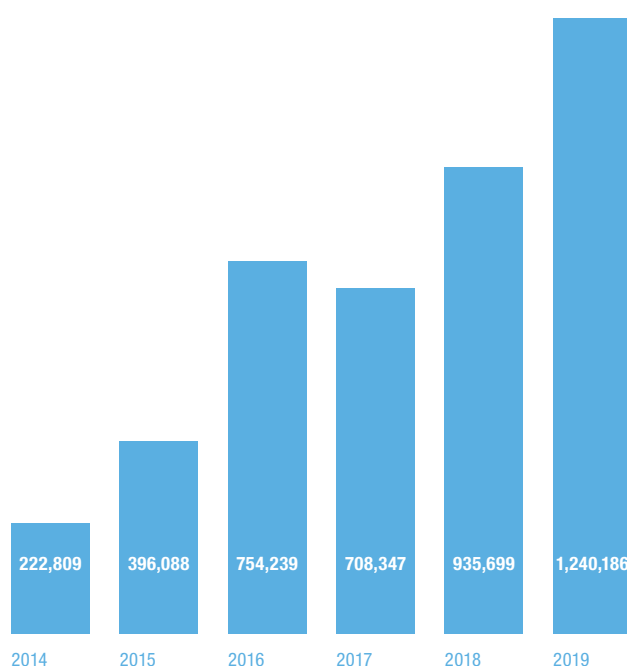
Colombia
The national network, comprising 33 TISCs located in 19 different cities, provided 674 consultations and assistance in technology searches and over 8,200 consultations on different IP rights and related issues. It also identified over 500 inventions and projects with the potential to benefit from IP protection.

Costa Rica
The national network continued to provide a wide range of innovation support services, including 35

Fig. 6 - Number of enquiries received by TISCs
(Source: Annual reports on national TISC activities submitted by TISC coordinators)

2014	2015	2016	2017	2018	2019
222,809	396,088	754,239	708,347	935,699	1,240,186

TISC national networks continue to develop providing a growing range or portfolio of basic and value-added services available specifically for local users.

consultations on technical assistance for patents and utility model legal protection, over 110 searches on patents, utility models and industrial designs, and over 2,100 technical consultations on different IP rights. The network also created a permanent position of national coordinator (focal point of the national TISC network) in the IP Registry.

Honduras

The activities of the national TISC network in Honduras focused mainly on awareness raising, technical assistance, drafting of patent applications, and technical consultations, with the main beneficiaries of these services being individual inventors and small and medium-sized enterprises (SMEs).

India

Licenses for patent and non-patent literature search software used by the Indian Patent Office have been extended to all TISCs in India.

Jordan

In Jordan, TISCs received an average of 150 visits per month during the first half of the year, which increased to around 300 visits per month by December 2019.

Madagascar

In Madagascar, the TISC network continued to focus, as it did in 2018, on providing "freedom to operate* search services to identify patents in the public domain in the area of food processing, in particular sugar cane, vanilla and clove processing, and fruit drying products and processes.

Mongolia

In Mongolia, the number of patent searches carried out by the national TISC network doubled, from 30 in 2017 to 62 in 2019.

Pakistan

In Pakistan, the TISC network received on average 300 requests per month in 2019, mostly from universities.

Peru

The number of services provided by TISCs continued to grow in 2019, representing an increase of 14.5 percent compared to 2018 for a over 1,000 types of basic services, while value-added services continued to be in high demand with more than 1,200 requests received mainly in the field of patent drafting and different types of patent searches (state of the art, freedom to operate, and patentability).

Russian Federation

Out of the 170 TISCs that are members of the TISC network in the Russian Federation, many target specific regional audiences such as the Tatarstan Central Scientific and Technical Center, the Mordovia Technology Park or the Peter the Great St. Petersburg Polytechnic University, which have become centers of competence in their respective regions.

Ukraine

The National Intellectual Property Office (NIPO) coordinated the establishment of 10 new TISCs in host institutions in different regions of Ukraine, bringing the total number of TISCs to 11. NIPO also estimated that in comparison to the average costs for providing IP services, TISCs have saved over USD 20,000 for applicants using their services.

Training – a cornerstone of TISC activities to build capacity and develop an innovation culture supported by IP

In addition to expanding their innovation support services to local users, TISCs continued to dedicate a significant amount of resources to self-development and awareness-raising activities, indicating increased sustainability and maturity levels.

Algeria

The Algerian National Institute of Industrial Property (INAPI), focal point of the TISC network in Algeria, organized nine training seminars on accessing and searching patent databases and 34 awareness-raising events for researchers, inventors and entrepreneurs. As a member of WIPO's Access to Research for Development and Innovation (ARDI) program, it also made over 1,500 scientific publications available to TISC users to help boost their research capacity.

Argentina
Present in 14 geographical zones across 24 localities, the TISC network in Argentina provided over 300 hours of training to 209 individuals.

Colombia
In Colombia, TISCs organized 345 workshops on IP and scientific and technical information, training over 9,600 people. They also organized more than 270 promotional activities.

