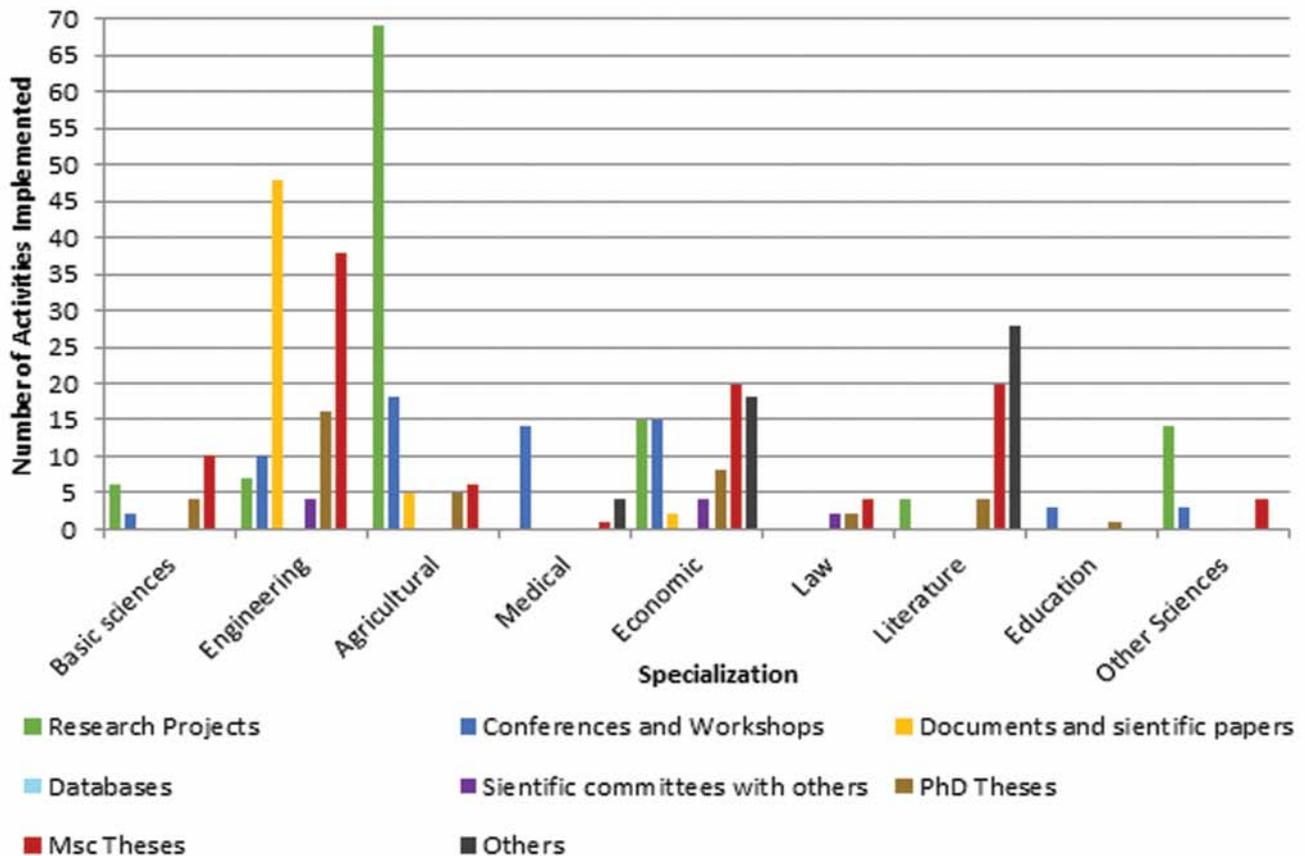




The National Report on Scientific Research in the Syrian Arab Republic for both years 2014 - 2015





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Syrian Arab Republic
Higher Commission for
Scientific Research



