

## *Learning Alliances development for scaling up of multi-purpose farm ponds in a semi-arid region of the Mekong basin*

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### **Abstract**

Northeast Thailand is a semi-arid region in the Mekong river basin. It receives an average annual rainfall of 1100 mm, concentrated in 4-5 months of the rainy seasons but with an erratic distribution that frequently caused floods and droughts in the same year. The region has a population of about 25 M persons, or 40% on the national population, but it has a far larger share of the poor. In the past, the government supported the local communities with small scale irrigation systems and some types of farm ponds. Yet, these are hardly used due to their localized availability, high cost and in-appropriate technologies. The natural and social environments in the region have degraded significantly since the 1960's.

In the last two decades, some innovator farmer groups and networks have developed their own knowledge on how to create farm ponds in ways that suit their production systems and needs. The individual leading farmers have later developed into groups and sequentially Local Wisdom Networks using concept of learning alliances since 1990s. Recently, the concept of 'Learning Alliances' has been extended to enable farmer networks and government sectors to interact. As a result, there is interactive planning using both farmer and government approaches to achieve efficient water resource management faster and more widespread. The mutual understanding between the partners in the Learning Alliances has also lead to a new national policy and development plans for which the Thai cabinet approved a program to create 450,000 farm ponds in 2004 and one million more in 2005.

The actual results of these developments are yet to be evaluated. It is encouraging to note that the Learning Alliances are already expanding rapidly into various types of rural development and address natural capital, social capital, financial capital and human capital.

### **Introduction**

Brief history of rural development. Rural economy of Northeast Thailand (NET) evolved from a subsistent economy (FAO, 1948; IBRD, 1959) to an export oriented economy. The evolution is reflected in National Development Plans (NDP, see NESDB, 1966; 1967; 1985, 2000): they show an initial emphasis on self-sufficiency in subsistence agriculture, which developed via emphasis on commercial production to the promotion of economic self-sufficiency economy in the last 15 years. Early development (sixties, seventies) or the rural economy was mainly by expansion of direct exploitation and extraction of natural resources, in particular of soil fertility. Later (eighties), this was intensified through modernization and industrial processing. Farming included large scale harvesting of land and water resources and lacked recycling. Even in the following phase (nineties) when value adding technologies were added, farming still caused the extraction of natural resources. The 7th NDP (1992-1996) and the 8th NDP (1997-2001) emphasized export promotion, assuming that the industrial sectors would absorb surplus labor (Sriplang, 1976), but despite the evolution in farming practices, mining natural resources remained a basic feature of agriculture. Inevitably, widespread natural and water resource degradation were reported and attention drawn to the un-sustainability of the process (Anukulampai, et al. 1983, Noble et al. 2000, Bridges et al., 2001). The research for agricultural development was generally reductionist in nature without a clear direction and end-user groups, and using scattered information on science and technology development (Issarangkura, 1981; Laohawichian, 1979; Attajinda, 1999).

The economic crisis in Asia (1997) had a big negative impact on the Thai economy. Importantly, the agricultural sectors were considered to be among the strongest resources of the countries, and moreover still had ample room to grow (NESDB, 2000). As such, the crisis underlined the need for more sustainable practices, that were then made part of the latest NDP. As a result, agricultural water resource rehabilitation is now redirected for sustainable development through self-actualization and integration of agriculture and rural livelihoods. Furthermore, the paradigm and direction of the 8th NDP point towards use of participatory approaches as also prescribed in Thailand's new Constitutions (adopted in 1997, published by ... in ...). To effectuate these plans, the Thai cabinet approved in 2000 a program to provide revolving funds to villages for any development initiatives (SADP, 1999; MOAC, 2001), and in 2004 a program to create throughout the country 450,000 farm ponds. For the latter program, it provides 2160 M Baht (about 43 M Euro) in the period 2005-2007, while additional provincial programs for new types of even more appropriate farm ponds are expected. With these changes in direction, the new approaches for agricultural development are partnerships and networking. A bottleneck, however, is that planners and researchers need to adopt an agro-ecosystem perspective for understanding some necessary background of farmer communities prior to the participatory phase (Tongpan, 1983; 1988).