Ecuador
During the past year, training activities carried out by the TISC network continued to be an important element in strengthening the skills of TISC professionals in Ecuador with 14 different training activities and over 1,600 persons trained in the field of IP. A virtual TISC platform was also developed to support the management of TISC operations and facilitate information exchange and communication amongst the members of the network.

Ethiopia
In 2019, 116 and 22 institutions were registered users of, respectively, WIPO's Access to Research for Development and Innovation (ARDI) and Access to Specialized Patent Information (ASPI) programs. To strengthen TISCs' capacity to effectively exploit the scientific and technical information made available through these programs, more than 260 hours of trainings were conducted during 2019 by the Ethiopian Intellectual Property Office, focal point of the national TISC network, reaching over 400 people.

India
In 2019, 458 IPR awareness programs were conducted across India. TISCs in India have also started to conduct advanced IPR training programs and workshops with eight such advanced level programs having been conducted last year.

Mongolia
The Intellectual Property Office of Mongolia organized seminars on building a culture of intellectual property and IP management, including one dedicated to startups, in cooperation with the Mongolian Foundation for Science and Technology, Mongolian University of Science and Technology, and National University of Mongolia.

Morocco
In 2019, TISC network members continued to actively pursue self-development through training and registered to 499 advanced distance learning courses with the support of WIPO and the Moroccan Industrial and Commercial Property Office (OMPIC), focal point of the TISC network in Morocco. The distribution of course registrations was as follows: 49 percent of the registrations related to training on patent searches, 36 percent to patent drafting, and 7 percent to IP management.

Pakistan
In Pakistan, distance learning has been an important tool for TISC staff to strengthen their IP and patent searching and drafting skills. In 2019, over 60 percent of TISC staff had completed selected basic or advanced distance learning courses offered by the WIPO Academy.

Peru
The network continued to organize training activities to strengthen the skills of professionals working in TISC centers in different fields, including 54 in the area of patent search, 60 in the area of IP in general, 418 in the area of patent drafting and 34 in the area of technology transfer.

Uzbekistan
The Agency on Intellectual Property of the Republic of Uzbekistan, the national TISC focal point in the country, organized 42 awareness-raising seminars on IP protection and 32 workshops to strengthen the skills of TISC staff and their users.

TISCs as catalysts in filing patent applications and other IP rights

Many TISC networks report a steady growth in patent applications filed by TISCs and their users, as a result of the rise in the number and quality of TISC services provided to local researchers and innovators.

In **Colombia**, members of the TISC network filed over 140 patent applications, 60 industrial design applications and 1,162 trademark applications in one year, in comparison to 2018 where 140

patent applications, 46 industrial designs and 600 trademark applications were filed.

In **Ecuador**, nine patent applications, three utility models and over 150 industrial design applications were filed in 2019.

In **Morocco**, members of the TISC network filed 122 patent applications, representing 63 percent of patent filings of Moroccan origin. At the international level, TISC network members made 16 international filings under the PCT treaty, representing 57 percent of all PCT filings of Moroccan origin.

In **India**, TISCs carried out over 350 patent searches and filed over 200 patent applications.

In **Pakistan**, out of 312 locally filed patent applications, 145 were filed by TISC host institutions, representing a nearly 100 percent increase compared to 2018.

In **Peru**, the training provided since the establishment of the TISC network to strengthen the skills of TISC staff in carrying out patent searches and patent drafting was also reported as having clearly contributed to an increase in resident patent applications.

In the **Philippines**, the number of IP filings from the national TISC network has increased nearly ten-fold since 2014 – from 154 filings in 2014 to 1,425 in 2018 – and ITSOs accounted for over 41 and 45 percent, respectively, of all resident patent and utility model applications, reflecting the growing innovative capacity of local academic and research institutions.

In **Uganda**, 33 patent and utility model applications were filed in 2019.

In **Uzbekistan**, TISC host institutions filed 105 patent applications and were granted 98 patents, accounting for nearly 30 percent of all resident patent applications and over 50 percent of all patents granted to residents in Uzbekistan. They also filed 42 utility model applications and were granted 20 utility models, representing about 15 percent and 19 percent of all resident

utility model applications and granted utility models, respectively.

TISC value-added services, such as commercialization and technology transfer, strengthen local innovation ecosystems

As the number of sustainable national TISC networks and the demand for TISC services has continued to grow, TISCs have been expanding their range of services to support local users in better exploiting their innovative potential throughout the different stages in the innovation cycle. Technology transfer and IP management support services, in particular, are creating real value, as evidenced by a rise in the number of TISC initiatives to help local researchers, inventors and entrepreneurs bring inventions to market.

India
The Punjab State Council for Science and Technology (PSCST) patent for Hybrid Kiln Technology has been successfully transferred to more than 300 brick kilns, with the PSCST TISC earning revenues of INR 110 Lakhs to December 2019. The TISC at the National Research and Development Corporation (NRDC) Visakhapatnam successfully transferred nine technologies. NRDC Visakhapatnam also confirmed over 20 memorandums of understanding with various academic institutions across India for technology transfer and IP commercialization. The scheme for facilitation of Start-ups Intellectual Property Protection (SIPP) has been also been extended to all institutions in the TISC network in India.

