

Ministry of Agriculture
Agricultural Mechanization Directorate

**Guidelines to Establish partnerships facilitating
mechanization technology transfer activities**

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1. Introduction

This document is aimed to provide guiding framework to establish national level partnerships with other countries or companies to facilitate technology transfer activities by MOA/AMD and/or regional institutions involved in agricultural mechanization interventions with problem solving support and technology transfer from partners. It is also aimed to develop framework for identifying and engaging countries, organizations in agricultural mechanization and facilitate mechanization assistance to facilitate adaptive research and transfer of mechanization technologies. It discusses definition & concepts of partnership, technology transfer, the purpose & benefits, of partnership programme. It also proposes steps in partnership development process, technology transfer tools, and criteria for selection of right technologies. Generally, it tries to give a roadmap to identify, select, evaluate partners and/or technologies and make good agreement to the advantage of Ethiopia agricultural mechanization strategy and policies development and implementation. Finally it proposes templates, formats, fact sheets to be filled and criteria of evaluation and decision for Acceptance of partnership including outline of statement of work to be considered throughout the process.

2. Concepts and Definition

2.1. Partnership

Partnership has become a central concept in development co-operation of countries these days. It can be defined in terms of a relationship between people or organizations with common objectives. Other associated words include association, cooperation, collaboration, participation, joint decision making and long-term relationship.

In general the core principles of any partnership are basically reciprocity, accountability, joint decision making, respect, trust, transparency, sustainability and mutual interests. More specifically equality of decision making and mutual influences are the key characteristics distinguishing present days partnership from conventional types of relationship. Moreover, this type of partnership is characterized by its long-term, shared responsibility, reciprocal obligation, equality, and mutuality and balance of power natures.

2.2. Benefits of Partnership

Partnership could offer the following benefits:

- It provide means for sharing technical expertise, ideas and information
- It permit local staffs to work closely with their foreign counterparts and learn from their experience
- It offers both partners access to a wide range of expertise in various disciplines.
- It supports transfer and use of technology developed outside to benefit developing countries.
- It can permit to leverage resources and share ideas & experience with the private sector.
- It can help accelerate the adoption and use of technologies & innovations while optimizing resources

However, despite its benefits in improving human and infrastructural capacity, partnerships have been criticized for the one way flow of capacity and the absence of genuine sharing and unbalance in resources, institutional capacity and power.

2.3. Type of Partners Involved into a Partnership programme

We can enter into a partnership with organizations, countries, governments etc (International or local)

- **International:** Government, industries, public & private foundations, nonprofit organizations, universities,
- **Domestic:** Federal, regional offices and research institutes, privates companies, industries

2.4. Resources Expected to be contributed by Partners

Resources (cash or in-kind) such as funds, personnel, equipments, facilities, services and intellectual property can be contributed to a partnership effort by all partners.

2.5. Responsibilities of partners

Responsibilities which is the technical core of the partnership, the basis for initial approval/rejection by the partners and the source of technical information of the partners, it should be described in the statement of work. It should describe the partnership effort, the individual tasks involved including anticipated outcomes.

2.6. Factors to be considered in selecting type of agreement

The type of agreement to be created should depend up on:

- Relevance, availability and cost effectiveness of alternative technologies,
- Complexity & level of development of the technology that is to be acquired
- Actual needs of the technology by the recipient country
- Technological capacity of the recipient and ability to use and/or adapt the technology
- Resource to be contributed (in cash or kind) by the recipient, other proposed terms and conditions
- Negotiating power of both parties (which will, in turn, depend on variables such as size, technological sector, demand for the technology, number of competitors etc)
- Type of relationship (long-term, short-term or one time purchase of products)
- Type and extent of technical support and training on use of new technology and related equipment

3. Technology transfer

Technology transfer is the process by which a technology, expertise, knowhow or facilities developed by one individual, enterprise or organization is transferred to another individual, enterprise or organization. It refers not only to physical hardware & procedures, but also to knowledge including human skills.

