



# Review: New trends in capacity development for agricultural extension system.

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### ABSTRACT

Today, the world and the agricultural sector face great challenges, and agricultural development systems are subject to increasing pressure due to the challenges of food security, climate change, climate adaptation, and market fluctuations. One of the most important of these vital systems is agricultural extension and its workers. Agricultural extension work does not rise to the level required to meet these challenges. Traditional work is no longer an appropriate option to meet these challenges and achieve an effective response to the needs of farmers and improve their livelihoods. These challenges require the presence of effective systems that help accelerate and expand the transition to sustainable and smart agricultural systems. The role of agricultural extension in the process of converting to agricultural systems is important and necessary because transformation is a process of change, and change means moving from one situation to another. This requires effective extension services, as the farmer may stop from applying some technologies or stopping the transition to sustainable systems, here the role of agricultural extension is focuses on encouraging the farmer to continue and transition to sustainable agricultural systems. The performance of agricultural extension is affected by a group of internal and external factors, and capacities are a vital factor influencing the performance and effectiveness of vital development systems in the agricultural sector, including the agricultural extension system. Therefore, developing these capacities is a basic condition for achieving effective performance of these organizations. In the past two decades, many programs and projects have emerged, and there is a growing interest by international organizations to develop agricultural extension capacities, such as the FAO, the United States Agency for International Development, the United Nations, Tropical Agriculture Platform, and others. The current paper discusses the contemporary concept of agricultural extension, capacity and capacity development, and the reasons and global trends for its capacity development.

*Keywords*: Agricultural extension, Capacity, Agricultural Innovation system, Capacity Development, Capacity Development Projects.

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### INTRODUCTION

Public agricultural extension systems are critical to achieving national food security, improving rural livelihoods, and enhancing natural resource management Extension is also a basic pillar of research and development[1], [2] and agriculturally developed countries are the ones that have a strong and effective agricultural extension system [3],[4],[5] Extension services constitute a major tool that helps farmers manage change and respond to various challenges and opportunities, and they have transformed from a single organization to a group of service providers [5],[6].

Agricultural extension today is going through a transition around the world and is under pressure to reform its objectives as well as its management. Countries have been responding to calls for reform in different ways, with mixed results [1]. Traditional work is no longer an appropriate option to confront these challenges and achieve an effective response to the needs of farmers, improve their livelihoods, and achieve the common vision set by the Food and Agriculture Organization to transform into sustainable agricultural systems [7]. One of the directions for reforming agricultural extension is to develop its capacity, this poses the challenge of developing capacity within the pluralistic concpt of service delivery [8],[9].

This system needs new capacity at different levels (enabling environment, organizational level, individual level), as an effective system depends on capacity. Enhancing all actors to contribute to the flow of knowledge and interaction between all these actors [1], as the role of agricultural extension has emerged as a vital and effective system in the agricultural innovation system at the present time than ever before, as this system works to connect the parties and The actors and sub-systems in the agricultural innovation system, such as scientific research, producer organizations, and higher education [10]. The current paper aims to identify the concept of contemporary agricultural extension, capabilities, capacity development, reasons for developing capacity, and trends. Modern development of agricultural extension capacity.

#### Materials and methods

A review of international literature and experiences was adopted in modernizing and reforming agricultural extension, the modern concept of extension, new roles, and trends in capacity development within a pluralistic framework, and the process of reviewing sources was carried out for the period from August 2023 to June 2024.

### Literatures review

### The concept of modern agricultural extension

Although the term agricultural extension remains popular, over time it has gradually been replaced by the term agricultural advisory services, which refers to a less top-down approach that views farmers and other producers as clients. The term has also been expanded to include "Rural Advisory Services (RAS), which refers to activities that focus not only on agriculture, but rather on sources of livelihood, and a greater focus on the role of mediation and facilitation, which extends to more than technology transfers [10] and other authors use Naming the facilitation approach to emphasize the role that extension plays in facilitating negotiation between different actors to solve problems [11]. As for Rural Advisory Services (RAS): the term refers to all the different activities that provide information and advisory services needed and requested by farmers and other actors in the country. Agri-food systems and rural development. These include technical, organizational, commercial and managerial skills and practices that improve rural livelihoods and well-being. [1], [11].