Mongolia
TISC activities in Mongolia have catalyzed the development and adoption of regulations on intellectual property (including on technology transfer, trademark licensing, and the creation of startups) and the establishment of technology transfer offices in several universities.

Morocco
As part of the Inventor Assistance Program (IAP), a joint WIPO-World Economic Forum initiative to support inventors and small businesses with limited

TISCs have been expanding their range of services to support local users in better exploiting their innovative potential.

financial means to secure patent protection for their inventions through pro bono legal assistance, 11 members of the TISC network in Morocco offered pro bono assistance to selected Moroccan inventors. In 2019, 15 requests for assistance were received, five inventions were reviewed, and one patent application was filed in the framework of this program.

Philippines
The importance of ITSOs in strengthening the local innovation ecosystem through the propagation of skills and competences needed to effectively use the IP system has been specifically recognized in the National Intellectual Property Strategy of the Philippines 2020-2025, which identifies ITSOs as key knowledge producers and essential actors in the local innovation landscape.

Russian Federation
In the Russian Federation, 31 TISCs have become members of a program of the Foundation for the Promotion of Innovation which aims to support commercially-oriented scientific and technical projects of young scientists. Sixty TISCs are also supporting project activities related to youth initiatives on inventions in "Schools of Innovation" or the "Growing Innovators" program. To expand their range of innovation support services, many TISCs also focused on strengthening their skills in advanced areas such as patent drafting, patent analytics, and market research.

Uzbekistan
To encourage IP commercialization and technology transfer in Uzbekistan, the Agency on Intellectual Property of the Republic of Uzbekistan, the national TISC focal point, published a collection of inventions and utility models in English, Russian and Uzbek.

TISCs without borders: regional initiatives help scale up the impact and reach of TISCs worldwide

Regional cooperation has been another important pillar to help strengthen national TISC networks and increase their impact and reach. Bilateral and regional initiatives to exchange experiences and best practices and to build on national and regional strengths to manage TISC networks more efficiently and deliver more targeted services have flourished in all geographical regions, with regional networks established in Africa, Asia and the Pacific and Latin America and the Caribbean, and ongoing discussions to strengthen regional cooperation in other regions such as among Arab countries and countries in Central Asia. Past initiatives such as cooperation among TISCs in the **CATI-CARD** regional network to provide patent information services to specific technology sectors important for the region's innovation ecosystem continued to be strengthened, while new initiatives flourished in 2019.

Among **Arab countries**, the National Institute of Industrial Property (INAPI), focal point of the TISC network in **Algeria**, hosted a study visit for the National Institute for Standardization and Industrial Property (INNORPI), focal point of the TISC network in **Tunisia**, to exchange experiences on how to better manage their respective TISC networks.

Other bilateral exchanges during the year included two study visits of a delegation of the **China National Intellectual Property Administration (CNIPA)** to **Morocco** and the **Russian Federation** in order to learn from the experiences of the Moroccan and Russian national TISC networks in establishing their networks.

China also hosted the **first Interregional TISC Meeting** in Hangzhou on September 2 and 3, 2019, which brought together representatives from 12 national TISC networks from around the globe to discuss and share experiences and best practices in integrating TISCs into national and institutional strategic frameworks with the overarching objective to supporting industry in the innovation process. The following countries participated in the interregional meeting: Algeria, Chile, Cuba, Egypt, Georgia, India, Mongolia, Morocco, the Philippines, the Russian Federation, South Africa and Viet Nam.

In regional networks such as the **ARIPO** regional TISC network, which was formalized in 2018 with the objective to serve as a platform for sharing experiences and best practices and to catalyze innovation and development in the region, the TISC network extensively used its website and social media channels to promote innovation and IP and published success stories from the network. It also established a roster of over 100 experts to promote existing local resources and expertise and build capacity in the region.

The **ASEAN** regional TISC network began building on the results of a pilot project for a regional mentorship program, linking new TISC staff with more experienced TISC staff to build basic patent search skills through work on practical cases. The pilot project identified key opportunities and challenges for developing a longer-term program, including the importance placed by mentors in contributing to a greater cause and developing their networks with experts throughout the region.

WIPO: Supporting TISCs with resources and tools

WIPO has developed a number of initiatives, publications, training materials and tools designed to help TISCs access and make effective use of valuable scientific and technical information. This has become ever more indispensable in reinforcing TISC impact and sustainability and in enabling TISCs to provide a broad range of services to local users.

As part of WIPO's efforts to support TISCs in building capacity, two public-private partnerships, ASPI and ARDI, have been established with leading patent database providers and publishers.

Access to Specialized Patent Information (ASPI) program

ASPI enables institutions in developing countries to obtain free or low-cost access to commercial patent database services. It is made possible through a unique public-private partnership with nine leading patent database providers.

With the addition of East Linden as a contributing partner, providing access to its traditional medicine patent search and analysis tool, the ASPI program now has nine patent database service providers as partners.