The opening to include in top-down planning also bottom-up thinking allowed contributions by farmers and other local people, and this made responses to the economic crisis easier. However, changing the mental attitudes of staff of organizations involved takes time, and the slow development of the government sectors as partner in Learning Alliances (LA) provides serious limitations despite the recent and massive government restructuring (MOAC, 2001). Nevertheless, the crisis has created countrywide and positive results with respect to the urgent need to develop sustainable water resource rehabilitation for agricultural sustainability and autonomy (Kudwongkeo, 1999). Therefore the economic crisis has created mostly a positive effect to development of sustainable water resource for the food and agricultural sector in Thailand. The impacts can be judged through changes in several aspects: conceptually, socially and economically (SADP, 1999), and are as yet to be evaluated by the LAs.

In response to the migration to cities and its impact on cohesion of families and on sizeable debt loads, and to and the general dissatisfaction with city life, some farmers have returned in the 1980s and 1990s to their homes in the rural provinces to take back control over their lives. With some external support from NGOs for empowerment, these farmers undertook a self-actualization of their situation: they analyzed their problems, assessed lessons learnt, identified potential alternatives and solutions to these problems. Key problems they identified are (i) degradation of community values and (ii) unsustainable agricultural production systems. The farmer groups and networks have dramatically expanded from less than 100 leading farmers 15 years ago in NET to currently a few thousand farmer leaders and their active groups. The leaders of these groups interact at national forums and with leading politicians of the country. The current number of members (2005) is approximately 100,000 households, as registered by the networks themselves). The organizations have to target of 1 million households within the next 17 years. With respect to improving farming systems. The increase has transformed the water resource use patterns and national policies to support those activities. Main policies affecting water resource rehabilitation practices also includes local research to identify existing indigenous sustainable water resource rehabilitation and water resource management technologies, research proposal screening for end-user participation, participatory technology development, biodiversity promotion, C-sequestration, community forests management, agroforestry. Part of this research was directed by the King's initiatives on a sufficiency economy. Through participatory technology development and transfer between farmer networks, integrated farming system or integrated pest management were developed by farmer groups with indigenous knowledge, as well as connections of producers to markets (SADP, 1999). All of their practices are for small farmers, and this includes monitoring and evaluation.

In addition to evolution in Thailand in top-down and bottom-up thinking for rural development, there were also other important influences that reinforced them developments. The first to mention is that His Majesty King Bhumibol presented the New Theory in 1987 as a holistic approach to stimulate new thinking in Thailand about water resource rehabilitation, integrated farming and community

development. The influence of the King as mentor of the Thai people is hard to overestimate. His theory aims at self reliance in terms of food security and income at the levels of households and communities, and has been promoted in many ways and researched in several agro-ecologies (KaoHinSon Regional Station, 1999). Figure 1 shows the concept graphically: diversity of production and resources, recycling, farm ponds, conservation of natural resources.

**Figure 1. A Thai farm according to the New Theory of his Majesty the King of Thailand**

(From: Response to Land degradation. Bridges et al., 2000)



**A Thai Farm in the New Theory  
of His Majesty the King of Thailand**

From the book *Response to Land Degradation*, Science Publishers, Inc., Enfield, NH, USA, September 2001  
With compliments from the Room Duey Chuey Kan Publisher, Bangkok, Thailand

When the Thai government's approach was still action strongly top-down in the 1970's and 1980's, the Thai NGO Population and Community Development Association (Viryavadia, 2000, PDA, 2005) brought an alternative development program to NET. Its emphasis was and is on empowerment of individuals and communities with skills, tools, institutions, and by using water, sanitation, agriculture and industrial employment in innovative ways as their means, with the NGO in the role of initiator and facilitator. In overall priorities, it promotes 'first health than wealth'. Its program to promote roof water harvesting and storage of the clean water for domestic purposes has been very instrumental in providing rural health. Its process of working with communities and the private sector from the bottom-up and of learning with them about the most felt problems and opportunities resembles in many ways 'learning alliances' well before the term was coined. PDA may already have reached benefited 100000 individuals and its approach remains an import stimulator for rural development.

**Participatory approaches and learning alliances; the international scene.** At an international level, participatory approaches in research were introduced in the 1990's to involve rural stakeholders in formal management of resources through participatory approaches and with a view to facilitate and accelerate uptake of innovations (Engel, 1995). These approaches involved NARES as sources of information and targets of capacity building, and later also farmers and farmer organizations (Penning de Vries et al., 2000). Many more types of stakeholders, however, need to be involved for an effective and speedy process of rural development and natural resource management. In 2001, CIAT and CARE started in South America a 'Learning Alliance' on agro-enterprises, and after that also with the Catholic Relief Services in Africa. In their words: a LA is 'a process undertaken jointly by research and development agencies through which research outputs are shared, adapted, used and innovated upon to strengthen and create local capacities, improve the research outputs, generate and document development outcomes and identify future research needs and potential areas of collaboration.' (Lundy, 2002). This concept of a LA is similar to that of research consortia (such as the Management

