The views presented here are the participants’ and do not necessarily reflect the views and the position of the United Nations or the United Nations Conference on Trade and Development
PERFORMANCE FORMANCE IN SCIENCE, TECHNOLOGY AND INNOVATION IN EL SALVADOR

Recently was presented in El Salvador the document “Science, technology and innovation policy review of El Salvador”, this was instigated at the request of the Salvadorian Government and enjoyed the support of the Vice Ministry of Trade and Industry and the Vice Ministry of Science and Technology. The review was conducted jointly by UNCTAD and ECLAC and forms part of a proposal of technical cooperation to the Salvadorian Government.

Most of the information El Salvador is sharing has been taken from this review. Another from the resent documents, “Scientific and Technological Statistics, higher Education Sector 2010” and “Human Resources Scientific and technological Indicators 1999-2009” which was presented by CONACYT in November 30th. And the information that the Technical Secretariat of the Presidency prepared for this meeting.

1. Inputs

**Research and development**

The country invested 0.11 per cent of GDP in 2008

Expenditure on R&D by higher education institutions is primarily financed by the Government and the institutions themselves.

In 2010,

The public sector financed 69.90 % of this expenditure. (2009 was 64 per cent)

Higher education institutions financed 21.11 of total expenditure on R&D. (2009 was 23 per cent)

Foreign resources served to finance 8.11 per cent of that expenditure (2009 was 11 per cent).

R&D projects are chiefly in basic was 31.04 per cent

Applied research was 50.75 per cent

Consultancy was 5. 67%

Experimental development products 5.97 %

Experimental development process 5.97 %

**Human Resources:**
El Salvador has a small nucleus of 395 researchers, of whom only 192 are devoted dedicated to research. This represent 1.51 % of the academy staff

In 2010, only 5.3 per cent (431 persons) of the academic staff carry out research work.

19 per cent of researchers have Phd

37 per cent of researchers have a master’s degree.

women represent 33 per cent of the total number of researchers.

**Science and technology activities (STA)**

The expenditure on scientific and technological services is the 15 per cent

A considerable proportion of expenditure on STA is allocated to the social sciences and humanities (42 per cent of expenditure in 2010).

19 per cent of the expenditure is destined for engineering and technology,

15 per cent to natural and exact sciences

16 per cent to medical sciences

and 4 per cent agricultural sciences

2. Results

   a) **Bibliometric**

53.62% of publications are in social sciences and humanities.

2010 45 journals have ISSN number and 24 without it.

Books: 38 with ISBN and 24 without it witch represent the 61.29%

   b) **Patent**

Registration of patents by residents has an average of eight patents registered annually

El Salvador has a higher annual average of patents granted to residents and a better ratio of these to total patents granted, with a coefficient of invention (patents applied for by residents in relation to the population).

It should be noted that while the inventors who patent their inventions live in El Salvador, the holders of the operating rights are essentially foreign companies. 16
per cent of registered patent holders are Salvadorian. The principal classes of patents are in medical or veterinary science (13 per cent of all patents).

POLICIES AND STRATEGIES BEING UNDERTAKEN IN EL SALVADOR

INFORMATION AND COMMUNICATION TECHNOLOGY

Index of ICT Development IDI: The Index of ICT Development (IDI) calculated by the International Telecommunication Union (ITU) in the context of measuring the position information societies in 2010 to El Salvador ranked 98 (of 152 economies), with a score of 2.89 (2008: 101 with score position 2.57).

This IDI worth mentioning: In the period 2008/2010 El Salvador reflected an increase in the percentage of households with computer and internet access. If it is true, the fixed telephony subscription in 2010 decreased compared to 2008, the mobile subscription increased. Reflecting the intensive use of mobile by society for communication, interaction and Internet connection.

EGDI: global score of the will and ability of national governments to use online technology and mobile in the execution of government functions. Prepared by: United Nations. At 2010: El Salvador is in position 73 of 192. 2008: position 67 LAC EGDI average was 0.4790.

The components of this are threefold:
• Web Presence
• Infrastructure telecommunications
• Human Capital

The human capital component is the El Salvador stands out most, and is based in the "Education Index" of UNDP, which is a composite rate adult literacy and combined gross enrollment in education primary, secondary and tertiary education.

Networked Readiness Index (NRI) measures how countries are likely to exploit opportunities offered by ICT. Prepared by: World Economic Forum (which also feeds Global competitiveness Index). El Salvador is ranked 92 in 2010-2011 ranking, compared with 138 economies. Its grade is 3.52.

