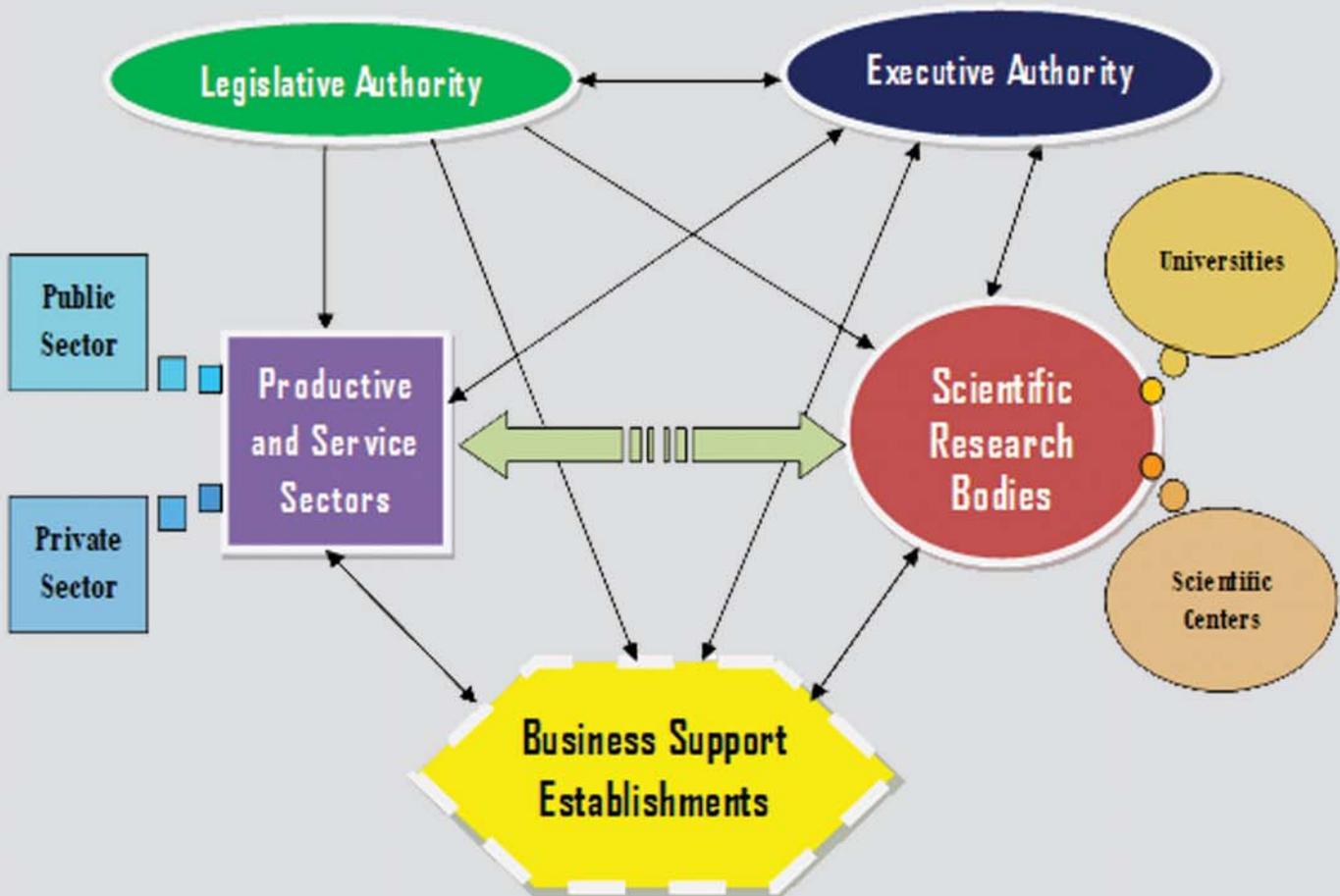




The Interlinkage Mechanisms between Scientific Research Bodies & Productive and Service Sectors



Syrian Arab Republic
Higher Commission for
Scientific Research



The Interlinkage Mechanisms between
Scientific Research Bodies
&
Productive and Service Sectors

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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

STI: Science, Technology and Innovation

Preface

The Higher Commission for Scientific Research (HCSR) has endeavored to implement the project titled "**The interlinkage mechanisms between the scientific research bodies & productive and service sectors**", within its framework to achieve its tasks in accordance with the Legislative Decree No. 68 of 2005 for establishing the HCSR. The HCSR has concluded this report, which contains the main features of effective and practical **interlinkage mechanisms**, with the aim to benefit from the Scientific Research Outcomes (SROs) and researchers in developing Productive and Service Sectors (PSSs) and solving their problems, and improving the quality and competitiveness of their products and services, etc. These mechanisms contribute to facilitate the implementation of the **national Science, Technology and Innovation (STI) policy** and maximizing the benefit of its SROs. This policy was completed by the HCSR, and issued in September 2017, in cooperation with various public and private organizations in Syria.