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Abbreviations

HCSR: Higher Commission for Scientific Research

PSSs: Productive and Service Sectors

R&D: Scientific Research and Technological Development

SRBs: Scientific Research Bodies

SROs: Scientific Research Outcomes

SRPs: Scientific Research Plans

STI: Science, Technology and Innovation

Preface

The national report on scientific research is considered as one of the most important documents related to Scientific Research and Technological Development (R&D). It is **the only national document issued in Syria** that includes data and information from all the Scientific Research Bodies (SRBs). This document concludes **useful indicators** to all the scientific research personnel and individuals, and helps **to make fact-based decisions for improving the real situation of R&D in Syria**. It provides an overview of the national R&D programmes and projects with their economic impacts on the governmental sectors that included in the national Science, Technology and Innovation (STI) policy. This report that prepared by the Higher Commission for Scientific Research (HCSR) represents one of the verification sources of achieving the indicators, which adopted in this STI policy. Based on the above, **and pursuant to the Legislative Decree No. 68 of 2005, especially article 13**, for establishing the HCSR which includes that the HCSR has to prepare a report on scientific research in Syria at the end of each year. After an interruption of several years for various reasons (mostly due to the current crisis that is raging in Syria since March 2011), the HCSR resumes the preparation of this report as a starting point for the subsequent annual reports.

This year, the HCSR presents **this report for both years 2014 and 2015**, in which the R&D in Syria has been described and analyzed, in addition to scientific and general proposals for improvement and development. Also, special sections were allocated for: human resources in the SRBs, the current and future Scientific Research Plans (SRPs), the Scientific Research Outcomes (SROs), the financial expenditure on scientific research projects, and the impact of the current crisis on the real situation of the R&D, etc. The HCSR has been careful to improve the structure and content of this current report by benefiting from the previous two reports that prepared by the HCSR (the first report for 2007 and the second one for the years 2008-2009). However, the HCSR does not claim perfection or idealism in conducting this report, but it is a new stepping stone to conduct future reports with a higher quality.

Finally, the HCSR is grateful to all those who have cooperated with it as individuals and institutions in order to achieve this important work, which is the result of a constructive cooperation between the HCSR, the Ministry of Higher Education, and the SRBs. The HCSR would like to thank its team that prepared this report for the hard work and strenuous efforts done in order to complete this document in the best possible way, **especially since this report is the first national statistical document issued in Syria since the beginning of the current crisis**.

General Director

Dr. Eng. Hussain Aziz SALEH

Executive Summary

The preparation of a national report on Scientific Research in Syria is considered to be one of the most important tasks of the Higher Commission for Scientific Research (HCSR) in accordance with the Legislative Decree No. 68 of 2005 for establishing the HCSR. The importance of this report lies in the fact that it combines the individual data of each scientific research body, and transfers it into comprehensive information, and derives from them indicators about the Scientific Research and Technological Development (R&D) situation, etc. These indicators form an important benefit for decision-makers, researchers and those who are interested in R&D activities. Up to date, the HCSR has issued two national reports on R&D in Syria: the first report for 2007, and the second one for the years 2008 and 2009.

After the hard work and strenuous efforts in data collection, auditing, classification and analysis, **the third national report on R&D in Syria was achieved for the years 2014 and 2015**. The HCSR was exempted from preparing the reports of the period from 2010 to 2013 due to several reasons (the most important one of which is the current crisis in Syria). It is worth mentioning that the HCSR is not responsible for the accuracy of the data contained in this report, but it is the full responsibility of those who provided this data.

In the interest for simplifying the procedures to prepare the next annual reports and to develop and improve their contents and quality, the HCSR will modify and develop the report's forms (after adopting this report by the Council of Higher Education), by taking advantages of the difficulties and observations made by some SRBs. The objective here is to help the HCSR for starting immediately the preparatory process of the next annual report for 2016.

1. The R&D activities of the HCSR during the years 2014 and 2015

The current crisis (with its imposed difficulties and challenges) has not prevented the HCSR from carrying out its tasks, and conducting its scientific research projects, workshops and new forums, and various other activities, etc. The most important activities as follows:

- A) To continue the implementation of **the national policy project for the national Science, Technology and Innovation (STI) policy in Syria**¹, which was approved by the Supreme Council of the HCSR in August 2007.
- B) To follow-up the financial support for scientific research projects.
- C) To organize the national conference titled "**The role of scientific and research institutions in reconstruction**" in November 2014.
- D) To organize the workshop titled "**Marketing and investment of the scientific research outcomes**" in May 2015.
- E) To hold the national dialogue forum titled "**Enhancing the Knowledge, Culture and Moral Structure of the Syrian Citizen**" in November 2015.
- F) To create the **knowledge network in the domain of water resources**, and to continue the development of previous knowledge networks.