In the 5 editions of the NRI, El Salvador has varied its position between 61 and 92. The number of economy varies information obtained by the WEF.

Of the three components of the NRI, the outstanding for El Salvador is the "Disposition" (Individual). Performance of the components of 2006 -2007 to 2010-2011, is the component Environment that has presented a decrease in your score. This component includes everything related to market environment, political and
regulatory and infrastructure. For the NRI 2010-2011, El Salvador is only in position 1 with a perfect score in the Pillar of Policy and Regulatory Environment in the indicator of the competitiveness index Internet and mobile sectors.

**Millennium Development Goals (MDGs):** Goal 8 of the MDGs established the need to develop a global partnership for development, the goal 8.F recognizing that ICTs are an important tool to fulfill the MDGs. Prepared by: United Nations.

ICT-related MDGs are: Target 8F: fixed telephone lines per 100 inhabitants, cellular subscribers per 100 inhabitants, and users Internet per 100 inhabitants. It is important that governments recognize ICTs as valid to reduce poverty. ICT can become essential tools for advancing LAC region towards achieving the MDG.

**eLAC2015:** an instrument for setting and monitoring of actions and specific targets to achieve an economic development with more innovation and equality, prioritizing the need to incorporate ICT in the formulation of public policies to promote inclusive development. It consists of 26 goals to be met in 2015. Prepared by: ECLAC.

The set of targets associated with various action plans short term, with view the long term (towards 2015), in accordance with the Millennium Development Goals (MDGs) and the World Summit on the Information Society (WSIS). eLAC2015 has 26 goals divided into 8 areas of action: (i) access, (ii) Government E, (iii) Environment, (iv) Social Security (v) Development and production innovation, (vi) enabling environment, (vii) Education, (viii) An institutional framework for State policy.

**Advances in the use of ICT to an Information Society in El Salvador.**

In El Salvador, ICT has been an emergence of innovation as a factor for access of society to the opportunities offered by the government. While the appreciation on the side of increasing the number of users Internet and computers reflects the impact of ICTs as a tool to access by the information society, it is important to highlight solutions that have allowed the government to boost the use of them:

**-Standardization and Modernization of the Web sites of Government Institutions:** Pioneer project throughout Latin America that seeks to align the websites to international indicators web e-government in order to improve, measure and modernize public administration thereof.

The standardization and updating of the Web sites of government institutions in El Salvador is a pioneering project throughout Latin America, which had its funding in the Assistance Technical Standardization and Upgrading Web Sites government
institutions of El Salvador, the Joint Spanish Cooperation Program Salvadoran Co-Funding Coordinated Found.

They joined 61 international standards e-government to improve, measure and modernize public administration web sites (taken from the international rankings e-gob) covering organizational aspects of technology infrastructure design and content of web pages, transparency and web accessibility for people with disabilities, is also implemented a common navigation system all web sites that provides access to citizen. This will search not only to maintain a similar picture in all sites but also improve quality of aligning themselves with best practices at e-Government world and especially to establish guidelines and policies on technology issues at government. Parallel to these technological efforts increased the wealth of knowledge trained staff to promote efficiency and collaboration to achieve a web strategy involving senior officers within an institution, and synergy government level.

To date a total of 37 institutions have achieved a minimum score of 8.0 incompliance standards according to the metric created in situ to measure the achievement of the objectives according to the qualification standards (the highest score being 10) with half current 9.19.

84 institutions are projected to be standardized. Thus, the citizen is prioritized as the axis all central e-government actions in the country (ITIGES responsibility), and thus the entire public administration.

**Tools developed**

As part of this project created a number of technological tools that improved the staff efficiency, including:

1. They created a "template" that is the most important project. It is a Joomla CMS installation that implements all the requirements that the project requires a website (standards, navigation systems, spatial distribution of the page). It refers to a pattern for the creation of all government websites, which reduces costs development and time in each of the institutions of government, whose use is not limited to project but serves as a basis to create new government websites to minimum effort in the future.

2. Evaluation system as a web application to verify compliance with the international standards for e-government in each of the websites standardized, and generates a maximum coordination between the ITIG and each institution government.

3. Decision procedures: a software that helps institutions to implement the common navigation system developed in this project. This system allows citizens browse websites in the same way, making it convenient and accessible information. The decision is made up of simple questions about the nature of the information to be accessed, directing the user to the part of the structure (Standard) on which to place it.

