

VETIVER SYSTEM FOR SOIL AND WATER CONSERVATION ON THE YADANA GAS PIPELINE AND COMMUNITY OUTREACH PROGRAM AT HUAY KAYENG, THAILAND

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ABSTRACT

Through the painstaking research conducted by His Majesty King Bhumibol [Adulyadej](#), vetiver grass technologies have evolved and flourished in certain ecozones of the Kingdom. Sustainability through indigenous knowledge can distinctly be defined as a scope of compounded importance and can be accented through several key endeavors on part of PTT Public Company Limited (PTT). PTT stands at the vanguard of the vetiver grass initiative on pipeline application in Thailand, clearly demonstrated in the successful 1997 implementation of vetiver alongside the Yadana gas pipeline where reinforcement of physical structures played a significant role in the germination of soil and water management or, more specifically, erosion control and slope stabilization within the region. Huay Kayeng, a PTT agro-ecozone case-study, can further show how successful implementation in one region of the world can stimulate sustainable growth in comparable agro-ecozones elsewhere.

In conjunction with the “Sufficient Economy” philosophy bestowed by His Majesty King Bhumibol to strategize and construct a viable and thriving biotic community, the company introduced a vetiver cultivation program as part of a mass-relation task to the Huay Kayeng community which is comprised of approximately 1,320 households. Due to the construction of Vachiralongkorn Dam in 1977, a community of Huay Kayeng peoples had to migrate to a higher area where the soil was less fertile and crops were of an insufficient yield. So the company has applied the execution of His Majesty King Bhumibol’s initiative placed strong emphasis on public participation, motivation, encouragement and outward-oriented.

The implementation was divided into four phases: the first phase was a controlled experiment in vetiver cultivation on holistic land within the community where the benefits of growing vetiver grass would gradually become apparent to the farmers. The second phase was accommodating cultivation of vetiver on the farms of willing growers. Successful effectuation of these two phases initiated a third phase by which approximately a quarter of all the households therein grew vetiver grass on their own land. In the final phase, vetiver was planted in roughly half the community and in an appropriated public sector. In addition, all imbued activity was publicized and the community itself was promoted as a paradigm in educating farmers countrywide. At present, the environmental conservation of the Huay Kayeng community has achieved par excellence in sustainability and most of its farmers can clearly boast a better life.

Keywords: Community outreach, Yadana gas pipeline, erosion control and slope stabilization

His Majesty King Bhumibol Adulyadej demonstrated vetiver cultivating to Thai people.



1. INTRODUCTION

The majority area of Thailand is used for agriculture which is also the principal occupation of the Thai people. Traditional agriculture relies on sufficient water and fertile soil. However the loss of soil surface due to flooding and landslide still happens every year. This is a problem that needs to be solved.

In 1991, His Majesty King Bhumibol Adulyadej of Thailand introduced an idea to use vetiver grass in conserving soil and water. To succeed His Majesty's initiative, in 1996 the PTT Public Company Limited launched a vetiver cultivation alongside the gas pipeline from The Yanada Gas Pipeline Project in Thong Phaphume District, Kanchanaburi Province. By employing an engineering concerned technique, the vetiver cultivation has minimized soil erosion and prevented landslide around the area where the pipeline runs through since then. At present, indigenous plants have been regrown and the forest has come back.

Appreciating His Majesty's contributed initiative, the PTT company in 2003 dedicated a 2.25 million USD fund for vetiver research in three years. This fund was transferred to the Royal Project where vetiver cultivation for conserving soil and water was to be supported. Thereby, the PTT was assigned to be a member of the working committee for vetiver cultivation of the Royal Project. The company then expanded its successful experience into 4 projects as follows:

1. Vetiver cultivation encouragement project in Huay Kayeng sub district, Thong Phaphume District, Kanchanaburi Province which is a community nearby the Yadana gas pipeline. The community is also a mass relation -targeted area of the PTT for cultivating vetiver grass to conserve soil and water according to His Majesty's idea.

2. Vetiver cultivation project at the border patrol police Wichit-wityakan school which situates nearby the Thai-Myanmar border.

3. Vetiver cultivation project to prevent landslide alongside the Thong Phaphume – Ban E-Tong road which encompasses approximately 30 km uphill part and consists of more than 50 landslide points.