¹ The national STI policy in Syria was completed and launched in September 2017.

2. The description and analysis of the current situation of the R&D

The current crisis has clearly influenced the R&D situation during the years 2014-2015, which has been reflected in its various aspects. In the domain of the **human resources**, this part has suffered from the severe drain of human capital. In this section, the number of employees in SRBs has been counted, and how they are distributed according to gender, scientific degree, age group and specialization. In addition to the distribution of those who left the work due to the current crisis, a comparison was conducted between their number and number of appointees. The number of delegates and how they were distributed according to the scientific degree and specialization were also counted, with reference to the large number of whom left the work and determining their ratios.

In spite of the negative effects of the current crisis on this section, especially the large drain in the number of researchers, and the decline in the level of training and qualification of cadres working in R&D, etc. However, this difficult situation did not prevent from the presence of qualified research cadres and a variety of specialties, etc. This situation can be tackled by increasing the support of the internal scholarships and assigning it appropriate importance, and the full-time studies to the postgraduate students, etc.

In the domain of **financial expenditure on the R&D projects**, they suffered from the limited financial resources due to the embargo and unfair sanctions. This negatively affected the implementation of the Scientific Research Plans (SRPs) and their outcomes in all the SRBs, which are still largely dependent on the governmental fund. In studying of the financial expenditure status on the R&D projects, it was found that expenditure rate is low despite the existence of financial support. It has been observed that there was a decline in the value of returns resulting from the investment of scientific research projects. This situation can be improved through finding a special financial system for the SRBs, encouraging the private sector and donors to increase the support and fund of the R&D activities, etc.

In terms of the **objectives of the current and future SRPs**, the SRBs have started to direct their plans to achieve economic returns, to enhance competitiveness, to implement the national STI policy, to find solutions to the problems arising from the current crisis and related to reconstruction stage, etc. In addition, reference was made to the foundations and criteria used in the development of the SRPs and their differences from the years prior to the current crisis. However, the SRBs have largely continued to rely on the implementation of their plans on researchers and postgraduate students without sharing this work with other SRBs. This situation reflects the continuity of these SRBs in following the same previous methods to implement their SRPs.

This indicates the absence of cooperation and coordination among the SRBs, which is one of the main tasks of the HCSR through establishing the **interlinkage mechanisms** between them, and between them and the Productive and Service Sectors (PSSs) that request R&D, and benefiting from it. This contributes to the financing, marketing and linking of R&D to the needs of society and the current and future development. It should be noted that the private sector continues to refrain from actively contributing to the financing of R&D activities. This

requires the need to intensify efforts to spread the culture of scientific research, and to change the perception of the private sector through carefully studied SRPs.

Looking at the **current and future R&D themes and projects in the SRBs**, they have directed their interests in some important sectors (such as information, communication, environment, construction industries, oil and gas, etc.) to the focus on the applied sciences with a large percentage of the total number of implemented scientific research projects.

As for the **distribution of the SRPs on the development sectors**, it is noted that the acquisition of agriculture and agro-industries on the large part of the implemented research projects, and the decline of these projects in the field of oil and gas and mineral wealth as a result of this sector has suffered severe damage during the current crisis. It must be emphasized that during the next phase of reconstruction, efforts should be focused more on renewable energy sector and human capacity building.

With regards to **the standards and criteria used in the development of the current and future SRPs**, it was noted that all the SRBs rely on the partnership mechanism in preparing their plans between the top of the administrative pyramid and its base. In addition to a governmental orientation to support R&D in the SRBs, and the clear vision of the PSSs is beginning to form about the importance of R&D in increasing the competitiveness of their products.

In spite of these positive points, the absence of coordination is still dominating among the SRBs when developing SRPs, and moving away from integration and cooperation to achieve the goals of these plans. Sometimes, some SRPs are randomly set up without any methodology or goal that the R&D seeks to reach it. It is possible to avoid these negative points and to develop the reality of the current and future SRPs by adopting the national STI policy as a main reference in the preparation of future SRPs, and coordination of these plans between SRBs, and good control of their implementation, etc.