4. Discussion forums allow IT professionals to the institutions of government share concerns, answer questions, share solutions and best
practices, and coordinate efforts toward a common strategy across government.

5. Technological rules includes a series of policies and guidelines that govern the most important technological area of the government institutions of El Salvador.
   a. Policy web elements: media, web 2.0 (blogs, forums, chats, social networking).
   b. Global presence Policy web: information management under the scheme web sites (new sites or integrated).
      c. Policy URL: internal operation and promotion of the site addresses web.
      e. Guide government web site development: guidelines for the design or modification of web sites for all government offices.

6. Automatic use generic components and standard for all existing sites to create, which manage information in a logical and uniform services officials and authorities of the institutions.
   a. Component services: guide services, opening hours, telephone numbers, location, and so on.
   b. Component Officers: staff directory officer of the institution, hierarchical structure, contact forms automatically generated, and so on.
   c. Menu component: Monitor the degree of standardization of the main menu Web sites of institutions, based on the standard set by the ITIG.
   d. Jobs Component: Post the job board offered by the institutions according to type of contract, and to interact by sending professionals and data summaries to apply to the squares.
   e. Component Procurement: Calls for purchasing and tendering by the institutions.
   f. Consultation Component: Acquires information requests (queries, complaints, claims and / or suggestions) and allows users to track and report of them.
   g. Component Graphics: allows to obtain statistical data on the website graphics, which in turn are configurable and easy to administer.

This project not only allows for standardization and synergy between government institutions, but also lends itself to pay for the efforts stipulated in the Law on Access to Public Information (March 2011), under which sets out basic principles to bring the government information to society. Currently working on the ITIG in creating blogs, white papers and newsletters dissemination of results and benefits of standardization, which in turn is a platform for exchange of information, documents and the creation of sub-blogs quickly and standardized serving government institutions. It has also created a "light" version of the template that has only 30 of 61 original standards, which is intended to include those institutions whose level of information, traffic budget will not allow them to comply with the standards initially proposed. On the other hand, the implementation of a mechanism
for the recognition of Access from mobile devices has allowed the adequacy of the presentation of the web sites device.

-Kiosks e-consultation: Use Internet technology for modernization of the consultations about Housing Social Fund (FSV) services to citizens, enabling a quick and easy electronic consultation query from inflow points massive and institutional agencies, allowing the same time, effective the response time in care centers and achieve efficiency in the provision service.

FSV 6 kiosks are located at important points like: Metrocenter Mall, Central World Trade Square, FSV Agencies San Salvador, Santa Ana and San Miguel. The kiosk provides FSV queries Statements Current Customers Loan, Statement of Save Quotes, Consultation procedures for loan applications and Consultation prequalification for customers interested in applying for funding with FSV, determine the maximum amount that they can finance, and term fee according to their income and current credit conditions of the FSV. This electronic reference is the average time of 50 seconds that customer interacts with the kiosk for its management, and has the facility to have an interface, intuitive and practical easily understood by any user.

-Prequalification Express Mobile: Makes it easy for clients to pre-qualified from mobile phones via QR Code for the amount of they are funded, according to their income.

With this application reduces the query time by simplifying the forms that the client must to complete in the current web. This is an opportunity to improve the online service to the website and electronic devices. Use technology tools to enable their customers to pre-qualified from their mobile phones (Blackberry, Iphone, Android, etc..) via QR Code (QR FSV) with which can know the amount of what they are funded, according to their income. The FSV has experienced an increase in the influx of visitors to the site from mobile phones intelligence received only at the present year 3.500 visits; with and an average of 500 users monthly. Therefore, the FSV create this new service to customers like new technologies and who have internet service on their mobile phones to pre-qualified for this new phone system installed on your QR Code FSV learning about the amount that can be applied to acquire financing. With this service, reduce wait times by stakeholders and the FSV is modernized as Government institution, a leader in building electronic services.

-CNR Virtual Desk: Service that allows you to receive via email or phone phone notifications of completion of record-keeping processes filed with the Registration of Real Estate and Mortgage and Registration of Commerce.

-e-Regulations Info Paperwork El Salvador: A system that approximates the information and promotes transparency and simplification of investment procedures that are necessary to carry out in the country’s government institutions,
emphasis on a detailed description of the features, requirements, timelines and next steps.

