

PROCESS OF ADOPTION AND ADAPTATION
TOWARDS SUSTAINABLE IMPLEMENTATION OF MICRO IRRIGATION.

(lesson learned from several dryland smallholder farmers in Indonesia)

Hanhan Ahmad Sofiyuddin; Marasi Deon Joubert Hutadjulu

Resarcher at Experimental Station for Irrigation, Indonesia

✉hanhan.ahmad@pu.go.id; ✉marasi.deon.joubert@pu.go.id

Over the past 15 years, the development of micro irrigation has been doubled the previous period and practiced by more than 70 countries in the world. Micro irrigation, supported by continuous innovation and technology adaptation, has proven to be a good alternative for successful irrigation development and management. However, high investment could be a challenge for its application which can usually be overcome by increasing productivity and using of high-value crops. In Indonesia, micro irrigation has been applied on a commercial scale by a private company for high-value crops to ensure its quality and continuity. In dryland, the government triggered the application of micro irrigation by farmers through pilot projects which accompanying some of the development of deep ground water irrigation project. Generally, the implementation on a commercial scale could be sustainable in the long term. On the contrary, the sustainability of the application by farmers could be varied and depend on many factors.

Key factors of success and failure need to be studied for reference in the future micro irrigation implementation project. Thus, this research was conducted to summarize the lesson learned from several cases of micro irrigation project in Indonesia. On desk study was conducted by reviewing some cases in the literatures. Surveys, interviews and questionnaires conducted at several locations to learn in detail of the characteristics and formulate alternatives of adoption and adaptation processes which could enhance the sustainability of the micro irrigation implementation project.

In dryland, micro irrigation project were developed sporadically in relatively small area. Due to different characteristics, the sustainability was varied by place. In some cases, farmers who managed to maintain the sustainability of micro irrigation can evolve to a commercial scale. On the contrary in some cases, farmers cannot sustain the application so that they applying back the conventional irrigation method

or even discouraged to cultivate the land. Based on the observations, the adoption and adaptation process should be carefully performed to ensure the sustainability.

In the process of adoption, financing schemes need to be carefully planned so that it not only can alleviate the burden for initial investment cost but also stimulate the self reliance, maintain conducive social conditions and farmers motivation. In most cases, open minded and highly motivated farmers could adopt easily and maintain the sustainability. Support for access to market is absolutely necessary to achieve profitable agricultural activities.

In the process of adaptation, the selection of methods and models of irrigation networks by considering local wisdoms can be the key to success. For example by integrating the hydraulic ram pump, rope pump, the optimization of the existing ground water irrigation network and the provision of a small dam in the upstream for alternative sources of water supply. Moreover, the application of local material could be promising alternative to reduce the investment cost, such as use of bamboo network, pitcher emitter, palm fibers and other subsurface emitter. Moreover, proper implementation of the operation and maintenance, especially for the network component, will contribute to the successful performance of micro irrigation which in turn the sustainability of micro irrigation.

Keywords: adaptation, adoption, micro irrigation, process, sustainability.