The transfer of technologies to developing countries is generally horizontal, transfer of established technology, unlike vertical transfer of innovation from research and development to production. In most cases, technology transfer implies a transaction or a longer-term collaboration in which two parties (the acquirer and the supplier of technology) are directly involved. This may not always be the case. For example, technology may be acquired by reverse engineering or from publicly available knowledge. These routes of technological acquisition require a certain level of capability. Reverse engineering also raises the issue of protection of intellectual property. Publicly available knowledge could be a source of technological knowledge but by and large it is unlikely to be commercially usable without a high level of adaptive and innovative capabilities.

Therefore, in discussing technology transfer in this paper, the focus will be on a transaction or a collaborative relationship between an acquirer and a supplier. Typically, both the parties will be business enterprises, though the acquirer may be an agency representing businesses. The supplier may be an NGO or a consulting firm working for an aid agency. The motivation for most suppliers will be commercial advantage. There are two types of technology transfer

1). Domestic technology transfer: is known as vertical transfer or adaptation process, basically involves the flow of technology from one stage of research and development process to another.

2). International technology transfer: is known as horizontal transfer or adoption process. It is the movement of technology from one culture of systems and methods that were developed for application into a different culture and location, the transferred technology is adopted rather than adapted to the recipient condition.

3.1. Priority Technologies

Technologies considered as priority for the partnership should be mainly agricultural mechanization technologies such as

- **Land preparation and planting technologies:** ploughs, tractors, harrows, cultivators, seed and fertilizer drill, planting technologies
- **No tillage /minimum tillage/conservation tillage systems and practices**
- **Cultivation & plant protection technologies:** weeding, spraying and dusting technologies
- **Harvesting, threshing and storage technologies:** crop harvesting, & threshing technologies including combine harvesters and grain, fruit & vegetable storage technologies.
- **Crop products processing technologies:** Millers, hullers, oil expellers & mills, fruits and vegetable & commercial crops processing technologies
- **Livestock production and products processing technologies** including feed/forage, dairy product processing and others

3.2. Technology assessment/evaluation Criteria

There should be criteria for a technology or capacity to be transferred through partnership based on Ethiopia context and existing policies/strategies.

The criteria for the selection and/or evaluation of technology can be seen from the following two Perspectives:

a. Benefits to the Country, People and Mechanization Sectors Perspective

- The extent to which the technology addresses issues of high priority for the mechanization sector
- The extent to which the technology yields significant economic benefits to the sector and the country
- Whether the technology transfer will foster investment by the private sector in mechanization and agri-business sector or not
- Whether the technology will strengthen public-private sector collaboration, and accelerate new product, practice and process development in the sector.

b. Knowledge Generation and Technology Development Perspective

- its contribution in the generation of new innovation and technology
- How the new technology or knowledge can be transferred and utilized locally
- The likelihood that the technologies or processes can be commercialized by domestic firms
- The extent that the knowledge and technology will strengthen the sector, enhance productivity and contribute to long term economic growth and social benefits
- How it supports establishment of new technology transfer units; incubators, hubs, parks and science parks, techno pole etc
- Contribution in supporting promotion of agricultural mechanization through training, testing and demonstration

3.3. Major Technology Transfer Methods

There are several potential channels for transferring technology. Some of them are:

- **Licensing:** an agreement that allows a technology recipient to employ the transferred technology as per the conditions that are spelled out by both parties.
- **Sales methods:** are mostly used in technology transfer, the entire right including the possession right etc. the technology is comprehensively transferred.
- **MOAs/MOUs:-** Memorandums of Agreement (MOA) and Memorandums of Understanding (MOU) are agreements between parties with common potential areas of coordination and cooperation. They are made between two or more Federal agencies or a Federal agency and foreign government, and can also be used between any two parties
- **Research Fellowships:-** A research program established for the purpose of promoting technology transfer between the Government and the private sector.

- **Joint Funding Agreement:** a federal bureaus enter into partnership programs with/and at the request of state, local or regional agencies either formally or informally.
- **Joint Venture Agreements:** is a form of alliance between two separate companies in a forms of **equity joint venture:** an arrangement whereby a separate legal entity is created in accordance with the agreement of two or more parties and **contractual joint venture:** establishment of a separate legal entity is not needed or where it is not possible to create such an entity.
- **Foreign Direct Investment:** Commercial technology transfer commonly work by first transferring technology to an initial organization, usually a multinational subsidiary and then further diffusing it to other firms in the local economy through knowledge spillovers, leaks or intended exchanges of useful technological knowledge.
- **Turn Key:** the technology supplier may construct a fully functional facility where the recipient needs merely turn a key to get a facility functioning.
- **Technical Enclave:** multi-national corporations establish fully functional modern facility in developing countries, where the local population is employed as laborer and the products of the facility would not find their way into the local economy but would be exported abroad.
- **Informal Technology Transfer:** Involves reverse engineering, where learning to design a product is achieved by taking existing product to pieces and analyzing its parts and working principles. It also takes place by moving skilled personnel from one country or organization to another, consulting journals and technical papers in international journals and participating in seminars, conferences and trade fair.