It is also defined as the sum of activities that provide information and services needed and requested by farmers and other actors in rural environments to help them develop their technical, organizational and managerial skills and practices, in order to improve their livelihoods and well-being. This process recognizes the diversity of actors in agricultural extension and advice, and provides support It is broad in scope for rural communities (going beyond information and knowledge) and embraces new functions such as facilitation, mediation, creating platforms and networks through extension and advisory services. [12]. Agricultural extension is a system concerned with facilitating the access of farmers, their organizations, and other actors in the value chain to sources of knowledge, information, and technologies, and their interaction with partners such as scientific research and agricultural services, and helping them develop their organizational, administrative, and technical skills and practices, leading to improved management of their agricultural activities [11].

Agricultural extension now days is an integral part of the agricultural innovation system, and FAO 2020[1] presented three possible visions about extension:

First, agricultural extension must be understood as part of a broader panel of actors that are critical to innovation. So, the comparative advantage of agricultural extension organizations lies in their transformation into an organization bridging and linking the various knowledge elements of different actors and facilitating the application and use of innovations and thus achieving innovation. This means facilitating interaction and partnership with a wide range of organizations such as marketing, finance, politics, and other diverse sources of knowledge.

Second: The perspective of the agricultural innovation system forces the agricultural extension system to change its approaches and expand its functions beyond the dissemination of technologies and training. Traditional extension tasks have value only when they are combined with other innovation management tasks such as developing networks, organizing producers, facilitating access to services, Creating platforms and other tasks.

Third: The innovation systems framework emphasizes the need to enhance learning strategies and design extension programs at the local or national level.

Thus, agricultural extension needs to develop capabilities at three levels (the system or enabling environment, organization, and the individual level) and enhance the ability to deal with the changing environment, as an effective AIS system depends on enhancing the capabilities of all actors to contribute to the flow of knowledge and interaction between all these actors [1.] **The concept of capacity and capacity development** 

Capacity is defined as the force or energy that enables an individual to carry out a specific work or task, and it can be mental, such as the ability to adapt, or physical, such as the ability to manufacture a product [13]. Also, there is a difference between ability in the sense of Capacity and ability in the sense of Ability. The first means the maximum extent to which something can be done or done successfully, while the second is possessing the necessary skill to do something [14]. Ability also refers to the extent to which an individual performs a certain profession efficiently or a specific activity resulting from his development, training, and possession of the required qualifications and skills. [15]. [16] defined it as the best level that an individual is likely to reach in performing a job if he is able to obtain appropriate training, which is either manual, mental, professional, or physical. Or it is the possibility of achieving success in carrying out a specific task or practicing work ]17].

Capacity is defined as the ability of people to perform their work and accomplish it successfully, and it is also known as the ability of people and organizations to complete their work successfully [18],[19],[20]. He defined it [21] as the agricultural extension worker's knowledge of the work, mastery and understanding of it, the availability of knowledge and know-how in all specialized fields, and the worker must be familiar with his work and proficient in it with the required and specific speed and accuracy. [15] Defines it as the ability of individuals or organizations to carry out the tasks, roles, and duties assigned to them to the fullest extent, continuously, and developable.

As for capacity development, the Food and Agriculture Organization (FAO) defined capacity development as the process of enhancing and maintaining the ability of people, organizations and society as a whole to manage their affairs successfully. It is a means of encouraging developing countries to design and implement national policies that help reduce poverty and enhance food security through agriculture and rural development. [22], [23]. The Tropical Agriculture Platform defined capacity development as the process by which individuals, organizations, and society as a whole unleash, strengthen, create, adapt, and maintain capacities over time [18], [19]. The United Nations Development Program defines capacity development as the process through which individuals, organizations, and communities obtain Capabilities, strengthen and maintain to set and achieve their development goals over time[24].

