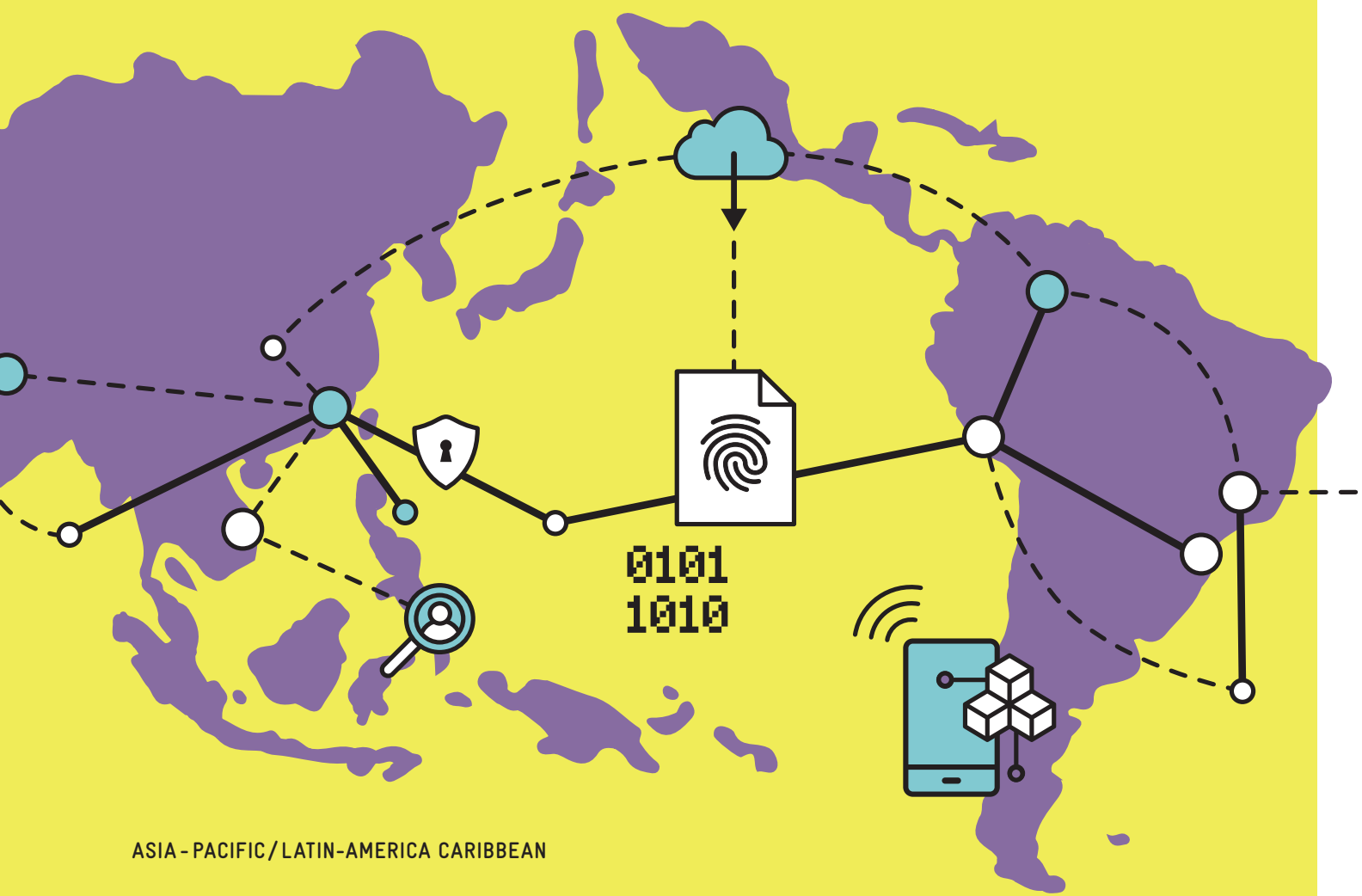
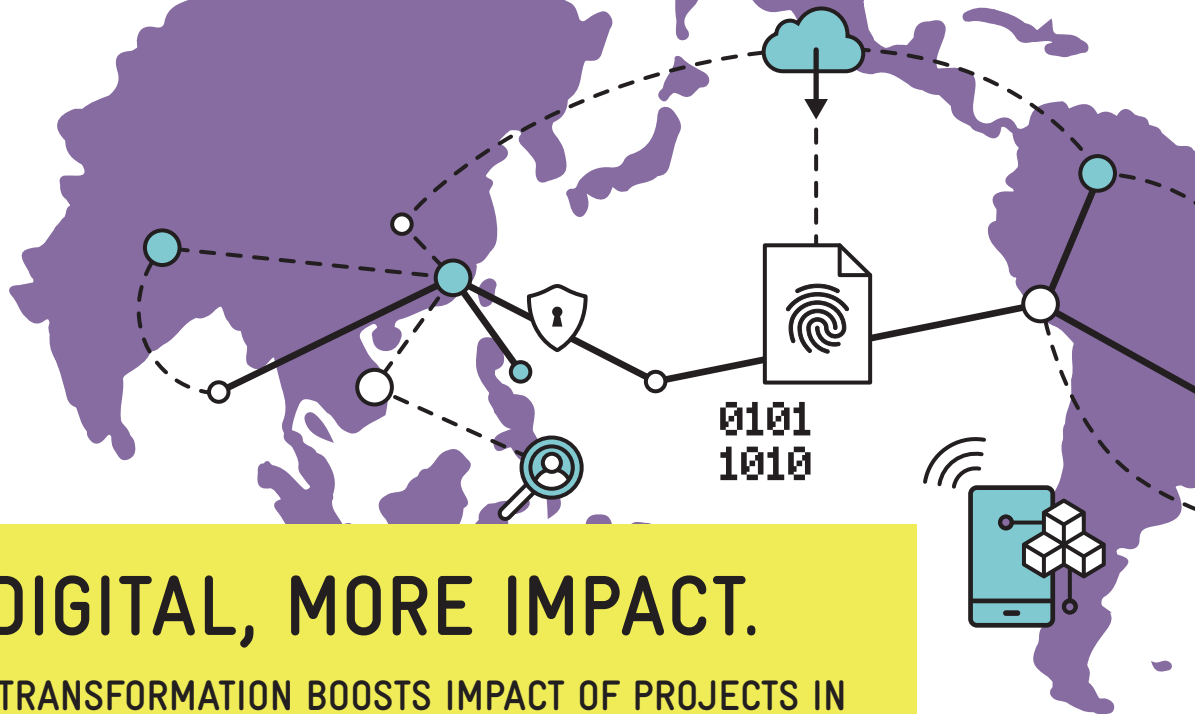


# MORE DIGITAL

More Impact



ASIA - PACIFIC / LATIN-AMERICA CARIBBEAN



# MORE DIGITAL, MORE IMPACT.

## HOW DIGITAL TRANSFORMATION BOOSTS IMPACT OF PROJECTS IN THE ASIA, PACIFIC, LATIN AMERICA, AND THE CARIBBEAN REGIONS

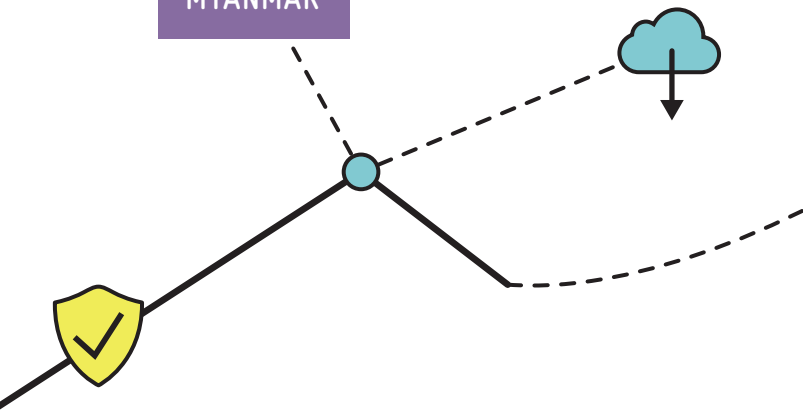
In digital transformation lies a key for the future. This applies not only to the emerging countries, but also for all other countries in the APLAK region addressing the new age of “Digital Revolution” as an opportunity. It enables them to get integrated into the global economy and to leapfrog in their development.