of Soil Erosion Consortium, Maglinao et al., 2001). The MUS-project (Penning de Vries et al., 2005) expands the concept a little further and includes explicitly the end users of the innovation, so that a LA is defined as 'a group of organizations and individuals in a particular area with a shared interest in an innovation and the scaling-up of that innovation'. Such a LA is a structured platform of a range of partners with different concerns (the various end users) and capabilities (implementation, regulation, policy and legislation, research, learning; documentation and dissemination), and is designed to break down barriers to horizontal and vertical information sharing. As such, it speeds up the process of identification, adaptation, and uptake of new innovation. A LA follows a flexible but structured, re-iterative path to progress. Good results with a Learning Alliance approach for natural resources management by communities have also been registered in 10 Asian countries (Gonsalves and Mendoza, 2003); the terms they use to describe the movement is 'learning by doing' and 'learning spiral'. The gradual process builds capacity and implements solutions to jointly felt problems.

## Emerging Learning alliances

The decline in the quality of farm land and water resources in NET since the 1960's caused a decline in productivity and farm income. This has led to an increase in poverty and forced farmers to find off-farm employment, predominantly in the larger cities, to augment their rural household incomes. This emigration has created further problems associated with increased consumerism, social issues, increased reliance on off-farm incomes and a dependence on loans. In the latter case, inappropriate loans have resulted in foreclosure of farms by money lenders or banks, accelerated migration to the cities and occupation of remaining communal forestlands by landless individuals.

In response to the migration to cities and its impact on cohesion of families, on debt loads, and on the general dissatisfaction with city life, some farmers in the 1980's and 1990's returned to the rural provinces to start a new life. With some external support from NGOs for empowerment, these farmers undertook a self-actualization of their situation: they analyzed their problems, assessed lessons learnt, identified potential alternatives and investigated solutions to their problems. Field visits were undertaken to successful farming sites. For themselves, they identified that a key factor for re-establishing viable farming units is to make best use of their natural capital. In particular, opportunities for multiple uses of water (domestic and productive) from multiple sources (rain, roof runoff, farm runoff, groundwater) was considered a key to development that would be under their own control (many farmers own land and the water on it). Using household labor and limited financial resources, farmers started to develop integrated farming system around farm ponds. This water was used in the production of vegetables for the household, with surpluses being sold into markets, and supplementary irrigation of the rainfed rice crop. In addition, the stored water was used to irrigate horticultural tree crops, production of fish and to provide drinking water to cattle, pigs, ducks and chickens. The manure produced from the livestock was used to fertilize crops. Some farmers used water in home gardens and in the growing of mulberry leaves for silk production. Income generated from these diverse activities has been used in the development of further water storage structures. The increased water availability encouraged the development of agroforestry systems utilizing fruit trees and timber species. Such developments in the 1990's occurred largely with support from government or research. Other farmers, feeling the same needs and constraints, joined and the movement in this tropical country 'snowballed', particularly when also some of the nation's leading figures through moral support. Development of an integrated farming system has assisted in improving the fertility status of light textured soils that dominate the region of 17 million hectares.

Five capitals. The modern livelihood approach (DFID/Pretty and Campbell et al. 2002) indicates that for rural development five types of 'capital' are needed simultaneously (Box 1): human, social, economic, natural and physical capital. Through the livelihood approach, we can better understand how empowerment works in the cases of farmer organizations.

**Box 1. The livelihood approach to rural development.**

The livelihood approach to rural development recognizes that five capitals are required for development:

- human capital (such as skills)
- social capital (including farmer organizations and laws)
- economic capital (loans, revolving funds, remittances)
- physical capital (farm and village infrastructure, internet)
- natural capital (land, water, genetic resources)

All capital need to be at a reasonable level. The capital(s) in short supply need to be increased in the first place.