This report is of great importance in this period, in which the country suffers from the systematic destruction of all its infrastructure, where the PSSs have suffered the largest part of destruction and damage. In this direction, it relies on the Scientific Research Bodies (SRBs) to form a supportive platform to promote and develop the PSSs - especially in the reconstruction stage - through their SROs and researchers. The main support for this side is the existence of **practical interlinkage mechanisms** that are desirable by both parties (SRBs & PSSs).

The HCSR hopes that this document will receive the attention and support that it deserves from all the concerned stakeholders, especially by the **Prime Ministry Office**, to motivate the implementation of these necessary mechanisms, for the good of our beloved country. As for the HCSR, and in its strong belief of the importance of Scientific Research and Technology Development (R & D) in improving the performance of PSSs, and thus in the development of the society, it will strive to follow up the implementation of these mechanisms, in cooperation with all the concerned parties, especially to serve the **reconstruction of the modern Syria**.

General Director

Dr. Eng. Hussain Aziz SALEH

Acknowledgement

The **HCSR thanks** all those who contributed to the achievement of this work, both individuals and public and private entities, including the members of the Executive Committee of the project (Annex 1), and the members of the working teams emanating from this Committee.

The HCSR also thanks Prof. Dr. **Ghassan ASSI** (the former General Director of the HCSR) for following up on the implementation of the project from its beginning to the final steps, the Eng. **Natali AL-KHOURI FALLOUH** (Head of the Unit of Centers for Excellences and Competences), the members of **the Board of Directors** of the HCSR, and members of **the Higher Education Council**.

The thanks go to everyone who will contribute and help to practically translate this work into reality, by facilitating the effective implementation of the operational interlinkage mechanisms between the SRBs and PSSs.

Executive Summary

Most worldwide countries have established effective interlinkages mechanisms between Scientific Research Bodies (SRBs) and Productive and Service Sectors (PSSs), while constantly developing and enhancing them. This has been done due to the importance of these mechanisms to the both parties and their positive effects on products and services, and thus on meeting the needs of the economic and social development of society in general.

Accordingly, the HCSR has launched the project titled "**The interlinkage mechanisms between the SRBs and the PSSs**" for mutual and complementary benefit from the material and human resources of the both SRBs & PSSs. In addition, this project helps linking the national R&D strategy with the actual requirements of the society, and enhancing the quality and competitiveness of products and services by increasing their knowledge content. The impact of the current crisis on Syria comes as an urgent need to accelerate establishing of these effective interlinkage mechanisms, and supporting them by all possible means due to their importance in supporting the reconstruction stage.

A. The theoretical framework

The vision: The existence of effective interlinkage mechanisms between the SRBs & PSSs that are desirable by both parties, and to contribute to the economic and social development.

The mission: Assisting both SRBs and PSSs in building confidence and achieving an effective cooperation between them in order to realize their mutual interests.

The goal: paving the way towards building communication channels and interlinkage mechanisms between the SRBs and PSSs, public and private, that request R&D and benefiting from it.

B. The system of bodies related to the interlinkage mechanisms

This system includes: SRBs, PSSs, supporting intermediate agencies, the executive and legislative authorities. Each component of this system has its own functions which complement each other.

The forms of and interlinkages are varied, and include providing technical consultancies and scientific researches, developing prototype models, marketing and technology transfer, training and development, etc. The experiences in this domain vary from country to another, and any country can establish successful models of interlinkage mechanisms. These mechanisms are not fixed according to one model or form, but are determined by the needs and the legal, administrative, scientific, cultural, social and economic environment of each country. As for Syria continues to take its first steps towards establishing interlinkage mechanisms, successful experiences in other countries can be studied to take advantage of them.

C. The real situation of the SRBs & PSSs and the interlinkage mechanisms between them

The real situation of the SRBs: The SRBs in Syria are distributed between the higher education system and beyond, but they share many weaknesses. These include the deterioration of many SRBs as a result of the current crisis, the low rate of investment in the SROs, and the weak institutional and organizational environment, etc.

The real situation of the PSSs: The industrial and agricultural sectors are the most important ones among the other sectors. However, the status of the industrial public sector is not good, and the required benefits from SRBs that are interested in carrying out scientific researches in this field are not utilized as should be. As for the agricultural sector is of particular importance, and its development is considered as a priority for achieving food security.

The real situation of the interlinkage mechanisms: This situation is influenced by two main factors; the open nature of academic science, and the sensitivity of productive sectors to time. The SRBs make continuous efforts to create effective interlinkage mechanisms, but it has not yet reached the acceptable results.

The challenges facing the **interlinkage** process: This process faces many challenges such as the lack of financial support, the dominance of small enterprises in the national economy, research and academic slackness, the scarcity of effective intermediate agencies, industrial secrecy, etc.