4. Steps to follow to create partnership programme

The fastest means to reach an agreement is through direct communications to create understanding and agree on actions. The partnership process basically includes following steps. All parties should be committed to working through these steps in a timely manner.

4.1. Determine Potential Partner

In determining whether or not the prospective partner is technically and financially suitable for a partnership, a questionnaire should be prepared so that the host country should use some documented system that will provide a satisfactory audit trail and demonstrate that an effort was made to establish the viability of a potential partner.

4.2. Determine if project meets qualification

The recipient determines whether a proposed partnership meets the qualifications for a technology partnership agreement of both parties. Suitability of a potential partner must be considered from ethical and public perception points of view. The decision-tree (annex 2) should be prepared to help the evaluation having very important issues when considering a potential partner. It is recommended that technical team seriously go through the decision tree at this point in considering a potential partner. If the decision tree is completed successfully, it is possible to proceed to the next steps.

4.3. Determine agreement type

If the project meets qualifications, both partners will determine the appropriate type of partnership agreement to develop.

4.4. Developing of Statement of Work

Once the team determines that the technical and economic objective of a partner matches the needs of partnership, they should work with the potential partners to draft a statement of work that describes the partnership effort and its outcomes which is a concise, technical proposal consisting of the following sub sections.

- **Background:-** technological level, potential and capacity of the country, problems & bottlenecks and demand for the technologies.
- **Objectives:-** specific measurable result of partnership project: problem to be solved; the technologies to be introduced, adapted, tested or refined.
- **Activities:-** each task or step necessary to reach the stated objective including list of the partners and their responsibilities.
- **Expected Results:-** short-term outputs & results of projects; longer-term economic return on the technologies commercialized in the country.
- **Limitation:-** uncertainties in the future or associated with the project; assumptions about future events and the availability of resources, personnel or equipment; issues of technical feasibility; deadlines or other constraints.
- **Resources:-** a detailed list and amount of cash and in-kind contributions by partners
- **Organizational Structure of the Partnership project**
- **Issues related to cooperation with third parties, delegation and outsourcing**
- **Budgetary & financial management, accounting principles**
- **Communication and Publicity of the results and outcome of the project**
- **Terms and condition of the Monitoring, Evaluation and Reporting etc**

4.5. Prepare Draft Agreement

The transferor will draft an agreement/MOU that includes the terms and conditions and provides it to the partner.

4.6. Review and/or Negotiate

The partner will review the statement of work and draft agreement. If needed, they will negotiate with the partner.

4.7. Approval of the agreement

The top management of both parties approved partnership package, up on reviewing the complete partnership document consisting of statement of work, all copies of relevant formats.

4.8. Signing Agreement

Once the top management recommends approval of the partnership programme, the partners will be notified. The technical team prepares the transmittal letter for the official signature. The officials sign two copies of the document and distribute to the partners.

4.9. Allocating Resource

After the final review and approval, the partners will allocate funds/resource to the project.

4.10. Start and Manage Work

Once resource/fund is allocated, which may take few days, the actual implementation may start under the technology partnership agreement. Both Transferor and the recipient manage their work and deliverables to achieve the project's goal.

4.11. Evaluation

The partners involved with the effort should track progress to ensure that expenditures and implementation of activities are as per their agreement. Form (to be prepared) will be employed in annual and progress reports concerning progress, expenditures and milestones.

4.12. Reporting schedule

Financial and activity report should be produced based on the agreed terms of condition and content periodically.