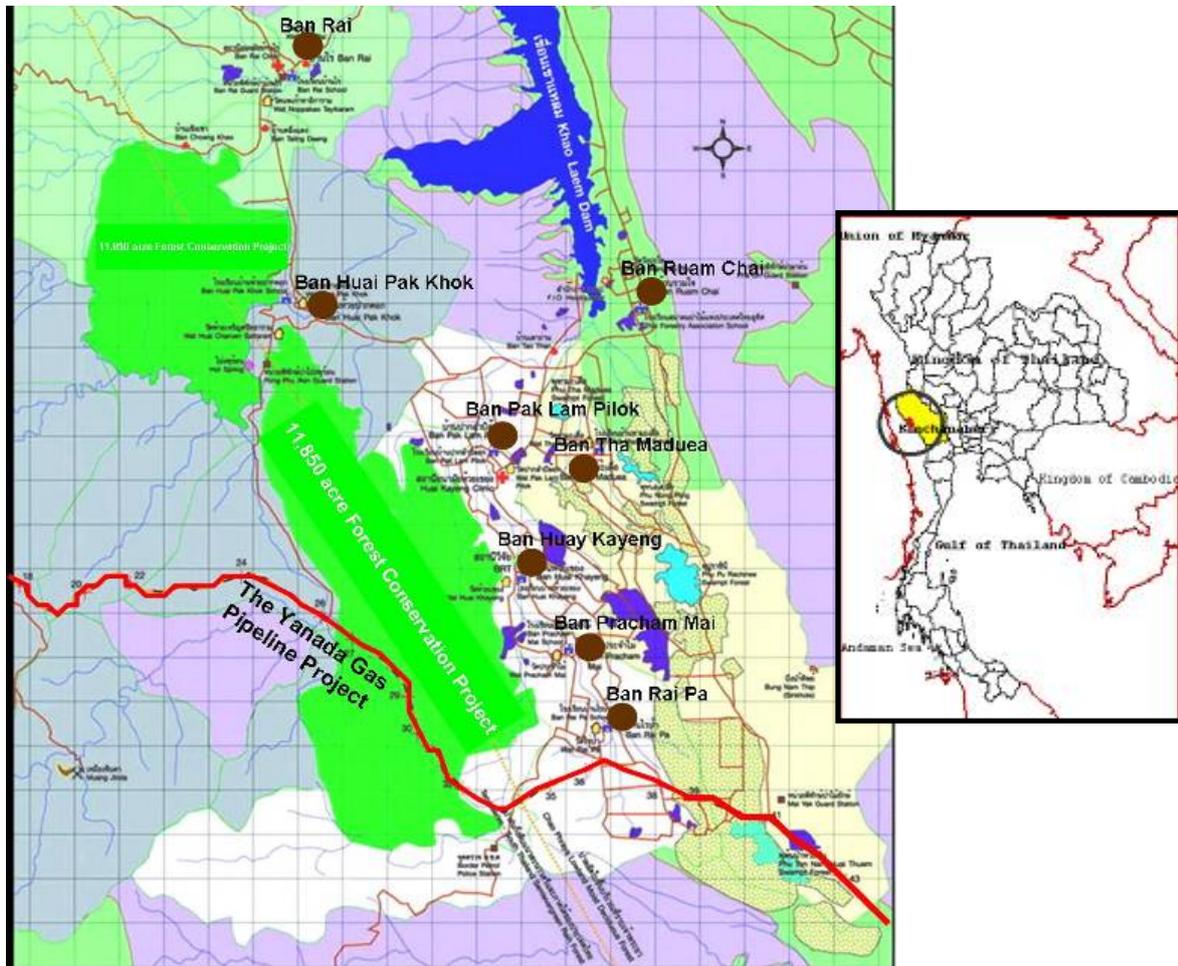
4. Vetiver cultivation project in the PTT's reforestation area covering 1,580

acre nearby the border at Ban-E-Tong, Pilog sub-district to reinforce the growth of trees.