As an actor supporting development worldwide, it is imperative for GIZ to become involved in the dynamics of digital transformation and to help shape the digital future together with our partners. Digital transformation brings fundamental changes for the organization and partners in the countries and defines how we work today and in the future. This transformational process, however, requires a high degree of flexibility, the readiness to rethink processes, readiness to accept mistakes, finding new ways of solving challenges without losing focus on the overall goal and especially a user centered approach. This requires investment, commitment and space for creative ideas. This transformational process is not a one-way alley; it must happen multidirectional and include an exchange between the countries too.

The PLAK Department has taken up the challenges of digitalization and implemented the *Digital by Default*<sup>1</sup> approach as an early mover. In APLAK; out of the newly planned projects since the beginning of 2018,

- 69% apply digital tools and solutions,
- 50% apply digital tools and solutions as an integral part of their work.

We have compiled documentations of a few outstanding projects from the APLAK regions, focusing on how digital transformation as a core project component – or even its main focus – becomes reality and increases impact in our daily efforts. This is however only a snapshot of many more projects applying digitalization to achieve their goals.



# SHWE JOB APP

## SOCIAL AND LABOUR STANDARDS IN THE TEXTILE AND GARMENT SECTOR IN ASIA

### SITUATION:

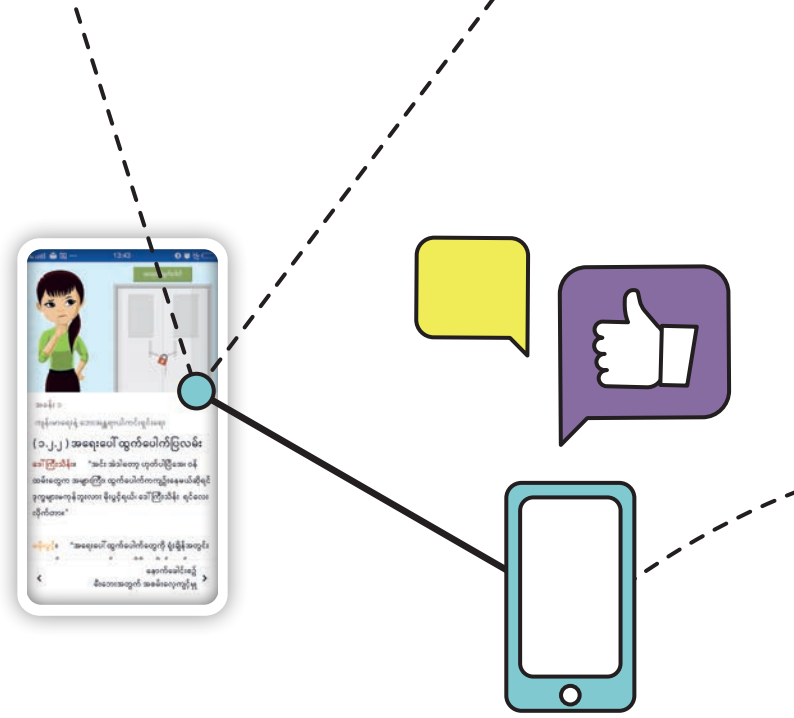
About 600.000 workers are working in the textile and garment sector in Myanmar, most of them are women from rural areas between 16 and 27 years. With its growth potential, this sector provides a lot of long-term jobs for unskilled workers, which makes the workers financially and socially more independent. However, as experience from Bangladesh has shown, a fast-growing sector also increases the risk that those workers are being exploited because they are not aware of their working rights.

### OBJECTIVE:

The project aims to increase compliance with sustainability standards in the textile and garment sector. Besides being educated on labour law, occupational health and safety, the workers were expected to become more self-confident, independent and willing to demand better working conditions from factory managers. Furthermore, the app was expected to increase exchange between the workers and building a learning network.

### APPROACH:

A basic requirement for women workers to claim their rights is that they develop an awareness that they have rights and know what they mean. Only then can they tackle the challenges they face in their everyday work. A study from Myanmar proved that 90 percent of garment and textile workers own a smartphone and use it regularly, therefore a mobile app appeared to be a promising education tool to reach a big audience independently from their location. The Shwe Job App, developed in May 2017, informs about the most important labour laws and occupational health and safety in the workplace in an interactive manner. The content is understandable for the workers, includes voice over and even a salary calculator. Besides the development of the App, it was important to engage multipliers who can reach workers, e.g. the factory managers, Sunday café operators, and large buyers as well as to start a Facebook campaign with the help of C&A Foundation to promote Shwe Job App. The app was also promoted, used, and explained at the Sunday cafés, trade union's women centre, skill training centres, and during factory visits in the framework of other SLSG activities.



### APPLIED DIGITAL TECHNOLOGY:

Mobile App at Google Play Store in Myanmar language and English. Because of the many Chinese investors who are often not aware of the local labour law, a Chinese version will be released in March 2019.

### ACHIEVEMENTS THROUGH DIGITALIZATION:

The strategy of using mobile apps to reach and educate a large workforce was more successful than expected. An app is particularly suitable for reaching out to target groups that are outside the geographical reach of a project as you can download it from anywhere. Further, the App can be transferred and used offline, which integrates even more workers who might not have a stable internet connection or any at all. Translating the app into English has created a replication model for other countries that can be easily shared online with women’s NGOs worldwide. About 10,040 workers were directly reached in ten factories through the launch of the app. Since its release in May 2017 9,517 users have opened Shwe Job; either through the direct download from the Google Play Store or via an app known as Zappya that allows offline transfer. A survey in August 2017 confirmed that the app is also used by factory managers, for example there have been 550 users opening the English version since its release in December 2017. There is also a great interest in using the app in the factories for training purposes.

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# TERRA LEGAL

FAIR ACCESS TO LAND AND NATURAL RESOURCES THROUGH A  
ONLINE BASED SPATIAL LAND MANAGEMENT SYSTEM IN BRAZIL

## SITUATION:

Rural smallholders as well as the indigenous population of the Amazon region are existentially threatened by heavy land conflicts. Clarified land rights structures and juridical security are a prerequisite for a socially, economically and environmentally just development in Amazonia. The land tenure system of the Amazon region is ambiguous due to its size, settlement history and various overlapping interests. The areas along the federal highways were distributed to smallholders in the 1970s. Even though they were granted rights of use they did not obtain property rights for their land plots. The subsequent lack of clear tenure rights acts as an incentive for illegal land appropriation and often leads to violent land conflicts. Additionally, the lack of legal certainty creates an obstacle for the implementation of forest protection measures that require long-term planning, such as for example the establishment of nature protection areas or reserves for the indigenous population.

The Brazilian government has acknowledged this issue and prioritized it within its national strategies to combat deforestation. The national program "Terra Legal", brought to life in 2009, aims at the regularization of 55.000.000 ha of federally owned land within the Amazon, which compares to more than one and a half times the size of Germany, in order to bring its usage into legality and allocate secure land titles to family farmers.

## OBJECTIVE:

"Terra Legal" is being supported within the framework of the Brazilian-German cooperation since 2014 through a project implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The aim of the project is to shape the proceedings of tenure regularization and land titling in a more efficient and transparent manner and to contribute to strengthening governance of land tenure. The voluntary Guidelines on the responsible Governance of Tenure of Land, Fisheries and Forests, (VGGT), agreed upon by the Committee on World Food Security of the United Nations build the orientation framework, which ensures a fair access to land and natural resources.