An example of the strengths of farmer organizations to improve livelihoods are that they recognize the need to organize themselves and find ways to do so (thereby increasing social capital). Also striking is their emphasis on the need for knowledge (human capital). They expressed a need to understand and quantify their own resources and the related production potentials. They used indigenous knowledge on land and water uses, revived from among older network participants, and involved scientists to provide a wider look. As an example of reviving indigenous knowledge, we can cite at least 30 plant species in small areas of 40x40 m<sup>2</sup>. As an example of their demand for scientific knowledge, we can cite three questions and challenges to scientists to provide practical answers while duly recognizing diversity in their conditions (Box 2). (It is interesting to note here that while farmers are asking site and situation specific advice, government services are not up to providing this, but stick to standard recommendation instead. It is though that involvement of 'soil doctors' (a Thai system of local volunteers with extra training and tools from the Land Development Department to advise on soil improvements and fertilizers) may have scope to liaise between both). Nowadays, farmer network are also interested to learn from experiences from other countries, such as about treadle pumps to lift water, drip irrigation kits for efficient use of productive water, use of soil amendments (Noble et al. 2004), and request scientists to introduce these and jointly test their appropriateness. With respect to financial capital, locally initiated and managed revolving funds provide the funding (typically, members can get loans of 2-5000 B, repayable in 6 months or up to one year to expand their natural capital (water in farm ponds) and infrastructure (communal gardens), which are covered by members who all contribute monthly 10 B). Indeed, there is a strong element of learning together in these farmer organizations.

**Box 2. Questions formulated in Kalasin, 20 January 2004, at a meeting of the main farmer networks in NE Thailand (Penning de Vries et al., 2006).**

- (What are the) Land: water resource ratios for best productivity in different ecosystems (at farm scales)?
- (How is the) Water management for water use efficiency for each crop, both monocrops and integrated farming system?
- (What are the) Water productivity potentials in different ecosystems for productivity gap analysis of each farm?

To realize the new NDP's to develop agricultural sectors and rural areas, pioneer leading farmers are accepted as channels of local wisdom and indigenous knowledge. In a crucial demonstration of mutual learning, 'local wisdom' has extended itself to modification of natural development policies and development strategies for sustainable development particularly in the form of farm network leaders advising ministers and government official leading figures.

Nowadays, government and research organizations and NGOs support the farmer organizations and promote actively the concept of 'sustainable land and water resource development for farmer livelihoods'. As such there has been continuous learning and empowering of farmer organizations.

The activities have expanded to formation of regional LA's for wider impact and acceptance by the general society to support sustainable land and water resource development.

There is now a large number of grass roots farmer organizations. Some of them are identified in Box 3. However, there are many more.

**Box 3.**

Farmer networks as members of Northeast Local Wisdom Networks:

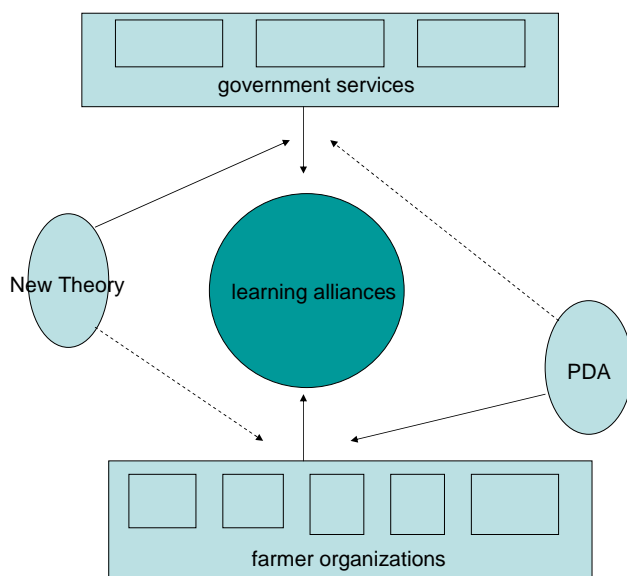
Mr. Boontem Chaila	Waengyai district, Khon Kaen
Mr. Tongbai Tonlo	Ubonrat district, Khon Kaen
Mr. Tas Krayom	Waengnoi district, Khon Kaen
Mr. Phong Katepiboon	Pon district, Khon Kaen
Mr. Chantee Pratumpa	Chumpuang district, Nakhonrachasima
Mr. Sanan Parisawong	Nongbunmak district, Nakhonrachasima
Mr. Phai Soisaklang	Lamplaimas district, Buriram
Mr. Kamdueang Pasi	Kandong district, Buriram
Mr. Suthinan Prachayaprut	Satuk district, Buriram
Mr. Tonglo Chenthaisong	Phut Thaisong district, Buriram
Mr. Yu Sunthonthai	Mueang district, Surin
Mr. Chiang Thaidee	Sikorapume district, Surin
Mr. Chalee Marasaeng	Huatapan district, Amnatcharoen

The various farmer organizations and networks in NET have evolved their own strategies, structures and values. As the groups grow and issues get 'bigger' other types of members are invited to participate in the networks, such as researchers and the Land Development Department, or to discuss and see, such as politicians. All recognize that there is much to learn together about resource management and farming: things as not a straight forward as one tends to think from 'the top down' and upscaling is much more effective when grassroots organizations are supported by policy and government organizations, and also some technical supports from private sectors.