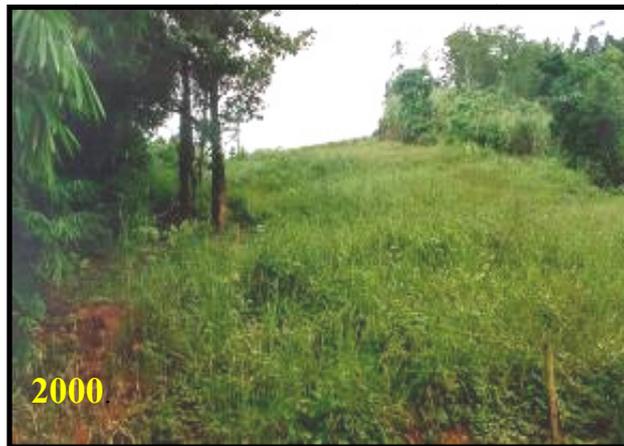
These activities of PTT has been continually implemented through the end of the year 2006. Vetiver cultivation in accord with His Majesty's idea that seeded in targeted communities is now publicized. The company also supports the people in all over Thailand to cultivate vetiver grass totally at least 5 million stalks to mark His Majesty King Bhumibol 60 year-reign by providing the essential knowledge and materials. Remarkably, the company's projects concerning contests of vetiver planting promotion and vetiver information poster design are very much positively responded.



Map of eight villages in Huay Kayeng sub district, Thong Phaphume district, Kanchanaburi province.



The Use of Vetiver Grass System for Erosion Control and Slope Stabilization along the Yadana Gas Pipeline in Kanchanaburi.



Forest rehabilitation by vetiver planting at KP15





2. VETIVER CULTIVATION ENCOURAGEMENT PROJECT IN HUAY KAYENG COMMUNITY

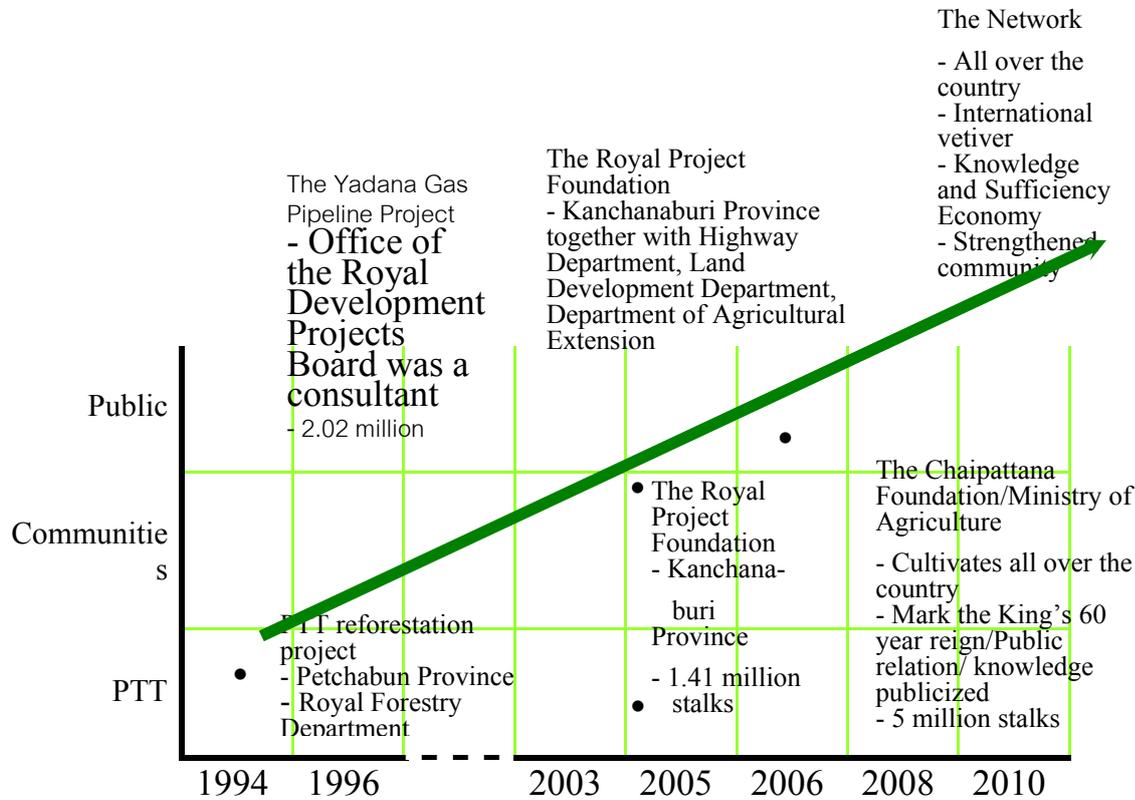
Huay-Kayeng is a sub district within Thong Phaphume district, Kanchanaburi Province of Thailand. This community situates only 10 kilometers from the Thai-Myanmar border and elevates an average of 300 meters above sea level. By its 1,315 households (population of 8,457), this medium sized community comprises of 8 villages (10 groups). Agriculture is the main occupation of the people. They grow rice, tapioca, corn, para rubber trees and fruit trees, keep livestock, hunt and gather from the forest. Some are employed as laborer. In general, the people are poor with their average income of 305 USD annually (data at 2004)