## APPROACH:

The project's approach includes using digital tools and management systems in order to make the land titling process more efficient, more effective and more transparent. For this, GIZ supports the development and implementation of a computerized system that makes the titling process in the Amazon region fully digital. The system is called SIGEF-Titulação (System for the Management of Land Tenure Regularization and Land Titling, or short SIGEF- Land Titling).



## APPLIED DIGITAL TECHNOLOGY: SIGEF–LAND MANAGEMENT SYSTEM

The Land Management System (SIGEF) was designed and set up to encompass the whole process of land allocation and tenure regularization: initial registration, issuing of land titles, monitoring, and the fulfillment of the contractual clauses. This database will also be available in the future for regional offices for land registration and other institutions responsible for public policies for rural landholders in the Amazon.

The computerized system is organized into integrated modules to facilitate effective land management. One module holds digitized, catalogued and vectorized information on land titling documents (SIGEF Archive). Another module, SIGEF Geo (cadaster) offers spatialized information on properties and automated certification of parcel information. Yet another module, SIGEF Finance is for automating land price calculations, issuing bills and controlling payments of fees. Still, the most complex module is SIGEF Land Titling: This module is for the digital operation of the process for land tenure regularization, from the registration of the applicants, until analysis and execution of the titling process. There are modules for different land use categories, such as land allocation to other public agencies, urban land use, and regularization of rural occupations. This system is being constructed to connect with the databases of various public agencies (Inland Revenue, Ministry of Labor and Employment, etc.), increasing and improving connectivity and enabling automated procedures.

## ACHIEVEMENTS THROUGH DIGITALIZATION:

So far, from over 32.000 titles and over 9.000 Certificates of Recognized Occupancy (CRO) that have been issued by the Program, only a small number has been effectively issued by the SIGEF Land Titling module. The system infrastructure and performance are being tested and are currently in the final phase of improvement before going online and start official routine operation throughout the entire land tenure regularization process. It is estimated that the system will be up and running in 2019.

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# OPEN-JUSTICE TOOL

## INTERNATIONAL REGIONAL LAW AND ACCESS TO JUSTICE FOR HUMAN RIGHTS IN LATIN AMERICA

### SITUATION:

Today, Latin-American lawyers still do not have much knowledge of the exact operation of the Inter-American system of human rights, able to condemn a State (and require damages) for infringement of a right provided for in the American Convention on Human Rights (ACHR). Unfortunately, the application of human rights treaties by judicial operators in Latin-American countries, still sound to them like something distant and foreign to their countries core thereby increasing the risk of the violation of a human right.

The project DIRAJus was set up to help overcoming this situation by deepening the dialogue between the Inter-American and national levels. In more concrete terms, DIRAJus supports the application of the concept of conventionality control. This concept demands that national judicial operators apply the ACHR and the case-law of the Inter-American Court of Human Rights (IACHR) over domestic legislation and increase respect for human rights on the national level, too.

To this end DIRAJus has supported the IACHR to undergo a systematic work-up of its legal arguments of

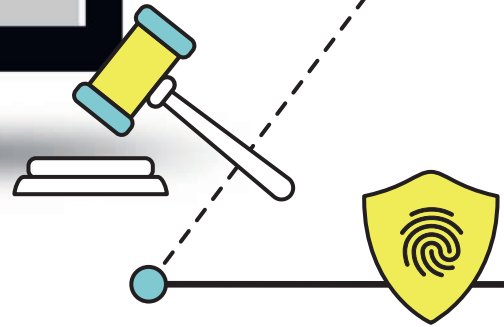
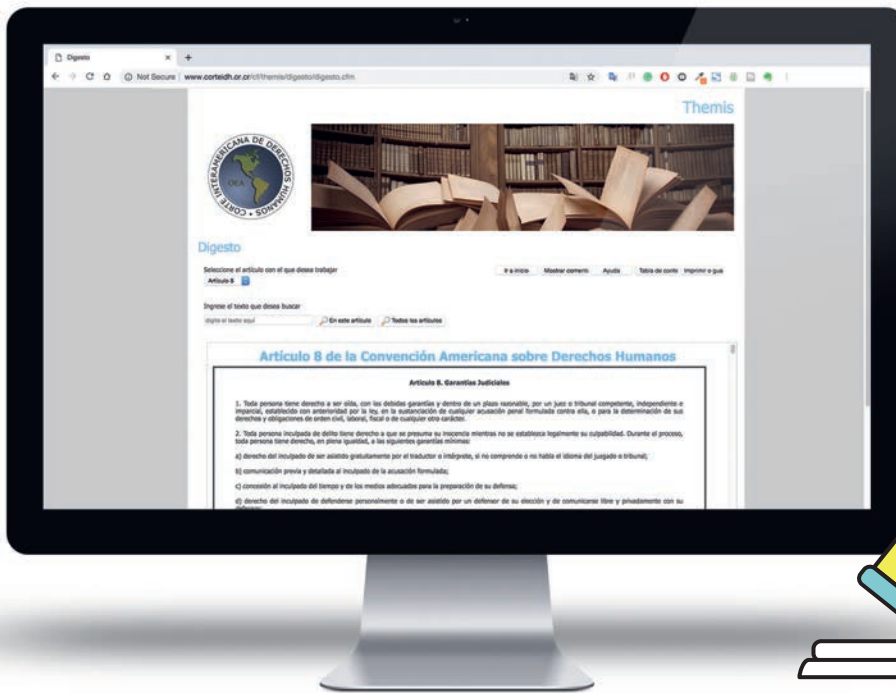
some articles of the ACHR. Because IACHR as a Court is producing new arguments in its ongoing judgments, a tool had to be developed that can integrate them in a contemporary and reasonable way.

### OBJECTIVE:

Creating a web-based open-justice tool that allows national judicial operators to exercise conventionality control accessing directly the legal arguments of the IAGMR online to clarify a specific human rights-relevant legal issue and save themselves time-consuming and labor-intensive processing of single judgments.

### APPROACH:

The digests of the THEMIS methodology jointly developed by the DIRAJus project and the IACHR systematize the legal arguments of the Court's judgments given since 1989 and assign them to the corresponding Convention article. The digests are publicly accessible on a web-platform similar to Wikipedia (<http://www.corteidh.or.cr/cf/themis/digesto/>). Each digest contains all relevant legal arguments of the Court sorted according to



the specific articles of the ACHR. The platform provides full-scale search options either in one or in all systematized articles, save and print options and a special function to leave a comment about a particular legal argument.

### APPLIED DIGITAL TECHNOLOGY:

Software application on a web platform with intuitive access to the content and full-scale search functions

### ACHIEVEMENTS THROUGH DIGITALIZATION:

- More than 2300 visits to the digests of the IACHR per month from all over the world
- In order to help national judicial operators to work with the digests DIRAJus designed a special training in the application of conventional control (methodology Themis). More than 100 legal practitioners in the five priority countries have been trained in multi-day workshops.
- 80% of the trained judicial operators stated that the method was used in practice.
- Application has been demonstrated by specific cases in 3 of the 5 priority countries.

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# NSP CAFÉ

## NAMA SUPPORT PROJECT LOW-CARBON COFFEE COSTA RICA

### SITUATION:

Over 41,000 coffee producers grow the crop in Costa Rica's eight coffee regions – a country famous for its specialty coffee. Due to varying micro-climates in Costa Rica, conditions affecting the crop such as rainfall, sunlight, soil consistency, temperature, humidity, and the spread of illnesses and pests vary significantly. Add the growing impact of climate change on the crop, and producers need quick, tailor-made recommendations from their technical advisors to further guarantee producing a high-quality product. These advisors from the National Coffee Institute (ICAFFE) and Ministry for Agriculture, Livestock and Forestry (MAG) visit each farm individually to gather the necessary data, recording it the old-fashioned way with pen and paper, and later digitalizing it farm by farm. Afterwards, individual recommendations for future farm management are given. The entire process is time- and resource-consuming and benefits neither the producer nor the technician.