D. The proposed operational mechanisms to support the interlinkages between the SRBs & PSSs

The proposed administrative, legislative, financial and scientific mechanisms included in the following actions of a practical and feasible nature, could lay the foundation for the desired interlinkage mechanisms as follows:

- Building confidence between the SRBs & PSSs.
- Motivating the SRBs & PSSs on the interlinkage among them.
- Finding the appropriate administrative structures to manage the interlinkage process.
- Activating and developing the role of the supporting intermediate agencies in the interlinkage process.
- Supporting the HCSR in completing its related activities.
- Conducting scientific studies to identify, develop and implement the interlinkage mechanisms that are suitable for the Syrian situation.
- Developing of legislations and laws that govern the interlinkage mechanisms.
- Enhancing the communication and partnership between the SRBs & PSSs.
- Increasing sources of funding for R & D and supporting the investment process of its outcomes.
- Activating and modernizing the industry and agricultural mechanization in Syria.
- Building a national system of innovation and motivation R & D.

The existence of communication channels and interlinkage mechanisms between SRBs & PSSs is particularly important at this critical period in the history of Syria, and double importance in the next stage of reconstruction. This is the main motivation for the HCSR to achieve this report which includes a practical methodology, and an effective plan to create effective, practical and productive networking and collaboration mechanisms. This is achieved with the focus currently on the industrial and agricultural sectors due to their importance for the Syrian economy. After publishing this report, the HCSR will immediately in cooperation with all stakeholders, and in conjunction with the implementation of the national STI Policy, to provide the necessary means to disseminate and develop this practical procedure in the implementation of the interlinkage mechanisms on all the governmental sectors covered by this policy.

It is worth mentioning that some of these above mentioned operational mechanisms have been approved by the Prime Ministry Office, especially within the recommendations of the workshop entitled "*Marketing and Investment of Scientific Research Outcomes*" organized by the HCSR in May 2015.

E. The practical preparation for implementing the interlinkage mechanisms

According to the main task of the HCSR in drafting up this policy project and setting up its indicators, the HCSR has worked since the beginning on the practical preparation and establishing of the environment for the implementation process of this policy, by doing several supporting activities and relevant scientific events, and the most important of which are:

- Information Systems: "*The National Information System for Scientific Research*" which aims to introduce researchers, financiers and industrialists to each other, and "*The Scientific Resources Management System*" which aims to identify all available scientific resources and required by SRBs and production and service organizations registered in this system.
- Knowledge Networks: These networks aim to create an interactive knowledge environment among stakeholders, and contributing to disseminate knowledge and to coordinate efforts, to develop the future visions, and to help in implementing the policy, etc. These knowledge networks have been established in several areas: renewable energies, environmental protection, agriculture, water and water resources. New networks are being pursued in other areas (health, industry, building and construction).
- Databases: Contains the contact data of all the experts and researchers who worked in a committee of the HCSR, or dealt with it, or attended one of the scientific events carried out by HCSR, so as to take advantages of these data in the process of implementation of the policy.
- A workshop on "*Marketing and investment of the scientific research outcomes*" held in May 2015. In this workshop, the frameworks for practical application and actual utilization of the SROs have setup.
- A workshop titled "*The completed research projects: the possibility of investing them, and their role in development*" held in August 2017, in which the most important scientific

research projects supported by the HCSR were presented and can be invested for the development purposes.

- A workshop entitled "*Executive mechanisms for the interlinkages between SRBs and PSSs: Successful cases in the industrial and agricultural sectors*" held in December 2017. This workshop was considered to be a practical step that aimed to establish effective cooperation between SRBs and PSSs, in which some successful cases were demonstrated to be potential for cooperation and networking between all the stakeholders.
- A workshop entitled "*The main system of the ethics of scientific knowledge and its role in enhancing interlinkage mechanisms between SRBs*", held in December 2017. In this workshop, the presence of possible national ethical controls were discussed to facilitate and assist in supporting the implementation of interlinkage mechanisms.
- A workshop entitled "*Implementation interlinkage mechanisms between the Syrian expatriate experts and researchers with the SRBs in Syria*" held in December 2017. In this workshop, the development of ways to benefit from the competencies of the Syrian expatriate experts and researchers for the benefit of SRBs and PSSs in Syria, especially during the reconstruction.

By completing the **interlinkage mechanisms report** which aims to find the main features of effective and practical interlinkage mechanisms that will help to benefit from the SROs and researchers in developing the national economy, the HCSR has achieved an important step of its main task in realization the networking and coordination among SRBs and between them and the PSSs in Syria. The access to an appropriate, practical and effective formula for interlinkage mechanisms is considered to be the first step towards achieving the required objective of this work, particularly in supporting of implementation the **National STI Policy**. This requires further steps that need serious action and effective cooperation among all the stakeholders, but the most important is the commitment to implement these mechanisms and working to apply them. This demands a strong will from the executive authority to support this trend by meeting the legal, administrative and financial requirements of these mechanisms. It is also the success of this interlinkage needs to be pursued vigorously by the HCSR, and united efforts by all stakeholders. **Noting that the possibility of the implementation is available provided that there is a will and an initiative.**

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