The steady increase in institutions registered and actively participating in ASPI over the years is also reflected, in practice, by a rise in the number of TISCs providing value-added services such as advanced technology searches and patent landscape reports which are often supported and reinforced by their ability to access commercial patent database services such as the ones provided through the ASPI program.

Access to Research for Development and Innovation (ARDI) program

ARDI aims to increase the availability of scientific and technical information in developing countries through a public-private partnership with the publishing industry. Over 50 publishers currently provide free or low-cost access for 125 developing countries to academic and professional peer-reviewed content through ARDI. The program is also a member of the Research4Life partnership, a joint initiative of several United Nations agencies, private sector enterprises, non-governmental organizations, and academic institutions designed to enhance the scholarship, teaching, research and policy-making of the many thousands of students, faculty, scientists, and medical specialists, focusing on health, agriculture, environment and other life, physical and social sciences in the developing world.

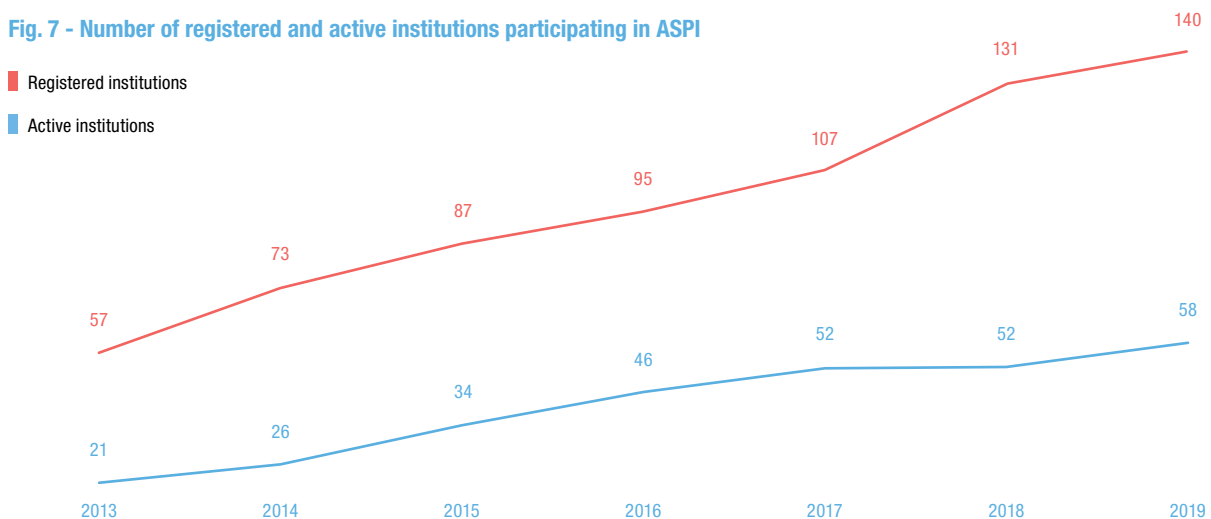**Fig. 7 - Number of registered and active institutions participating in ASPI**

■ Registered institutions
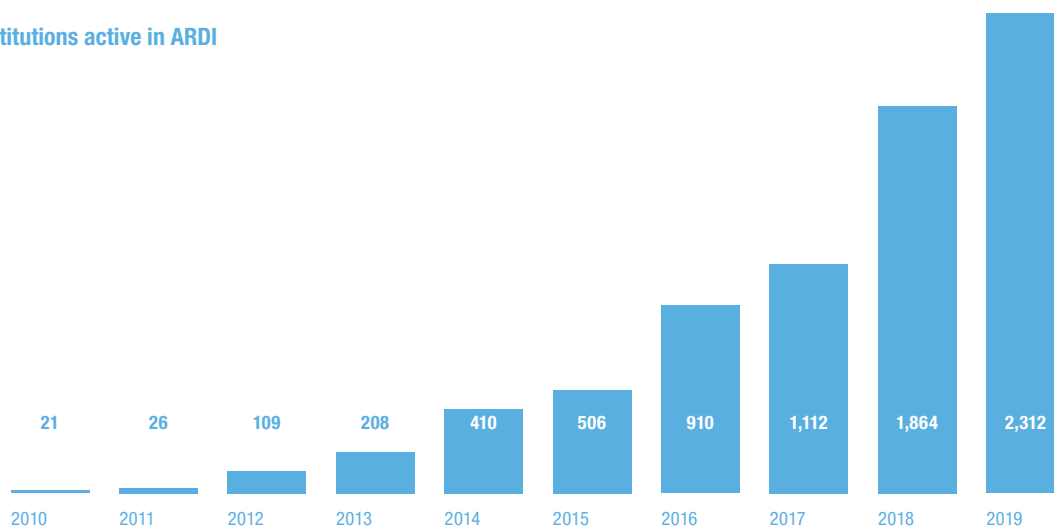
■ Active institutions

	2013	2014	2015	2016	2017	2018	2019
Registered institutions	57	73	87	95	107	131	140
Active institutions	21	26	34	46	52	52	58

Fig. 8 - Number of institutions active in ARDI

21	26	109	208	410	506	910	1,112	1,864	2,312
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019

The year 2019 marked the 10th anniversary of ARDI. Since the program was launched in 2009, it has witnessed a significant growth not only in the number of registered institutions, from 21 institutions in 2009 to 2,312 in 2019, but also in the availability of content from its initial goal in 2009 to facilitate access to 100 scientific journals to the 42,000 journals, books and reference works available in 2019.