### OBJECTIVE:

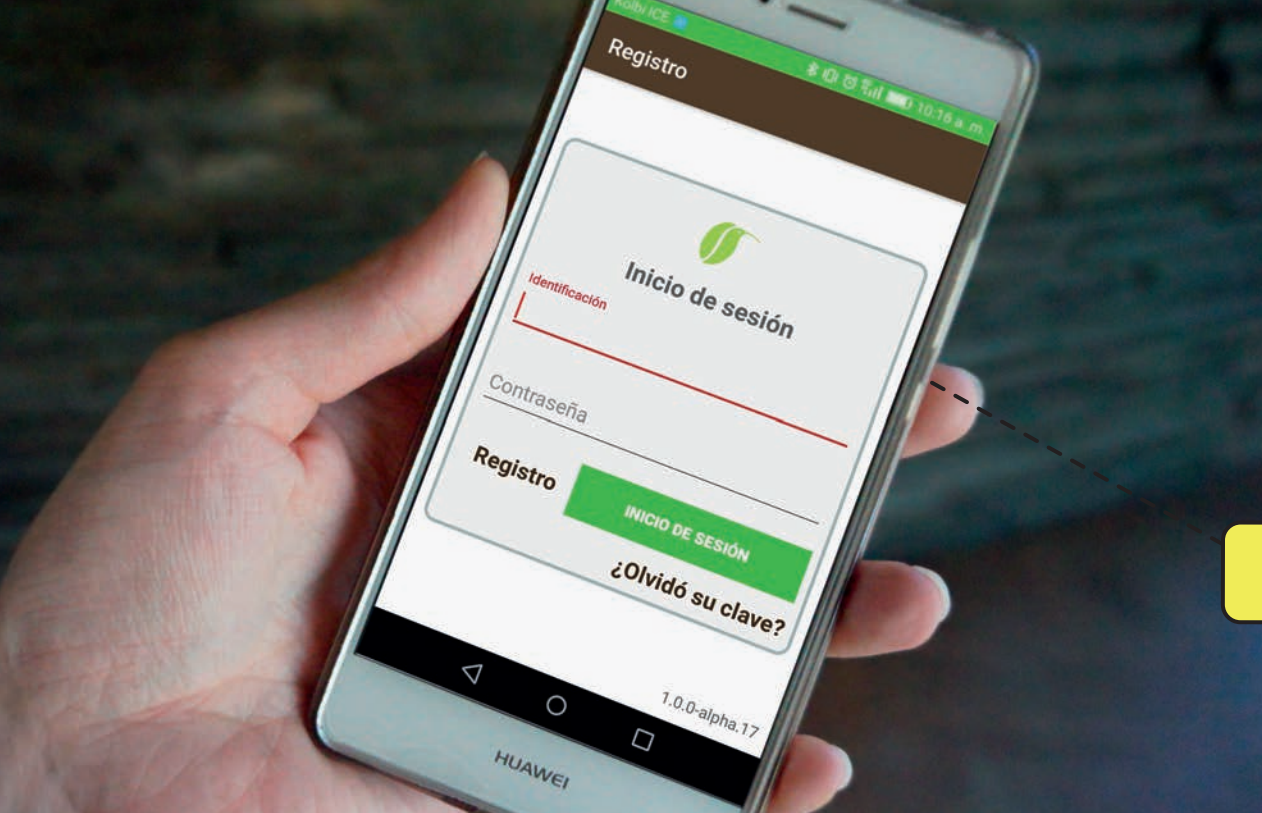
Develop and institutionalize a tool that facilitates the recollection of climate data in Costa Rica's coffee farms and easily introduces this data into a single database, which allows its subsequent analysis and visualization.

### APPROACH:

In a process led by ICAFFE, the NSP Café analyzed and adapted the structure of an already existing ICAFFE project (Coffecloud). A new platform and a series of modules were programmed during 2018, that allow the input of climate related data from Costa Rica's coffee farms.

### APPLIED DIGITAL TECHNOLOGY:

The pp CRCAFÉ 1.0 is the result of an extensive programming process during 2018 and includes modules for gathering data on fertilization, shade management and the implementation of good agricultural practices in coffee farms. It was launched in the second half of 2018 for testing purposes. An extended version 2.0 is currently being developed by ICAFFE and financed by the Central American Bank for Economic Integration. It includes additional functions, such as a module for harvest estimations, agrochemical dosage and disease sampling. Also, technicians will be able to include their farm reports directly into the application.



## ACHIEVEMENTS THROUGH DIGITALIZATION:

As the CRCAFÉ is not yet officially in use, achievements have not been recorded. However, it is estimated to reduce a minimum of 700 work hours per year, as visits to farms will be shorter and more efficient. Additionally, it is estimated to save over 2,000 pieces of paper per year and reduce an additional 128 hours of work yearly dedicated to digitalizing and archiving the formerly paper-based interviews. Lastly, the options to record harvest estimations, fertilizer dosages and diseases within the app will allow to promote tailor-made, efficient and sustainable practices, thus improving productivity, lowering costs and reducing greenhouse gas emissions.

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# PREVENTING VIOLENCE

## USING ONLINE CERTIFICATION TO RAISE AWARENESS ON GENDER-BASED VIOLENCE IN ECUADOR

### SITUATION:

Gender-based violence is the leading cause of death for women aged 15 to 44 in South America. In Ecuador, every 55 hours a femicide happens, the murder of a woman because she is one, and 6 out of 10 women have suffered violence. And yet, it is still seen as normal and widely tolerated socially.

### OBJECTIVE:

The Ministry responsible for the Ecuadorian development plan “Toda Una Vida” (A Lifetime) and the Ministry of Labor, with the support of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through its PreViMujer program, want to raise awareness and sensitize government institutions and agencies about their responsibilities in the prevention and eradication of violence against women as part of the implementation of the Ecuadorian Government field of action “Women’s Mission”.

### APPROACH:

An online certification named “Secure Institutions Free of Violence against Women” was created to combat the global pandemic. It was launched by the Ecuadorian Government on the 27th of November, 2018 as part of the 16 days of activism for the elimination of violence against women. The certification provides tools to learn how violence against women manifests itself, the cycle of violence, the national and international legal framework, gender roles, how to act when faced with these cases, care services, and the myths that exist around the issue. All employees from public entities receive a certificate if they reach a score of at least 90%, and if more than 90% of them pass the program, the entity receives the recognition that they are a “Secure Institution Free of Violence against Women”.

### APPLIED DIGITAL TECHNOLOGY:

Through a digital platform accessed via the web portal of the Ministry of Labor, public servants are sensitized and informed on how to prevent negative sociocultural patterns from reproducing in workspaces and how to adequately attend survivors of violence. The program consists of 25 blocks of 10 questions each. The first 15 are training, the rest are to test the information learned.



Certificación en  
prevención de  
violencia contra  
las mujeres

Misión Mujer

Access to the online  
certification via  
the web portal of the  
Ministry of Labor

Certificación en prevención de violencia contra las mujeres

### ACHIEVEMENTS THROUGH DIGITALIZATION:

While the program has just launched, there have already been some positive effects observed. Through the digital platform, information can take place on a larger and more cost-effective scale. It is also not location-bound, and so can reach public entities also located in rural areas. This has also led to employees taking the course to not only discuss the information in the closed setting of a workshop, but to also speak about it with colleagues and family and friends. The digital interface also allows for better analysis of participation and progress, which permits a factual comparison which in turn can be used for healthy competition between employees, departments, and institutions. Finally, having the option to repeat questions, participants can learn from their mistakes and are not judged for them in a public forum. To date, 10,000 public servants from 6 institutions are being certified, including the Presidential Office, the Ministry of Labor, and Public Media.