With regard to the **Scientific Research Outcomes (SROs)**, it is not possible to focus on the number of these outcomes and to consider them as an important indicator of the value of the scientific production of the SRBs. However, its importance lies in determining their quality and contribution to alleviating the effects of the current crisis, and supporting the reconstruction phase. With reference to the decline of scientific research publications outside Syria, and its focus on the internal publications on master's theses, in which the largest proportion of these publications were in the field of medical sciences and engineering.

The SRBs have strongly continued to perform their tasks and to produce valuable SROs and its relative diversity with the continuation of external scientific publication, despite of many obstacles.

Some of these obstacles might include the high cost of the external publishing, the burden of the scientific system with the large number of students, their lack of time to carry out scientific research, the difficulty of carrying out fieldworks, or the obtaining of aggregate data due to the security conditions, limiting scientific research to statistical matters and

simple research experiments, etc. However, it is possible to improve the real situation of the SROs by providing specialized international journals, avoiding individual research, marketing of these SROs and focusing on R&D in human and administrative development.

The **local and international cooperation** remains an important issue during this current crisis. The **local cooperation** has been manifested in the completion of new research projects, the exchange of consultations, information and experts, the organization of workshops, conferences, symposia, etc. At the international level, the embargo and sanctions imposed on Syria have had a significant impact in reducing the level of international cooperation, which has been limited to some activities with a very few friendly countries.

This crisis has cast a dark shadow on all fields, in which the SRBs have received a large part of the damages and effects. These impacts have been reflected in the increase in the brain drain, the low financial capacity to fund R&D, the destruction of some of the infrastructure that are necessary for carrying out the R&D activities, and the difficulty of accessing scientific information of the worldwide journals. etc.

3. A comprehensive analysis of the current situation of R&D during 2014&2015

The analysis of the real situation of R&D during the years 2014 and 2015 shows a few **positive points**, and the most prominent ones are: the existence of a good foundation for the STI system that can be built upon it to reach an integrated institutional system, the openness of new governmental and private universities, and the completion of the national STI policy, etc. The **negative points** remain the most prominent in the real situation of R&D that have increased as a result of the current crisis, notably: the lack of confidence between the SRBs and the PSSs, the lack of general legislations for the SRBs that can be helpful to the research work, and the absence of coordination and networking between the SRBs, the absence of the effective mechanisms to link R&D to the requirements of the actual situation, the decline of financial and moral support for researchers and the migration of many of them, the wide scope of the supervision tasks for faculty members, and the increase in the embargo and sanctions imposed on Syria, etc.

4. The proposals to develop the real situation of R&D

The development of the real situation of the R&D has **become a necessity rather than a need**, as a result of the current crisis that has affected all the PSSs in the country. Currently, it is relying on R&D to promote the development and improvement of these PSSs. The R&D situation can be developed through:

- Providing **full support to the HCSR** to exercise its tasks that are related to the coordination between SRBs, and enhancing the interlinkage mechanisms between them and the PSSs that request R&D and benefiting from it, etc.
- Working on the **development of legal legislation** to regulate the work of the SRBs that ensure the privacy of their work and appropriate use of their SROs.
- **Raising awareness of the importance of R&D**, and their role in the service and development of the society.

- **Increasing the support provided to researchers**, and providing them with full time for the benefit of R&D, and giving them appropriate financial compensation.
- Finding new **mechanisms for the delegation** to ensure the return of the delegates, and to make use of them in an optimal way.
- Providing **support for access to international journals** and references, and supporting the external publication.

The **importance of this national report lies** in its achievement during the current crisis, as the reports that contain aggregate data are of particular importance during crises and their double **significance in the reconstruction phase**. The completion of this report at this critical time for Syria proves that the determination and hard work of qualified and efficient HCSR staff have given excellent results regardless of the difficulties and obstacles. Finally, it must be noted that the insistence on accomplishing this valuable work is based on the conviction of its importance, the importance of the proposals, and the possibility of building on its indicators. Other benefits of this report is providing the information to researchers and interested people in R&D, and this will be considered as a motivation to the HCSR to do more with aim to improve, develop and enrich future reports.

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The English translation of: Preface, Executive Summary, and Table of Content,
(by **Dr. Hussain Aziz SALEH, General Director of HCSR**).