The activities of the LA's promote involvement of individuals through groups that have an impact at the local, regional and national level. More recently, these LA's collaborate with various governments and non-government sectors, research and development organizations, social and economic development agencies, academic and education systems and finally, policy makers to promote the concept of sustainable water resource and water utilization for livelihoods. Interaction with other international LA's with similar objectives has been achieved.

The progress made could be depicted in Figure 2 that shows how slowly government services and farmer organizations start to interact and collaborate in forms that can be called Learning Alliances. The process is accelerated by ideas and experiences in other movements.

**Figure 2: The growing of Learning Alliances**



Yet, there is still a long way to go. While LA's are already functional, their strength can further increase by adopting broadly the most effective forms of cooperation and learning process. The government, and even more the private sector, are still relatively new and weak partners. For a sustainable development program, there should be centralized and accessible information system (NESDB, 1985, 2000). In order to fulfill the target, government structure is on transformation from functional-based to problem- and area-based structure, with increasing decentralized system.

## Empowerment through Learning Alliances

The farmer organizations see the actions by and benefits for the members of learning alliances at the levels of individuals, households, community and national levels. They actively promote empowerment from the individual levels upwards. The practices they promote are inspired by the philosophy in Buddhism of 'a good life with minimal needs'. At the community levels, there are number of approaches for community empowerment (Attajinda, 1999). One of the practices is called 'Looking inside out'. It encourages individuals to perceive their environment from their own aspirations, concerns and available capitals. This practice helps to achieve realistic analyses.

Empowerment is attained through emphasis on and development of the following factors. Some of the empowerment occurs in weekly and monthly meetings of groups of 20-30 farmers, less frequently in larger groups, some empowerment comes from in joint action, and some in explicit training sessions. Then a light management structure emerges (leader, liaison persons, secretariat, contacts with other groups), ways of sharing knowledge in meetings, training sessions and self-made education centers, and revolving fund is often created that permits newcomers to borrow from those already longer participants for farm improvements that fit the network visions.

Means to achieve empowerment means activities to acquire knowledge and skills with respect to the following notions:

### At the individual level (promoting human capital)

- Self analysis for self actualization
- Happiness oriented, cash as a only supporting factor
- Self reliance system and autonomy

- Skill building and knowledge
- Life security through improved production and family system

#### **At the household level (promoting human and natural capital)**

- Skills and knowledge
- Autonomy
- Food quality and security
- Economic sufficiency
- Land and water resource security
- Biodiversity
- Local wisdom utilization
- Family livelihood and self sufficiency

#### **At the community level (promoting human and social capital)**

- Skill building and knowledge sharing
- Caring and sharing society
- Community business
- Social security
- Cultural protection
- Environmental quality

#### **At the group and network level (promoting human, social, financial and natural capital)**

- Skill building, experimentation and knowledge sharing
- Learning organization
- Education for life at all levels
- Creation of a revolving fund
- Caring and sharing
- Local wisdom and cultural conservation
- Sustainable development
- Policy integration

### **Impacts of learning alliances on water resource rehabilitation**

**Empowerment.** The role of learning alliances in the Thai society is to lead to sustainable agricultural development through self-actualization and community empowerment. This is widely accepted by most social sectors and compatible with the new development paradigm on sufficiency economy which has to strengthen both household and community economically. As such, most development is currently based on this concept. Therefore most of the farmer leaders are respected as leading figures at grassroots level. They are regularly invited as advisors to ministries, research and development agencies and consequently, most of the 8th NDP (on Integrated Development) and 9th NDP (on multi-lateral developments) and policies have tuned towards concepts developed by farmer learning alliances. The development policies have gradually effect water resource rehabilitation and water resource use planning of both local and regional levels. The water resource rehabilitation activities are transformed by promoting and adopting changes in production practices and relating technologies; from mono-cropping to integrated production system of agroforestry, integrated farming system, and diversified cropping system.