**Capacity development**: The process through which individuals, organizations and communities acquire, enhance and retain the capabilities necessary to set and achieve their own development goals over time [25]. It is defined as the process of developing and strengthening the skills, talents, capabilities, procedures and resources that societies, organizations and individuals need in order to live, adapt and thrive in a rapidly changing world. The important component in developing capacity is the transformation that arises and continues over time internally [26]. When Viengxay and others defined it as methods used by all departments to develop the capabilities and capabilities of project workers through a group of activities including workshops, meetings, field tours, follow-ups, and others [27]. As for the Canadian International Development Agency (CIDA), it defined capacity development as strategies, activities, and methodologies that work to help organizations, groups, and individuals improve performance and achieve goals [28]. Capacity development: It is a learning process driven locally by leaders, alliances, and agents of change. Others that bring about changes in social, political, and organizational factors related to policies to enhance local ownership and the effectiveness and efficiency of efforts to achieve development goals.[29]

As for developing the capacity of the agricultural extension system: a process directed at developing the scientific and non-scientific skills or competencies required for the agricultural extension system to perform effectively. Among other aspects, it develops and improves: links between knowledge producers and users; Types of relationships and institutional framework that lead to knowledge exchange and interactive learning; The enabling environment and the need to create the necessary conditions to benefit from knowledge rather than focusing solely on creating that knowledge; Science, technology, policy development and visions.

#### Reasons for developing agricultural extension capacity

The objectives of agricultural extension have begun to change with the goals of sustainable development, which has necessitated the move towards agricultural extension systems that are consistent with sustainable development, and that traditional extension work is no longer an appropriate option to meet the challenges in extension work and provide better services to farmers, as effective response to the needs of farmers is the greatest challenge. Which guidance faces in the world at the present time [5]. Therefore, the main reasons calling for reform of agricultural extension systems can be summarized as follows:

- 1- The first and most important reason is to achieve food security by increasing production and productivity for the growing population, which may reach 9.6 billion people in 2050, which requires increasing production to 60% in agricultural products and to 100% in some countries, especially developing countries. [7]. In addition, these increases in production and productivity must be achieved based on depleted lands that are not suitable for agriculture, the problem of fragility of water security and water characteristics, the low quality of water, and climate change, which has begun to affect agricultural productivity due to the factors of drought, land erosion, and floods [31].

2 -Agricultural extension is an effective element in facing these challenges. Agricultural extension is a vital system in the agricultural innovation system, which is the main engine for increasing production and productivity [32]. Agricultural extension is the system of facilitating the access of farmers and their organizations to sources of knowledge, information, and markets. It is also considered the most important coordination and bridging organization in linking the elements of the agricultural innovation system and facilitating the work of agricultural innovation platforms.

3- The tendency of organizations and researchers to develop approaches, strategies or policies in the field of improving guidance and advisory services calls for their adoption.

4-Today the world is witnessing a digital revolution in the field of communications technology and it has begun to enter the agricultural field and the term digital agriculture has begun. This has also entered the work of agricultural extension and does not represent a burden on extension as much as it represents an opportunity to reach the large numbers of farmers who are deprived of extension coverage (women, Growing up smallholders [30].

5 -Countries of the world have left the government extension approach, especially since this approach faces many problems, including lack of funding, routine work based on supply, and the limited capabilities of the guidance organization and guides [33]. Also, the government is no longer the only reliable side in providing extension services. As many civil society organizations have appeared that provide advisory services and representatives of private agricultural companies, the agricultural extension worker is not the only one working with the farmer. Therefore, it is necessary to turn to more pluralistic extension services and not rely on government agencies only [3].

6 -Global developments that require reform of agricultural extension systems, the forefront of which is globalization, liberalization of markets, the trend towards decentralization, privatization of extension services, pluralism, the establishment of partnerships, and the multiplicity of actors in disseminating innovations, natural disasters, and diseases. All of this calls for reform and Improving agricultural extension and advisory services [3].

7 -Capacity development is necessary to improve interactions, build confidence, and create harmony and harmony between

governmental and private agricultural extension and scientific research institutions, system actors, stakeholders, smallholder farmers, development organizations, and advisory services to enable them to perform a wide range of tasks. Agricultural innovation activities, investments, and policies necessary for change to occur [18],[19] The main reason calling for developing the capabilities of the agricultural extension system and its elements is to improve the overall performance of the system.

### New trends (experiences and projects of the world and international organizations in the field of capacity development) 1 -United Nations Development Program to Support Capacity Development (2008

### Supporting capacity development, The UNDP Approach

Objective: Institutional reform that ensures the responsiveness of the public and private sectors to manage and provide services to those who need those most [34]. The program's strategic plan was specified for the period between (2008-2011) and focuses on developing the capabilities of development organizations, as agricultural extension is one of the most important Development organizations operating in the countryside provide support for capacity development at the national and subnational levels and proceed from existing capacities to developing, adapting and maintaining new capacities [34].