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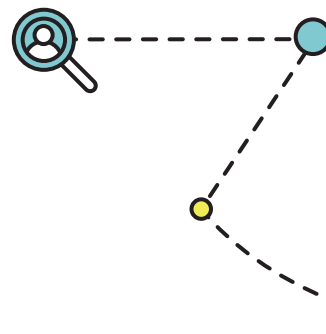
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# GEOPORTAL

## TACKLING CLIMATE CHANGE PARAMETRIC THROUGH SPATIAL INFORMATION

### SITUATION:

Guatemala is one of the world's most vulnerable countries to climate change. Between 1998-2014 alone, Guatemala was affected by 8 extreme weather events with damages of more than 3,5 billion US Dollar. Because of the decentralized governmental structure, the municipalities play a key role in the adaptation to climate change. The access to data and its analysis is of fundamental importance in order to adapt spatial planning to climate change. However, climate relevant data is difficult to access in Guatemala and correlations are rarely analyzed or considered in local planning.

### OBJECTIVE:

Implementation of an internet based platform (GeoPortal) that allows municipalities and the public to access climate relevant data and its analysis as well as to gather local information on climate risks.

### APPROACH:

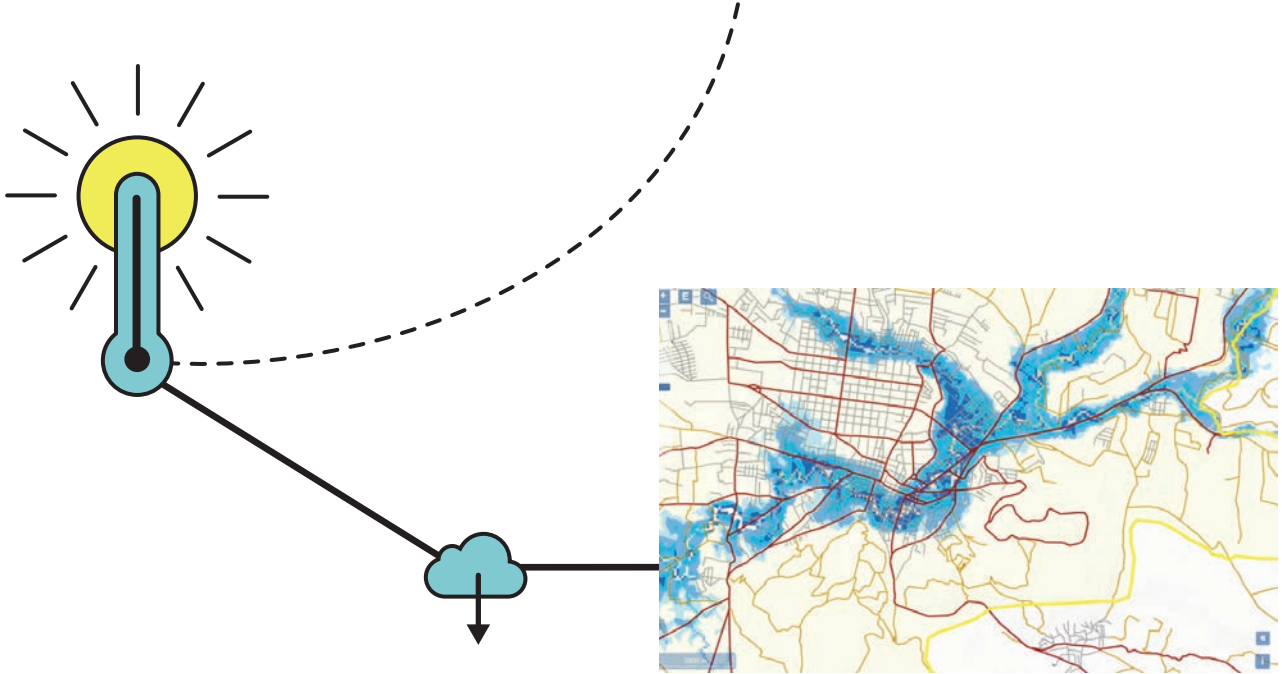
Together with the Planning Secretariat (SEGEPLAN), the programme ADAPTATE is developing a GeoPortal that allows municipalities and the public to access climate relevant data and their analysis.

At the same time, the GeoPortal allows the municipalities to feed data into the system that had to be collected by hand until now.

Thus the municipality can complement the official information with their own more detailed information and thereby understand its vulnerability to climate change, adapt its spatial planning to the climate risks and increase the adaptive capacity.

The GeoPortal is integrated into the National Planning System and serves the vertical information flow by making the information available at the local level and channeling it through the Monitoring and Evaluation System into decision-making and governmental strategies at national level. At global level, the data feeds into the reporting of the NDC's and SDG's.

Based on open source software, the system is dynamic and can be expanded flexibly.



Already in the near future, the data bases of the Ministries of Agriculture and Environment could be connected to the Planning Secretariat and allow a cross sectoral analysis of climate risks.

#### APPLIED DIGITAL TECHNOLOGY:

Internet based geographic information system (GeoPortal) constructed with open source software.

#### ACHIEVEMENTS THROUGH DIGITALIZATION:

An adapted spatial planning on climate change will reduce and hinder large human and material losses in the future.

Another part of the project is the exploration of possibilities for climate risk insurances where the data collected through the GeoPortal is playing a crucial role.

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# IT ENABLED MONITORING TOOL

## INDO-GERMAN BIODIVERSITY PROGRAMME

### SITUATION:

Under the scope of Biological Diversity Act 2002 and Access & Benefit Sharing Guidelines, National Biodiversity Authority (NBA) of India aims to enable the effective monitoring of the use of bio-resources and associated traditional knowledge from India. At present, most of the users accessing bio-resources from India for research & commercial purposes are outside the preview of NBA, leading to its illegal & unsustainable use. Also because of lack of information, benefits arising out of its utilization cannot reach to providers. Hence NBA is now seeking to enhance its capacity to monitor the utilization of Indian bio-resources and associated traditional knowledge with the help of an IT based monitoring tool.

### OBJECTIVE:

The objective of this tool is to monitor utilization of bio-resources, characterized by two different scenarios:

- Access and utilization are undertaken with approval of NBA: Access to bio-resources or associated knowledge from India for commercial utilization, research/ transfer of research result/ applying for any Intellectual Property Right within or outside India, after obtaining prior approval of National Biodiversity Authority
- Access and utilization are undertaken without approval of NBA: Enable NBA to effectively monitor and perform regulatory actions against any non-compliance within and outside India.

### APPROACH:

IT enabled Monitoring Tool, provides access to globally available databases on biodiversity information related to India through scientific publications, patent databases, taxonomic data and information on bio-resource based commercial products. Any trace of information highlighting the use of bio-resource or associated traditional knowledge of Indian origin would be tracked and necessary information about it shall be flagged to authority. The tool emphasize whether the required permission for access was prior obtained by the user or not. In case of non-compliance appropriate actions shall be taken.



## APPLIED DIGITAL TECHNOLOGY:

The IT enabled Monitoring Tool would be a cloud based system, integrating the real-time information from globally available data-sources like EU patents, US patents, CrossRef, Web of Science, GBIF, Microsoft Academic Graphs (MAG) etc., filtering the information specific to India through a sophisticated data mining approach and creating its own metadata repository containing information relevant to India only. This data repository is dynamically updated through Application Programming Interfaces (APIs), ensuring an up-to-date datasets.

This tool uses advance interfaces like R, Python and D3 to perform the machine learning function for cleaning the data sets and capture the desirable information with higher accuracy. This functionality will be useful to monitor the activities related to bio-resources accessed by registered users of NBA and scrutinize whether their actions are within the scope of granted permissions.

## ACHIEVEMENTS THROUGH DIGITALIZATION:

It is practically impossible to monitor all those who are utilizing bio-resources from Indian origin within/ outside country. Though this information is digitized and available online, it is extremely scattered and thus is difficult to interpret.