The Research4Life General Partners Meeting was held at WIPO headquarters on July 18, 2019, marking 10 years of ARDI. As highlighted by guest speaker, Dr. John Okuonzi from Kyambogo University, one of Uganda's eight TISC host institutions, at, having access to the scientific and technical information provided through the ARDI program – in particular in his case literature about educational management systems – helped his university develop an innovative Enterprise Resource Planning solution, making student registrations and management much more effective. This innovative project was later scaled up to other public and private universities in Uganda.

Other countries that reported a boost in the research capacity of their TISC host institutions thanks to the ARDI program in 2019, as showcased above, are Algeria and Ethiopia.
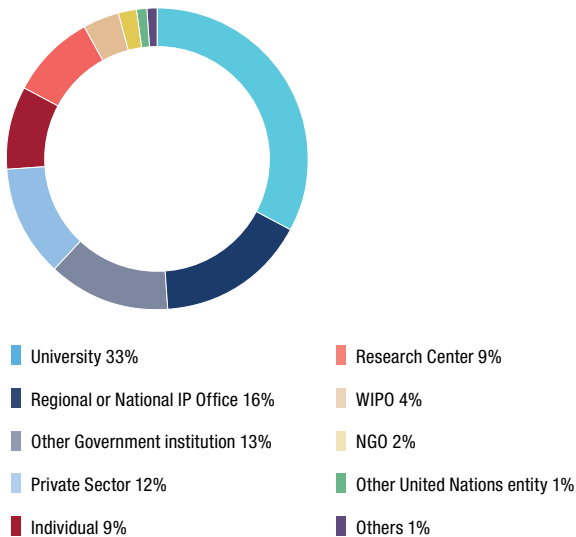
Publications and training materials boost capacity

A number of publications have been created by WIPO to boost capacity building among TISCs worldwide. These publications are key reference sources for a range of subject areas, including patent documentation and databases, patent search, patent analysis, and TISC management. The publications are available in multiple languages and include brochures and guides as well as WIPO Patent Landscape Reports. These insightful reports examine patent filing trends and provide technical and business information of particular relevance to developing countries in areas such as public health, food and agriculture, environment, energy, and disabilities. Moreover, resources such as those developed to guide TISCs in drafting patent landscape reports contribute in reinforcing the quality and quantity of value-added services provided by TISCs and consequently lead to strenghtening the overall impact and sustanability of TISCs providing these services.

Developments in patent analytics

A series of WIPO patent analytics activities, including the development of specific subject matter publications and methodological resources aim to keep the TISCs and the patent information users informed on trends across different technologies

Fig. 9 - Members of eTISC by institution type

- **■** University 33%
- **■** Regional or National IP Office 16%
- **■** Other Government institution 13%
- **■** Private Sector 12%
- **■** Individual 9%
- **■** Research Center 9%
- **■** WIPO 4%
- **■** NGO 2%
- **■** Other United Nations entity 1%
- **■** Others 1%

and to help them develop and enhance their patent analytics skills for the provision of high-quality analytical services.

WIPO Technology Trends: The *WIPO Technology Trends* report is a new flagship publication addressed to industry, academia and policymakers, as well as general readers interested in innovation. Based on patent and non-patent data, it shows trends in different technologies, contextualizing them with case studies, insights and perspectives from leading experts, and policy considerations. WIPO Technology Trends 2019 was dedicated to artificial intelligence and was one of the most successful recent WIPO publications, with over 100,000 downloads in the first year. The taxonomy and related patent search methodology developed for the report have been adopted by industry leaders, academia and national IP Offices, and the report's AI glossary is a helpful resource for non-specialists. The second issue in the series will focus on the field of assistive technology.

Patent Landscape Reports series: Over 220 free-of-charge patent landscape reports in the fields of public health, energy and environment, ICT technologies and other topics are available online in the WIPO Patent Landscape Reports series,

including the latest on marine genetic resources in the ASEAN region published in 2019.

Handbook on Patent Analytics: Following the Manual on Open Source Tools, a first draft of a Handbook on Patent Analytics is available on a collaborative online space. It addresses some key issues and considerations in patent analytics and explores new areas such as machine learning. A finalized version of the Handbook is expected to be published in 2021.

e-Tutorial on Using and Exploiting Patent Information

The e-Tutorial on Using and Exploiting Patent Information is a free online learning platform developed to help innovators learn how to use the wealth of technology information in patent documents to boost their own research and development. It comprises three sections: patent basics, patent search and retrieval, and patent analysis.