With the support of the Luxembourg Government, the monitoring of a Technical Council and the Public-Private technical assistance from the United Nations Conference on Trade and Development (UNCTAD) the ITIG June 2010 coordinating the implementation of e-paperwork System Regulations El Salvador.

E-Regulations system has been installed in other countries: Guatemala, Nicaragua, Costa Rica, Colombia, the Russian Federation (Moscow City), Mali, Comoros, Rwanda, Vietnam (Hanoi, Da Nang and Ho Chi Minh), Ethiopia and Morocco. Among its main features include: I. Provides full transparency of rules and procedures to offer online detailed descriptions and current practices of the steps to be performed, exposed from the user point of view.
II. It helps governments to simplify procedures to facilitate the identification of steps and unnecessary requirements.
III. Promotes good governance to make public, the rules, procedures and conditions for a balanced dialogue between users of public service officials.
IV. Provides a basis for regional / international harmonization of the rules, to facilitate exchange of good practices among countries.

This system seeks to bring information and promote transparency and simplification of investment procedures that are necessary to carry out in the country’s government institutions, making emphasis on detailed features, requirements, deadlines and next steps. Currently, the system already offers, for free and bilingual, a detailed guide to the steps to perform the following steps:
Register of local and foreign companies, sole traders and non-profit entities profit.
• Registration with tax authorities, municipal and labor, as well as procedures to continue to pay municipal taxes and licenses for prosecutors.
• Import and export.
• Authentication of documents issued abroad.
• Purchase of shares in the stock market and existing companies.
• Transfer of title to property (real estate).

For each proceeding described, the system presents in a logical and orderly, a complete listing of the steps that an investor must follow, and within each step, it includes information on who are the officials in charge of the process, contact details, required forms, documents to be attached, the cost and duration.

Even includes sections with information for filing complaints and administrative resources case of disagreement, and to get feedback from users of the system and gather suggestions for simplification of procedures and reports of observed deviations. The forms, examples and documents can be downloaded from the site to facilitate the procedures.
To date, 29 procedures have been described, more than 220 detailed steps and 28 institutions government have been mapped. Another feature of the system is that information has been validated in situ and should be officially certified by the officials in charge of arrangements.

**ICT Points:** Implementation of computer equipment, software, peripherals and Internet in public places of great affluence.

One of the strategic objectives is ITIG be a continuous channel on technologies conducive to the public in computers and internet access in high-traffic locations public.

In that sense, ITIG managed the installation of ICT in Metapán Point, Santa Ana, which consists of a computer with software and peripherals, plus the installation of a Point ICT in the National Comprehensive Care for People with Disabilities in the form of be licensed for use by blind people and braille system printer. By the end of 2011, there are plans to install two more ICT Points: National Zoo and National Palace. Points ICT strategy has been associated with the efforts of the Technical Secretariat of the Presidency, which together installed in 2012 around 20 points as part of ICT Productive Settlements Program administered by the Secretariat.

**Closing the gap Project (Ministry of Education)**

The project started with the donation of 2,500 XO Laptop through "One laptop per child / One Laptop per Child-OLPC." TELECOM machines delivered to the Ministry of Education (MINED) as a sign of strategic support that the company makes to its social responsibility and above all to help improve educational quality through the use of technological resources.

In counterpart, the United Nations Program for Development (UNDP) supported by financing the following activities:

- Training to 60% of teachers in the first six selected schools and taught by the Evangelical University of El Salvador (UEES).
- Development of educational resources.
- Installation of equipment for connectivity and support.

In this first phase began in November 2008 with the provision of XO laptops to the six schools mentioned above, as well as the training of teachers in grades one through six of them. The schools have computer rooms and are located in marginal urban area. This stage of integration has been underway since November 2008, 2009 and in 2010.

The second phase is part of the Social Education Plan 2009 - 2014 which implements the Mined from El Salvador, which is proposed within the strategic line No. 7, implement the CBC program in the national education system, including planning and execution of actions that contribute to the development of the
strategic line. In this regard, in the second half of 2009, made the proposal includes the addition of 5 rural schools and teacher training, provision of XO laptops, as well as continuity of pending actions to develop the first phase.

For the selection of schools have applied the following criteria:
- Geographically located in the rural north Living conditions of extreme poverty
- Difficult access Schools that have higher educational backwardness Schools that have not had experience in the use of new technological tools in the pedagogical.

In total 11 schools and 3550 students have benefited.