With the IT enabled Monitoring Tool following shall be achieved:

- Integration of information on patents, scientific literature and taxonomic data from various relevant data sources available across the world into a single standardized format for effective access
- Automatically tracking the activities of bio-resource users and readily available statistics highlighting trends of uses of bio-resources from India
- Seamless scanning through complex documents on patents & scientific literature and obtain relevant information for monitoring purpose
- Automatically capturing of any new information published online on use of Indian bio-resource or traditional knowledge
- System generate reports, statistics and alerts mechanism

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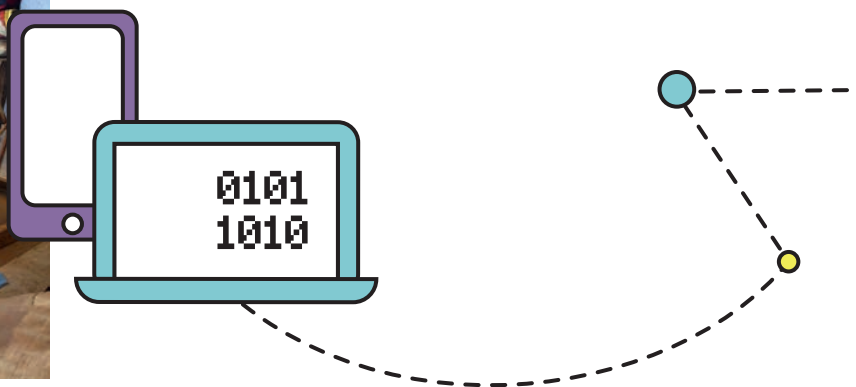
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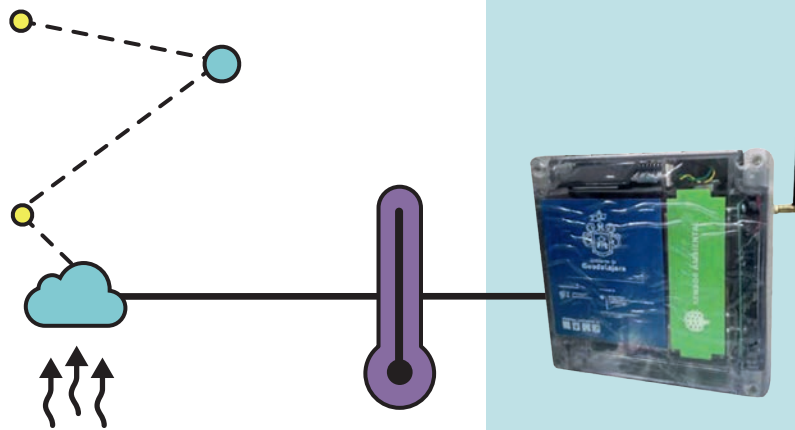
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# IOT – INTERNET OF TREES

## ICT FOR CLIMATE-SMART ADAPTATION IN CITIES

### SITUATION:

The municipality of Guadalajara has identified the need to improve the condition, quality and quantity of their urban trees. With just 9m<sup>2</sup> of green space per inhabitant, Guadalajara in Mexico does not meet the minimum requirements established by the World Health Organization (WHO). Furthermore, the uneven distribution of urban trees within the city is an indicator of socio-spatial inequality. Moreover, the city is facing increasing temperatures, for which urban trees can help to cool the air between 2 and 8 degrees Celsius. The need to allocate more resources to improve the urban stock of trees has also been recognized by the citizens as priority in the participatory budgeting of 2017. But the municipality doesn't have enough human and monetary resources in order to implement a desirable plan. The development of a digital solution gives the city an opportunity to engage citizens by contributing in to the climate adaptation strategy and by implementing a new approach of a data-driven sustainable model for green infrastructure.

### OBJECTIVE:

The projects seek to develop a digital solution that engages citizens in the co-creation of their cities to achieve urban resilience and adapting the city to the impacts of climate change by installing an urban tree inventory.

The idea is to democratize urban trees knowledge and facilitate data collection, supported by a crowdsourcing mobile App that will allow the municipality to collect the complementary missing data and highlights the benefits and importance of healthy urban trees with the supports of citizens, students, volunteers and public servants, while raising awareness and providing environmental information, for example about air pollution, sound, weather, and light among others.

### APPROACH:

We create Technology through a citizen center design method by involving stakeholders from academia, NGOs, organized neighbors, individuals, private and public sectors as local experts were gamification is the key to innovate by transforming the city climate issues into a playground to understand its nature and contribute in its solution consciously

In cooperation with



### APPLIED DIGITAL TECHNOLOGY:

The application is designed by using the existing codebase developed by OpenTreeMap, which is an open source project. In addition, the application will be completed with new features to customize it to the needs of Guadalajara.

The digital solution will collect and provide data from commercial sensors acquired by the municipality and DIY sensors (e.g. developed with Arduino and/or Raspberry Pi).

**The mobile app works with the following inputs and outputs:**

1. **Citizen Input:** Citizens are collecting data and information via an Android app or a Webapp (e.g. typology, photos, diseases, state of surrounding infrastructure, illegal logging, etc.). This data is complementing the existing cities data: treemapping (eCarto), mapaGDL and CiudadApp. In order to motivate the citizens a gamification model was established for all app interactions.
2. **Sensor Input:** the digital solution will collect and provide data from commercial sensors already acquired by the municipality. This data will be complemented by data from low-cost sensors (LCS) developed with Arduino (Open Hardware), which can be built and programmed by the citizens themselves. Therefore, the app will be open to receive environmental inputs from a variety of sensor types, enabling an open platform that doesn't require the acquisition of a specific type/brand of sensors for its transfer and upscale.

3. **App Output:** to raise awareness on the relevance of urban trees and greenery, the application will provide users with notifications regarding associated environmental, economic and health benefits. In addition, the app informs and alerts citizens about climate and environmental conditions in real-time. In order to make calculations respective tree benefits, the mobile solution is using an open sourced library OpenTreeMap.

### ACHIEVEMENTS THROUGH DIGITALIZATION:

During September 2018 the digital solution was deployed in the climate vulnerability area of Guadalajara. By engaging individuals, organized citizens, neighborhoods representants and students from local schools along with the Citizen Participation department of the municipality a pilot proof of concept was ran, empowering a vision for the future of the technology.

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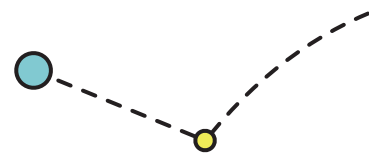
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# E JUSTICE

## INTEGRATION AND CONSOLIDATION OF LEGAL AND JUDICIAL INFORMATION SYSTEMS IN MONGOLIA

### SITUATION:

The need for an interoperability IT-system between the Mongolian legal institutions was identified in 2010 as part of a study on the legal and judicial reform of Mongolia. The study found that Mongolian prosecutors and judges used up to 70% of their working time to perform administrative tasks. In addition, it has been proven that procedural errors are the main reason for amendments to court judgements at the appeal stage.

### OBJECTIVE:

The IT system eJustice was set up by advising of GIZ project “Consolidating the Legal Framework for Sustainable Economic Development” to provide transparent legal and court process information to citizens.

Main objective of the eJustice system is aiming to reduce the processing time, to eliminate fraud and corruption, to track cases in a digital way and to improve the efficiency of court management. In this sense, four government agencies have been interacted through the web-interface virtually to get improved linkages and better access to information, to reduce duplication of data entry.

Integration and Consolidation of Legal and Judicial Information system consists 4 main information systems below:

1. Prosecutor Management Monitoring System
2. Civil Court Information System
3. Police State Department Information System
4. Court Decision Enforcement Information Management System

### APPROACH:

After a development phase of three years, the Prosecutor Management Monitoring System is introduced nationwide in 2013. One year later, the Civil Court Information System went into operation. In parallel with the digitization measures, offices were set up with professional judiciary employees in the courts and prosecution offices.

Since the first of January 2018 the two remaining systems Police State Department Information System and the Court Decision Enforcement Information Management System were linked through the eJustice System.