In 2019 the e-Tutorial was translated into Chinese and is now available in five UN languages (English, French, Spanish, Russian and Chinese).

eTISC knowledge sharing platform

eTISC connects the TISC community and other individuals with an interest in patent information and related subjects. A range of features allow eTISC members to share knowledge and experiences across national and regional boundaries. In addition, it offers training opportunities through webinars and "Ask the Expert" sessions on a range of topics. This range is also expanding to reflect the diversification from basic to value-added services offered by TISCs. By the end of 2019, the eTISC platform had 2,637 members from 133 countries.

Patent Register Portal

The Patent Register Portal is a gateway to online patent registers and gazettes and to legal status-

related information from over 200 jurisdictions and patent information collections. Information on the Portal can be accessed on a searchable map and table, help files with detailed legal status-related information, and search tips. It is available on the WIPO website where a short video on how to use the portal can be also viewed.
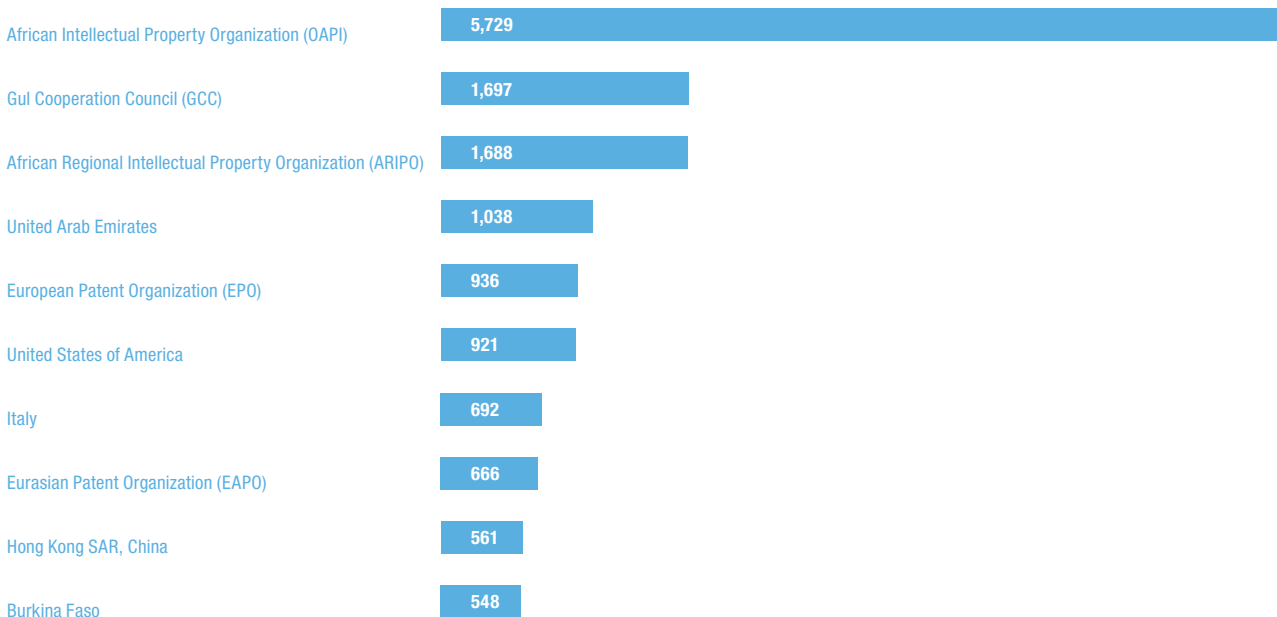
During 2019, which was the first full year after its launch, the Portal registered over 42,000 page views and 90,000 downloads of the help files containing detailed legal status-related information and search tips for all available jurisdictions. While the Portal is used by a variety of users, its use by TISCs also reflects the growing demand for legal status information used in freedom to operate searches and due diligence services.

TISCs are being empowered through a growing range of capacity development initiatives, resources, tools, as well as data, information and knowledge-sharing platforms provided by WIPO.

Fig. 11 - Patent Register Portal usage

Page views	42,397
.pdf downloads	90,502

Fig. 12 - Top 10 report downloads

African Intellectual Property Organization (OAPI)	5,729
Gul Cooperation Council (GCC)	1,697
African Regional Intellectual Property Organization (ARIPO)	1,688
United Arab Emirates	1,038
European Patent Organization (EPO)	936
United States of America	921
Italy	692
Eurasian Patent Organization (EAPO)	666
Hong Kong SAR, China	561
Burkina Faso	548

WIPO supports the development of knowledge and skills

Training includes on-site workshops and seminars with a focus on training of trainers, distance learning carried out in cooperation with the WIPO Academy, and "Ask the Expert" sessions and webinars on specific topics on the eTISC platform.

The topics covered by WIPO include: basic concepts and skills in patent searching; different types of patent searches, including state of the art, novelty and freedom to operate, as well as patent analytics. In 2019, while training continued to be provided to assist TISCs in becoming effective and sustainable institutional access points offering high-quality services to local innovators, new training areas and tools were developed to strengthen TISCs knowledge and capacity in providing value-added services and addressing more complex issues related to IP management and commercialization, including using information in the public domain and technology transfer.