Methodology: The program was based on ongoing research and analysis of theories and approaches to implementing capacity development. Supporting capacity development is a process consisting of five integrated steps: involving stakeholders in capacity development, assessing the need for capacity, formulating a capacity development strategy, implementing the strategy, and evaluating capacity development.

### 2 -World Bank Capacity Development Program (2009)

### Capacity development using the results framework (a strategic, results-oriented approach to learning for capacity development) [35], [36].

Objective: Developing the capacity of developing countries and their institutions in order to achieve sustainable development goals, including agricultural extension institutions.

Methodology: The capacity development results framework was developed by a global team of experts in the field of capacity. The framework was developed through two video consultations, in which senior practitioner experts from capacity development programs, Ethiopia, Ghana and Uganda, as well as international, national and regional capacity development organizations provided ideas, as well as on the results of the international forum "Improving Learning Outcomes for Capacity Building," which was held in Washington in June 2009. This approach focuses on the fact that the process of capacity development is a learning process whose results are measured through indicators that were previously established.

### 3-Capacity Development Project for the Agricultural Innovation System (CDAIS).

### Capacity development for the agricultural innovation system

The EU-funded Agricultural Innovation System Capacity Development Project, with joint support from Agrinutra and the Food and Agriculture Organization of the United Nations, is designed to create a global partnership to develop the capacity of the agricultural innovation system and its subsystems in low-income tropical countries.

Objective: Improving the performance and effectiveness of the agricultural innovation system in tropical countries with support from the Tropical Agriculture Platform (TAP). This project is supported by dozens of countries and international organizations, most notably the Food and Agriculture Organization. Agricultural extension is a vital component of the agricultural innovation system and one of the most important organizations in the innovation network and an important stage of agricultural innovation [10],[18],[19], [37].

Methodology: The first phase of the capacity development project was to collect and review relevant literature to develop a general framework for the project. The project's main experts, Eduardo Trigo, Julia Ekong, and Atharul Chowdhury, agreed on the work strategy for collecting and analyzing the project's literature. A Skype meeting in December 2014 clarified the project's objectives and began. Literature review activities from December 12, 2014 until March 10, 2015. The initial framework of the project was presented to the global committee of TAP during a brainstorming session to determine the main elements of the joint framework for the project, and after agreement with the experts, the joint framework for the project was produced.

### **Results**:

The EU-funded Capacity Development for Agricultural Innovation Systems Project from 2015-2019 was jointly implemented by Agrinatura and the FAO Research and Extension Unit and provided support to the Tropical Agriculture Platform (TAP): a G20 initiative focused on capacity development for innovation systems. Local in tropical countries. This model was tested in eight experimental countries[38].

## 4 -Capacity development project to analyze and strengthen agricultural innovation systems (AIS) in Central Asia and Turkey [39].

Project Objective: The main purpose of the "Capacity Development to Analyze and Strengthen Agricultural Innovation Systems in Central Asia and Turkey" project, in which agricultural extension is a vital component of the innovation system, was to assess the strengths and weaknesses of the current agricultural innovation system in each participating country, to identify gaps and opportunities for improvement. , and recommend follow-up actions to improve innovation systems for farmers and rural people, facilitating market orientation, income diversification, environmental protection, and adaptation to climate change [39].

Methodology: Environmental analysis was used to identify strengths, weaknesses, gaps and opportunities for improvement in agricultural innovation systems, as well as three case studies for each participating country. Project results:

1-In-depth country studies on the innovation system and its subsystems in each participating country, including at least three case studies per country with examples of successful innovation processes that benefit small farmers.

2-Cross-country comparison and sub-regional synthesis of AIS analysis, including suggestions on how to develop the AIS system in participating countries further and address constraints to innovation.

3 -Three trained national experts for each participating country.

4 -A regional project document for developing the agricultural innovation system.

5 -JICA Model for Capacity Development (JICA, 2014, Japan International Cooperation Agency [40]

### (JICA Capacity Building Project to Implement the Executive Program for Agricultural Renaissance in Sudan)

Objective: The project aims to strengthen the capacity of the Ministry of Agriculture and Irrigation.

Methodology: Work on the Japan International Cooperation Agency project on capacity building in implementing the Executive Program for Agricultural Renaissance (hereinafter referred to as the JICA Project) began in March 2010 and continues until March 2014, meaning the project extends for a period of 4 years.