The Justice platform minimizes on one hand the procedural errors in government agencies and ensures smooth and legitimate procedures within the system and on the other hand it speeds up the processing of criminal and administrative proceedings by digitizing the previously manually maintained registers of the authorities.

As a further development of the eJustice system the GIZ project is working together with the Mongolian Ministry of Justice and Home Affairs, the Supreme Court, the Prosecutor General's Office and the Mongolian Executive Authorities to set up an internet portal for citizens.

With help of a mobile phone or other devices, the participants of a procedure can inform themselves about its status and, if necessary, get legal advice on further procedures. This is particularly important for the nomadic population in the rural areas of Mongolia, which accounts for 40% of the total population. The portal is to be put into operation from December 2018.

### APPLIED DIGITAL TECHNOLOGY:

Web Server, Oracle, BI, Dashboard, Network, Server, encryption Mobile application

### ACHIEVEMENTS THROUGH DIGITALIZATION:

The 2015 data surveys showed that after the implementation of the process-accompanying software in the judiciary, the workload of the judges and prosecutors has decreased by 60% and method has been accelerated by 70%. At the same time, there was a reduction of procedural errors detected by 38%. Another positive impact is the significant increase in public confidence in the judiciary from 46% in 2011 to 81% in 2015.

“Based on the experience with the monitoring software of the prosecution and civil courts, we can be sure that the implementation of the new IT data system will make the work of criminal justice even faster, error-free and efficient, and will reduce corruption in criminal proceedings,” emphasized Mr. G. Bayasgalan, State Secretary of the Ministry of Justice and Home Affairs in Mongolia in his speech on the commissioning event of eJustice System.

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# RERA

## RENEWABLE ENERGY FOR RURAL AREAS PROGRAMME

### SITUATION:

After adopting the new constitution in 2015, Nepal is moving from a unitary to a federal government system and has devolved authority to local (municipalities) and provincial governments to design policies, make decisions and deliver public goods and services. This restructuring process of the Nepalese state also results in a paradigm shift in how decentralized renewable energy (DRE) will be promoted.

The Alternative Energy Promotion Center (AEPCC) is the national government agency for the DRE sector in Nepal. Before federalization, it has been responsible for policy making, planning and implementing decentralized RE. It was AEPCC's main task to provide subsidies, collect demands, plan DRE systems and oversee their construction at community level. In the new federal structure, this mandate has been transferred to newly established local (municipal) and provincial governments. Thereby, federalization provides the opportunity to increase accountability and make economic development more inclusive and bottom-up. However, the newly established local and provincial governments lack capacities and means to take up their new task of promoting DRE. At the same time, AEPCC is undergoing a fundamental transition from an agency that provides

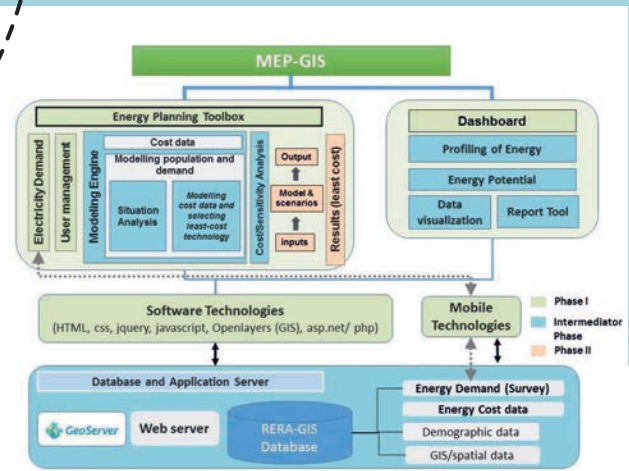
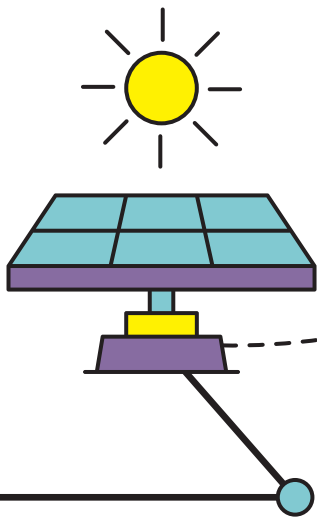
services like subsidies directly to end-users, to providing support services to provincial and local governments for promoting and implementing Renewable Energy Technologies (RETs).

### OBJECTIVE:

To improve the capacity of provincial governments and municipalities to promote decentralized renewable energy.

### APPROACH:

In the spirit of Nepal's new federal set up, RERA is using digital approaches to address the challenges of the lack of capacity of the sub-national level (municipalities and provinces) to promote renewable energy. For this RERA developed a 9-step periodic Municipality Energy Planning (MEP) process which is compatible with the local government's annual and periodic planning cycles. The major steps like baseline data collection and the identification of suitable electrification solutions for specific geographical areas are supported by the web-based GIS-Tool (MEP-GIS). The MEP-GIS consist of a household energy baseline survey (KOBOToolbox/Open Data Kit), a sampling assistant, a municipality energy dashboard which contains energy information (baseline



survey results, installed RETs, Irradiation Potential, ... etc) of the municipality that can be displayed through interactive layers on a map. The novelty of the system, is that it allows planners to assess the suitability and the economy of a specific electrification technology for a given area of a settlement.

To enable the availability of energy-related data across all tiers of government necessary for planning, monitoring, reporting and quality assurance, RERA is supporting AEPC to design an Information System (MIS) that is adapted to the requirements of the new federal set up. The main innovation of the envisioned Integrated National RE MIS (RE MIS) is the consolidation of all RET-related information into one database and allows access for provincial and local authorities. Data can be fed into and extracted on local and provincial level, while the data is aggregated at the national level to allow stocktaking on all levels of government. Additionally, a digital monitoring system will be integrated to track the installation of RETs and the progress, as well as level of success of government programmes.

### APPLIED DIGITAL TECHNOLOGY:

The EP-GIS Tool is a locally developed tool based on the freeware QGIS, and in its next phase an integrate Open Data Kit (currently using KOBOToolbox) will be integrated to allow the automatic feed-in of data from

household-surveys. In cooperating with the Berlin based Reiner Lemoine Institute, state of the art research on the sampling, mobile questionnaires and technology suitability algorithm was applied. The E-MIS's will be based on a web-based, multi-layered, service-oriented architecture featuring a database run on an SQL Server. Provincial and Local Units will get access to the system via a web-application.

### ACHIEVEMENTS THROUGH DIGITALIZATION:

The ERA programme established the energy baseline of 14 rural municipalities using the mobile surveying capabilities of the MEP-GIS Tool. The information gathered from the baselines allowed the rural municipalities to make municipal energy plans, and take data backed decisions.

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# NEXUS SEA

## NEW ENERGY NEXUS SEA

### SITUATION:

Southeast Asia (SEA) is among the fastest growing world regions. This growth comes at an expense: the need for cheap electricity in SEA will drive global demand for coal power generation until 2040. No other region in the world has such excessive coal plans like SEA. The international community is increasingly aware that SEA will be a decisive factor when it comes to combating climate change. Technology and the cost of renewables are no longer the main limitation to fostering new energy solutions; rather it is the absence of innovative business, software, finance and service models that are holding back its deployment. In most countries the energy sector, with its deeply ingrained centralized and top-down (often government-lead) structures, is not able to adapt fast enough to propel a transformation of the energy system.

Fast-movers and providers of innovation are nimble startups. They are focusing on digital technology to significantly disrupt established energy players. Be it innovative customer engagement, mobile payment solutions, blockchain for transmission and distribution, smart grid control, vehicle-to-grid technologies etc. – startups are already shaking up the sector by focusing on data and software. This will allow for smart energy technologies to be scaled across the globe and contribute

to achieving the energy transformation we need. Southeast Asia needs to be at the center of these activities as it will move the needle on climate change.