Moreover, a feasibility study was carried out in 2019 on developing a TISC staff certification system, which would aim to strengthen TISC staff career development and reduce turnover in TISCs. The study will serve as a basis for formally developing national TISC certification schemes from 2020 onwards.

Training on identifying and using information in the public domain

With new tools being developed to support TISCs and their users in using information in the public domain, workshops on freedom to operate determination and on how to integrate inventions in the public domain into product design and development processes were conducted in nine pilot national TISC networks between the end of 2018 and 2019. These new tools aim to support TISCs in providing services related to the further development and commercialization of products, particularly in view of the growing demand for such services by TISC users.

In total, some 500 participants were reached by the workshops, with virtually all of the participants confirming that the trainings were successful in

Training provided by WIPO supports the development of knowledge and skills among TISC staff, building their capacity to provide a range of high-quality services.

building their knowledge and skills and will be useful for their daily work (over 98 percent). The high rate of satisfaction suggests that this area will continue to be an important focus of the TISC program.

New tools for assessing training needs in the area of technology transfer and IP management

The ongoing Development Agenda Project on IP Management and Technology Transfer aims to enhance innovation capabilities by developing new materials and training in the area of technology transfer and commercialization. A methodology and toolkit for assessing training needs and mapping innovation value chains was developed specifically with key role players in mind, including TISCs, to make training in this field more effective and consequently making technology transfer in a country's innovation value chain more effective. This approach has been used to formulate training plans in four pilot countries, namely Chile, Indonesia, Rwanda and South Africa.

Training activities based on the training plans in each of the four pilot countries were commenced in Pretoria, South Africa, in October 2019, with topics such as IP Commercialization Strategies
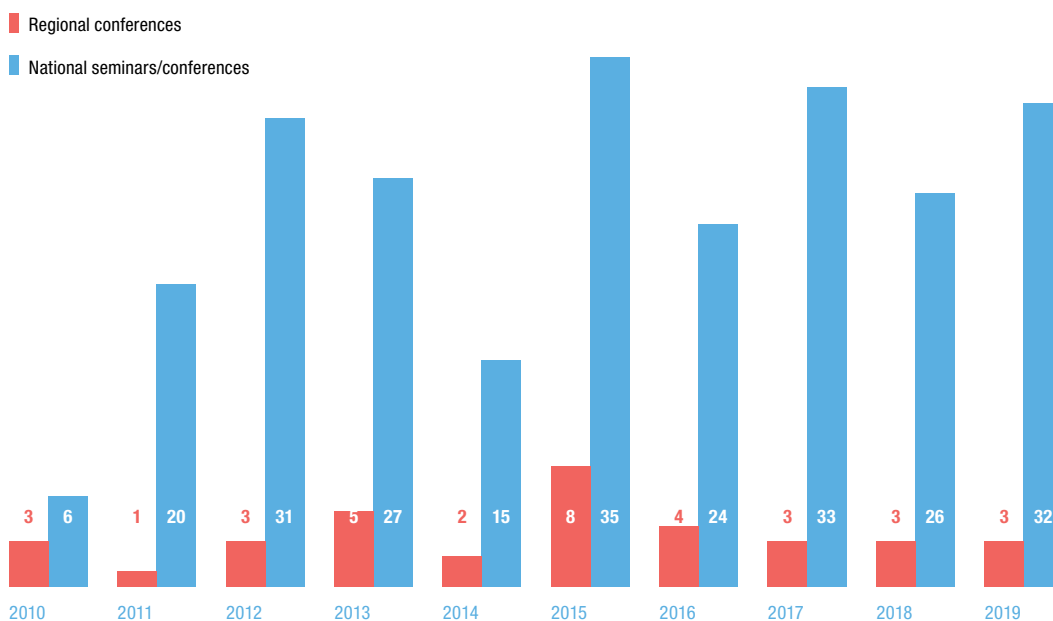
Fig. 13 - Training statistics

- Since 2009, over 13,000 TISC staff have benefitted from on-site training on a range of subjects including patent search and analysis. In 2019 alone, over 2,000 participants took part in TISC training seminars. Further, there is a continued increase of TISC participation in WIPO Academy distance learning courses with 2,539 TISC participants in 2019, representing an increase of 23 percent in comparison to 2018.

  Half of the advanced courses attended by TISC participants in 2019 were on patents, patent information search and patent drafting. There was also an increase in the interest to develop knowledge and skills in areas related to value-added innovation support services, which are seeing growing demand: in 2019 the advanced course on IP management and the advance course on trademarks, industrial designs and geographical indications were followed by 12 percent and 11 percent of TISC participants, respectively.

- Over 60 percent of the participants came from the TISC networks of Morocco, the Philippines, the Russian Federation, South Africa, Ukraine and Peru, with almost 30 percent from the TISC network in Morocco alone.

and Pathways, the role of IP in Commercialization, Licensing Key Issues, IP Protection Strategies and Enhancing Negotiation Skills. A second training workshop took place in December 2019, in Jakarta, Indonesia, following a similar structure to that of South Africa. Training will continue throughout 2020 in the other pilot countries. A final evaluation of the training activities will be carried out to assess the effectiveness of the training, with a view to amending the methodology and toolkit for future use and a general roll-out to all interested countries.