5. Documents to be used for a partnership agreement

I. Partners Profile Sheet (annex 1)

With the above background, the following information has to be provided by the company/Partners or institution interested in a partnership up on arrival

- Legal Name/Address of the company
- Type of the company: a subsidiary of a larger corporation or subsidiary (if applicable)
- Nationality of Parent Corporation or the partner (if applicable)
- Location or country of the operation of the company
- Business function of the company: a private business, public, University, other
- Area of interest or type of technology/knowledge partner
- Type of partnership agreement company's can make in partnership, license, other

- Types of resources that could be contributed by the partners (Personnel, engineering, scientific, marketing, facilities, equipment, estimated value)
- Applications of the technology partners are interested in (R&D, manufacturing, capacity building training, other)
- Companies legal contact person and address and others

2. Concept note development

The concept note has to be developed including activity rationale addressing the partnership need or opportunity, how this need identified and how does it relate to national development plans of the partner country in general and mechanization sector in particular. Summary of activities to be done, results the activities going to deliver e.g. numbers of people who will benefit from each of the activity areas. Description of the expected results, purpose of this activity, roles and responsibilities of each partners, value each partner add to their skills/experiences, the future fate when partnerships fund support ends and financial arrangement: how much will it cost to deliver the outputs, funding sources etc.

3. Partnership Decision-Tree

After having provided the above information and develop the concept note for partnership partners will fill the following questioner (annex II)

4. Criteria for Acceptance of a Partnership Checklist

There should be criteria to ensure a technology to be transferred through partnership. Based on our countries context, the criteria indicated in annex II are adopted

5. Statement of work

If both decides to make partnership agreement, detail Statement of Work (SOW) as per the outline mentioned in section 4 should be developed and signed

6. References

- Ethiopian Science and Technology Agency (October, 2006), ***National Science, Technology and Innovation (STI) Policy of Ethiopia***, (Draft for Discussion), Addis Ababa
- Ethiopia Agricultural Transformation Agency (August, 2014), ***Ethiopian National Agricultural Mechanization Strategy Vision, Systemic Challenges and Strategic Interventions*** (final draft), AA
- NREL ***Technology Partnership Agreement Process***, www.nrel.gov/technologytransfer/.
- The Royal Institute of International Affairs (2005), ***Partnerships for Technology Transfer***: Briefing paper on Sustainable Development Programme SDP BP 05/01, UK,
- Oyelaran B. (2003). ***Partnerships for Building Science and Technology Capacity in Africa***. United Nations University – Institute for New Technologies (UNU-INTECH), Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands.
- Bennett D. (2003). ***Innovative Technology Transfer Framework for UNIDO Action***, UNIDO and the World Summit on Sustainable Development, Vienna.

Annex 3. Criteria for evaluation of Partnership

Description of criteria's	Yes	No
Does the partner support technological development and transfer process of MOA/AMD and agricultural mechanization strategy implementation?		
Is this partnership programme be in compliance with MOA/AMD strategies and agricultural mechanization strategies		
Is this partnership mutually compatible with the partner's mission?		
Is this Partnership adequately supported with financial and other resources by both partners?		
Will the Partnership affect the national development integrity of the Partners in a positive way?		
To what extent the intended technology/capacity addresses issues of high priority stated in the mechanization strategy?		
Is the intended partnership accelerating the development, transfer and uptake of mechanization Technology and knowledge?		
Can the intended partnership strengthens public-private sector collaboration and accelerate new technology, practice and process development in the mechanization sector?		
Can the technologies addresses issues of high priority for the mechanization sector of the country		
Is it contributes towards establishment of new technology transfer units, incubation, parks and science parks etc?		
Is the technologies or processes can be commercialized by domestic firms?		

Annex 4. Criteria/ Checklist for Acceptance/appraisal of a Partnership

Description of criteria's for appraisal of a Partnership	Yes	No
Whether partnership is in the public interest?		
Is there any new technology being transferred?		
Is there a benefit to the partners?		
Is the Partnership, as specified in concept note developed fairly?		
Is the procedure for partner selection documented?		
Is the basis for partner selection fair?		
Is the Partnership within our normal and legal authority?		
Are the description and statement of work clear and concise?		
Is the relationship of the project to the partner's mission and programs well defined?		
Are the goals and objectives clearly defined?		
Are the partners role and contributions well defined?		
Are the tasks to be performed and responsibilities of each partner on each task well defined?		
Are there any special provisions clearly defined in the project description in the Partnership?		