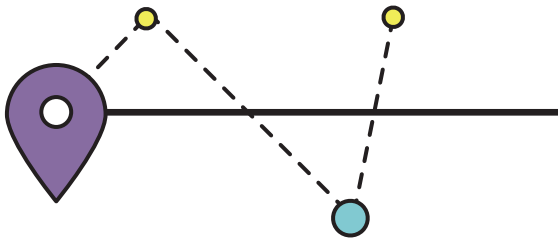
### OBJECTIVE:

To help bring innovation to the energy sector in SEA GIZ together with the California Clean Energy Fund (CalCEF) established New Energy Nexus Southeast Asia (Nexus SEA) in 2017. Nexus SEA is a smart energy support initiative aimed to build smart energy startups focused on digitization of energy and innovation business models for Southeast Asia. The goal is to create smart energy startups; fasten the market introduction of these startups in their countries and across region, which in turn will accelerate the region's renewable energy deployment to combat climate change.

### APPROACH:

GIZ and CalCEF are implementing Nexus SEA together with local incubation partners, leveraging the strong network and experience from both sides. Incubators help new startups to succeed; they train entrepreneurs that may not have any experiences in setting up ventures by providing workspace, mentoring, training, and seed





funding. While incubators exist across SEA, very few focus on supporting digital smart energy ventures. This is where Nexus SEA comes in and support financial means and expertise to the incubators. The incubators then follow a 3-step approach. During the first months they (1) create a smart energy entrepreneur community in the respective country, which is followed by (2) hackathon-style events to form teams and ideas. The core of the program, however, is the (3) incubation program, which will support and build the energy startups SEA needs.

Each year, each local incubator partner will engage hundreds of smart energy enthusiasts and produce 5-10 startup teams who will receive incubation support. Nexus SEA aims to implement in 10 countries by 2020. This strategy allows the program to scale quickly across the region whilst remaining locally rooted.

## APPLIED DIGITAL TECHNOLOGY & ACHIEVEMENTS THROUGH DIGITALIZATION:

The beauty of Nexus SEA is not in its direct application of digital technology, but how it leverages the startup community's talents and scalable nature to apply software solution in the energy sector. Nexus SEA is currently

operating in Thailand and Indonesia where it accelerated 8 smart energy teams through its hackathons and incubated 9 startups in its Indonesian program. A prime achievement was getting a team taken over by an energy company, which builds an app for residential rooftop education and procurement created at the Nexus SEA Smart Energy Hackathon.

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# GREEN GROWTH

## PROGRAMME MACROECONOMIC REFORMS – A NATIONAL STRATEGY FOR INDUSTRY 4.0 IN VIETNAM

### SITUATION:

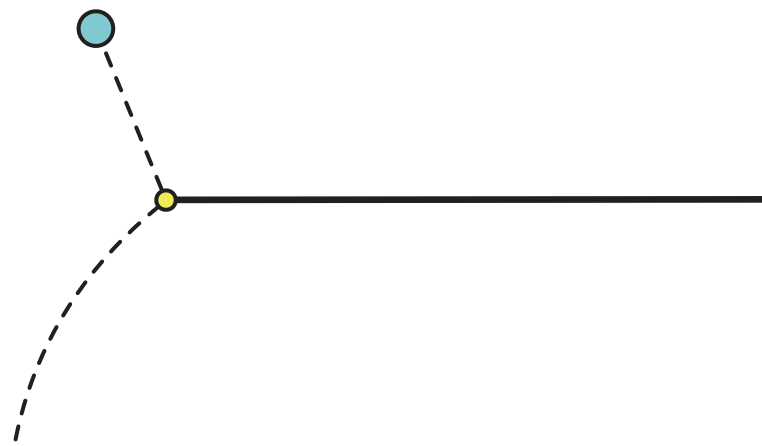
Vietnam achieved and still achieves high economic growth rates. But the traditional growth model with high investment inflows, high population growth and natural resource depletion is not sustainable. Therefore, increase in the productivity in all these three dimensions is required. The programme supports sustainable economic planning processes with the Ministry of Planning and Investment, green budget and tax policy with the Ministry of Finance and green financing with the Central Bank. To further boost productivity mainly in manufacturing and agriculture, the Government of Vietnam asked the Ministry of Planning and its think tank – the Central Institute for Economic Management – to develop a National Strategy on Industrial Revolution 4.0, including digital infrastructure and e-government. It was agreed to include a new line of activities with respect to the Industry 4.0 and digitization in the “Programme Macroeconomic Reforms/Green Growth” with one Output indicator for the new phase starting 2019. In 2018, additional funds from BMZ were used for first activities in this field.

### OBJECTIVE:

Support the Central Institute of Economic Management in the Development of the National Strategy on Industrial Revolution 4.0, including international benchmarking and monitoring of the implementation of the strategy.

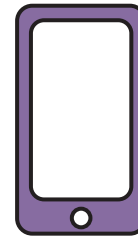
### APPROACH:

Develop a draft strategy, considering relevant economic sectors for the Industrial Revolution 4.0, facilitate exchange of international experiences, especially with Germany, and designing appropriate support structures for the structural change, coming along with the Industrial Revolution 4.0. The strategy includes a roadmap on stimulating innovation and mitigation measures which the Industrial Revolution 4.0 might have on the labor market. The draft strategy is expected to be discussed in the Government in the third and fourth quarters of 2019.





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## ACHIEVEMENTS THROUGH DIGITALIZATION:

Potential for GDP growth through application of the Industry 4.0 (mainly digitalization, internet of things, integrated process with sensors, highly integrated value chains) in Viet Nam is estimated at 7%-16% of GDP until 2030.

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# SOFTWARE FOR MINING

## ACCESSIBLE AUTOMATION FOR A MORE EFFICIENT AND SAFER UNDERGROUND MINING IN CHILE

### SITUATION:

Mining is the most important economic sector for Chile, as the first copper producer in the world, besides lithium and molybdenum. Automation and Tele-operation are the strategies applied to increase significantly safety in underground mining. They allow safer, healthier and more ergonomic labor conditions, as the use of tele-operation reduces considerably the man-hours needed underground. In addition, keeping in mind the necessity of an efficient operation, and in order to reduce the cost per ton of mined material along with an optimized usage of the mining machinery. Automation improves significantly these parameters, e.g. through a reduction of cycle times, which consist of loading, hauling and dumping.

The required expertise in developing and applying technologies in the sector of automatization and tele-operation is not much available in Chile to this point of time. The scarcity of capable workforce presents still a limitation in developing countries, which depend on imports of technology and workforce. Sharing experiences, teaching local workforce, and develop local technology in these highly specific fields have the potential to affect positively the local market of Chile in the mining sector and transferring these developments to real mining

scenarios in the local context. Despite the fact that some automation technologies are already available, its costs are restrictive to middle and small mining companies.

### OBJECTIVE:

To develop tele-operated equipment along with specific software for semi-autonomous mining equipment to improve working place safety and improve mining key performance indicators (e.g. Tons per hour mined) through technology, and to install local capacities in the local context.

### APPROACH:

Cooperation with local actors to install human capacity in relevant Chilean educational institutions (both an University and a technical school). Profiles of people being involved going from engineers to maintenance personnel. The goals are the human capacity development and the development of cooperative technology.

### APPLIED DIGITAL TECHNOLOGY:

Software development for tele operation of mining machinery.



## ACHIEVEMENTS THROUGH DIGITALIZATION:

- Software and a LHD (long haul dump – a mining equipment) have been developed in cooperation between a German company and a Chilean University.
- Local workforce at different levels has been trained
- New curricula contents with the topic of automation have been included in the regular courses offered by the University, also, technical education have been implemented through training of trainers for mine operations and maintenance.
- The university, through a research center, has started the procedures to open a spin-off enterprise, with the goal of improve and commercialize the developed technology.
- The developed technology has been tested with good results in a medium size mine in the Coquimbo region in Chile.
- Software and a LHD (long haul dump – a mining equipment) have been developed in cooperation between a German company and a Chilean University in the context of a Public-Private Partnership (developpp.de).

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