**Water resource rehabilitation.** The agricultural practices on water resource rehabilitation are expanding from the members of existing LAs and group centers to other farmers. The main innovative practices are replacing depletive commercial farming systems with organic farming system, integrated farming with recycling and agroforestry. The practices have great impact on water resource rehabilitation and water resource use planning of Thailand for agricultural production, agricultural resource management and environmental quality. it demonstrated that organic farming systems has

protected and conserved natural wildlife, revive soil and water resource systems close to previous natural stages. The transformation process is an example of situation settings, processes, outputs and outcomes of the development processes in NET in transition, as an example and potential application approach in both development for water resource use planning and policy integration for sustainable development of resource, livelihood and environment. More resilience has been created to drought and flooding, as well as to market price fluctuations.

At the farm level, the greatest impact is on water resource conservation and its efficient utilization, and on biodiversity. This has been accompanied by a revival in indigenous knowledge, self-actualization and learning process development. This has resulted in the development of diversified agricultural production systems that have significantly improved livelihoods of households through food security. At the household level, there has also been a significant improvement in incomes and the ability to repay outstanding loans. As an example, Mr. Boontem Chaila of Khon Kaen, he could gradually pay for his loan of 800,000 Baht (20,000 US\$ in 5 years from his agricultural income within 2 ha. At the community level, biodiversity has been promoted through the growing of trees and intensive organic waste recycling and natural resource conservation encouraged. This has resulted in community-scale soil and water improvement in the region within only 2-5 years. (unpublished data) At the network level, there has been the evolution of continuous learning groups that have developed into structured farmer learning alliances at local, regional and national levels. As a result of this mobilization and empowerment of farmers, multiple development partnerships with National Policy have occurred.

**National Policy change.** Currently, agricultural water resource use and development is trying to operationalize to the paradigm shift from the export to self-sufficiency. Since King Bhumipol has supported the new development paradigm, economic sufficiency has become a firm national development paradigm (MOAC, 2001; NRCT, 2001), but interestingly the importance of the paradigm was driven home by the economic crisis.

While farmer groups are working hard to develop agricultural sustainability, government sector improve their support the development paradigm through internal auditing, monitoring and evaluation on outcome, and re-structuring for problem-based and area-based structure (SADP, 1999). The re-structuring and downsizing will re-organize and transform some parts of Ministry of Agriculture and Cooperatives and Ministry of Science, Technology and Environment into Ministry of Natural Resource, Energy and Environment. The development would change some office working culture to be more decentralized and hopefully, higher working efficiency (Attajinda, 1999; NESDB, 2000, BIOTEC, 2001).

One of the new development government objectives, on suggestion of farmer leaders, is that a knowledge-based economy needs also be supported by education development (National Education Bureau, 1999). In this aspect re-structuring of education system is also going on from primary school to university levels.

At the local levels, farmer LAs and NGO's are working at full scale to expand the practices of sustainable agricultural practices using high potential existing indigenous technology (Kudwongkeo, 1999). Government support for a revolving fund of 1 M Baht per village will be stimulating on the use and expansion of the sustainable technologies (Organic Agriculture Standard, 2001).

The policies have influenced from development ideology, water resource use allocation at farm and community scales on water resource use types and basic resource conservation. This includes soil, water, plant and animal species. Consequently the water resource rehabilitation in Thailand is now on a process of transforming back to a sustainable, resilient and biodiverse production systems.

## Conclusion

Agricultural development in Thailand resource has passed through a socio-cultural setting of top-down approaches with insufficient information. The situation has created inappropriate plans for agricultural development until the economic crisis of Asia in 1997. Since then farmer learning alliances have greatly contributed to awareness of the inappropriateness of the development paradigm.

There has been a paradigm shift from water resource use for one-sided income promotion and economic growth to economic sufficiency to balanced production and production of economic and social goods in a healthy environment. LAs have contributed significantly to this transformation.

From the paradigm shift, previous reductionism water resource use and development for individual office objectives has been modified for integrated holistic development objectives. The new agricultural development concepts have also incorporated participatory approaches and new water resource use approaches on farmer contribution and partnerships. However, the reductionism development concepts are also on the process of transformation to holistic approach.

A number of limitations and adaptation are arising from government bureaucracy and corruption, however, currently; there are rapid changes to more transparency system. As such farmer learning alliances could initiate a realistic development of Thailand from looking inside out, for sustainable agricultural water resource use system.

At a more abstract level, the development of LA in NET has the promise to reverse the process of natural resource degradation in the country, and as such very valuable for food security and a healthy environment.

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