Project outcomes: Establishing a model system for developing the human resources and organizational capabilities of the Ministry of Agriculture and Irrigation and all its institutions, including agricultural extension, improving the planning, implementation, follow-up and evaluation of the rice agriculture development program in Sudan.

### Conclusions:

1 -The process of capacity development is a purposeful and planned process.

2 - A locally driven process by governments, ministries and relevant authorities.

3 -The concept of capacity development does not include individuals only, but also includes organizations and the broader system (the enabling environment).

4 -Capacity development stems from a real need for actors in the agricultural extension system (individuals, organizations, and the broader system).

5 -Capacity development is a continuous process and consists of a set of sequential stages.

6 -Capacity development is a change process that takes a long time, as capacity does not appear immediately but rather over time.

7- There is no model or approach that is considered the best for capacity development, but it is adapted to the national context. **REFERENCES** 

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### الاتجاهات الحديثة في تنمية قدرات نظام الارشاد الزراعي.

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### الخلاصة

يواجه العالم والقطاع الزراعي اليوم تحديات كبيرة و تخضع الانظمة التنموية الزراعية لضغوط متزايدة بسبب تحديات الامن الغذائي و التغيرات المناخية والتكيف مع المناخ وتقلبات الاسواق ، و ان احد اهم هذه الانظمة الحيوية هو الارشاد الزراعي والعاملين فيه. ان عمل الارشاد الزراعي لا يرتقي للمستوى المطلوب لمواجهة هذه التحديات ، فالعمل التقليدي لم يعد خيارا مناسبا لمواجهة تلك التحديات وتحقيق الاستجابة الفاعلة لحاجات الفلاحين وتحسين سبل عيشهم. اذ ان تلك التحديات تنطلب وجود انظمة حيوية فاعلة تساعد على تسريع وتوسيع التحول الى انظمة زراعية مستدامة وذكية . ان دور الارشاد الزراعي في عملية التحول الى نظم زراعية هو امر هام وضروري فالتحول هو عملية تغيير والتغيير يقصد به الانتقال من وضع الى اخر او من حال الى حال اخر ، وهذا يتطلب خدمات ارشادية فاعلة فالفلاح قد يتوقف عن تطبيق بعض التقانات او يتوقف عن التحول الى النظم المستدامة وهنا يبرز دور الارشاد في تشجيع الفلاح على الاستمرار والتحول الى النظم الزراعية المستدامة مع توضيو بعض التقانات او يتوقف عن التحول الى النظم المستدامة وهنا يبرز دور الارشاد في تشجيع الفلاح على الاستمرار والتحول الى النظم الزراعية المستدامة مع توفير افضل التقانات و لمعارف و الممارسات التي تدعم هذا التحول.ان اداء الارشاد الزراعي يتأثر بمجموعة من العوامل الداخلية و الخارجية ، و عد القدرات عامل حيوي مؤثر في اداء وفاعلية الانظمة الحيوية التمول.ان اداء الارشاد الزراعي وي يتأثر بمجموعة من العوامل الداخلية و الخارجية مع لعون افضل التقانات والمعارف و الممارسات التي تدعم هذا التحول.ان اداء الارشاد الزراعي و يتأثر بمجموعة من العوامل الداخلية و الخار العن عام ويفير افضل التقانات والمعارف و الممارسات التي تدعم هذا التحول.ان اداء الارشاد الزراعي و عليه فان تنمية هذه القدرات عد الم لعو يوي مؤثر في اداء وفاعلية الانظمة الحيوية التمول الزراعي والقطاع الزراعي و عليه فان تنمية هذه القدرات تعد شرط لعو و الاضل القدان و المعاري الحامية التموية في القطاع الزراعي ومنها نظام الارشاد الزراعي و عليه فان تنمية هذه القدرات الارشاد الزراعي و الفال لعزه المنظمات. وفي العقدين الماضرين العرب العرب العرمية الزراعي و هناك الم من الزراعي و المنظمات العالمية لنتمية قدرا والوكالة الامريكية للتنمية المولية الامم المتحدة ومنصة الزراعة الاستوائية و غيرها .

الكلمات المفتاحية :الارشاد الزراعي، القدرات ، نظام الابتكار الزراعي ، تنمية القدرات ، مشاريع تنمية القدرات