Fig. 14 - Number of national and regional conferences organized

Legend:
- Regional conferences
- National seminars/conferences

Year	Regional conferences	National seminars/conferences
2010	3	6
2011	1	20
2012	3	31
2013	5	27
2014	2	15
2015	8	35
2016	4	24
2017	3	33
2018	3	26
2019	3	32

Outlook for 2020

The effective implementation of the WIPO TISC program is a key priority and a major component of the assistance WIPO provides to its Member States with the aim of creating or strengthening a positive environment for innovation and creativity that could be crucial to achieve the SDGs within its mandate.

The TISC program acts as a stimulant to progress and as such can be considered as having an accelerating effect on the implementation of Goal 9 of the 2030 Agenda. Since the adoption of the 2030 Agenda in 2015, the implementation of the program has seen a noticeable annual progression not only of the number of centers and of beneficiary countries, but also in the provision of related high quality innovation support value-added services, to help inventors, researchers and entrepreneurs unlock their innovative potential and to act as a catalyst for fostering innovation and encouraging technology transfer.

WIPO will continue to work, upon request of its Member States, to ensure that national IP and innovation strategies are aligned and integrated appropriately in their national development plans, so as to optimize WIPO's support in governments' use of the IP and innovation system as a tool for the achievement of the SDGs.

New resources are being developed to reinforce TISC capabilities worldwide

The focus of the program continues to be supporting TISCs with the means to build their skills and better manage their portfolio of services to reinforce their role as an effective catalyst in the national innovation process. The new tools and resources under development for TISCs include the following:

- Development of content for WIPO INSPIRE in collaboration with internal and external stakeholders to provide TISCs and local users with easily accessible, up-to-date and comprehensive information on free-of-charge and commercial patent and non-patent databases.

> The TISC program acts as a stimulant to progress and as such can be considered as having an accelerating effect on the implementation of Goal 9 of the 2030 Agenda.

- Development of a Project and Performance Management Platform for use by national TISC focal points supported by WIPO to ensure national projects are run as efficiently as possible by national TISC focal points, in particular to efficiently target capacity building in specific national TISC networks through onsite and online digital delivery of training activities.

- Development of a TISC staff certification scheme based on a feasibility study undertaken in 2019 so as to strengthen career development and ensure that skills are retained in TISC networks or, at least, in the field of intellectual property rights.

- Integration of the Technology Transfer Web Forum into the eTISC platform thereby allowing greater visibility and exchange of views on technology transfer specific topics by TISCs and others.

- Training activities on technology transfer and IP commercialization/utilization in four pilot

countries to be concluded and serve as a basis for fine-tuning the methodology and toolkit, as well as mapping of national innovation value chains, to significantly improve the efficiency of training and consequently the process of technology transfer itself in a broad roll-out to all interested countries.

- Publication of complete guides on identifying and using inventions in the public domain in all six UN official languages to allow TISCs in all regions of the world, particularly in developing countries, to adapt, exploit and commercialize inventions.

- Publication of user-friendly toolkits on using inventions in the public domain to give TISC staff practical, hands-on materials to support local inventors and enterprises with regard to new product development and design.

- Availability of the e-Tutorial as a WIPO Academy distance learning course, in all six UN official languages including Arabic from 2020, to reinforce the possibility of self-learning on how to effectively carry out patent search and analysis.

- Preparation of the second publication in the *WIPO Technology Trends* series specifically on assistive technologies for people with disability or impairment to provide a comprehensive, global picture of developments and trends in this area.

Useful links

WIPO TISC Program
www.wipo.int/tisc/en

WIPO TISC Directory
www.wipo.int/tisc/en/search

WIPO INSPIRE
https://inspire.wipo.int

eTISC Platform
https://etisc.wipo.int

Patent Register Portal
www.wipo.int/patent_register_portal

ASPI Program
www.wipo.int/aspi/en

ARDI Program
www.wipo.int/ardi/en

Patent Landscape Reports
www.wipo.int/patentscope/en/programs/patent_landscapes

Patent Landscape Reports Database
www.wipo.int/patentscope/en/programs/patent_landscapes/plrdb.html

WIPO Technology Trends – Artificial Intelligence
www.wipo.int/tech_trends/en/artificial_intelligence

PATENTSCOPE Artificial Intelligence Index
www.wipo.int/tech_trends/en/artificial_intelligence/patentscope.html

Inventor Assistance Program (IAP)
www.wipo.int/iap

Alternative Disputes Resolution (ADR) for TISCs
www.wipo.int/amc/en/center/tisc

Development Agenda Project on Technology Transfer
www.wipo.int/meetings/en/doc_details.jsp?doc_id=372830

Development Agenda Project on Public Domain
www.wipo.int/meetings/en/doc_details.jsp?doc_id=329197