Dated back in 1977, due to the construction of Vachiralongkorn Dam, Huay Kayeng community had to migrate to a higher area where each household was provided with a 5.5 acre land for farming and another 0.4 acre land for housing. The people that used to do rice farming and fisheries in lowland then had to rely on a less fertile soil and limestone hill. From year to year, their crops yielded less and less products. Suffering from the insufficient income, some had to leave or even sold their land and turned to be agricultural laborers in other villages or in the cities.

In 2002, the PTT commenced a mass relation activity in Huay Kayeng community. The development projects that have been implemented are as follows:

- Strengthened Community Project that encourages the community to analyze and determine its own way to solve economic and social problems.
- Future Youth Project, to form a group of young people who perceive and understand their own community profiles and can contribute to the development and conservation of the community environment.
- Forest Conservation Project, that cooperates with the community to conserve a 11,850 acre forest and its wild life in Huay Kayeng, Thong Phaphume district where the Yadana gas pipeline partially runs through.
- Western Thong Phaphume Research Project, that joins the Biodiversity Project of Thailand (BRT) in doing an area based-research on the biodiversity of flora and fauna in the 11,850 acre conservation forest and its nearby area to generate a knowledge that will lead to a sustainable conservation.

The chart of an overviewed vetiver cultivating activities by PTT since 1994.



These activities are implemented in accord with the Sufficient Economy philosophy bestowed by His Majesty King Bhumibol that emphasizes the self-dependent of a community. The concept of sustainable conservation has to be inherited to young people who will strengthen their own community and form a paradigm for the knowledge management.

Reinforced by many organizations, the PTT therefore conducted a vetiver cultivation project. Vetiver was cultivated in the community's private and public area in order to conserve water and improve the soil quality. The project that commenced in 2004 and has been implemented until present time is named "Vetiver Cultivation Encouragement in Huay Kayeng Community".

3. RATIONALE

The following objectives warrant the PTT's Vetiver Cultivation Encouragement in Huay Kayeng Community project.

- To apply and publicize His Majesty King Bhumibol's initiative of using vetiver to conserve soil and water. Evidenced by the experience in cultivating vetiver alongside the gas pipeline from the Gas Pipeline Project, the PTT thus confided to apply this successful activity to its mass relation-targeted community.

- To promote the self-reliant economy of the PTT's mass relation-targeted community according to His Majesty King Bhumibol's Sufficient Economy philosophy. This doctrine has been shown to relieve the sufferings during the 1997 economic crisis.
- To share and exchange wisdom with the community in the use of and benefit from vetiver. A cautious action together with the check and balance process should result in an efficient outcome and new knowledge.
- To encourage vetiver cultivation in the community. Interested visitors can learn and expand this knowledge to other areas.

4. STRATEGY AND IMPLEMENTATION

The PTT' strategies for the Vetiver Cultivation Encouragement project in Huay Kayeng were as follows:

- Public participation was applied in every steps of the process.
- The outward-oriented development was conducted in order to let the people appreciate the benefit from vetiver by themselves and willing to grow it.
- All applicable measures were employed to reinforce motivation. The PTT had to respond abruptly to the community's requests and assist the people to get rid of the obstacles.
- The feeling of the people's self-pride was promoted. Let them narrate their own success.

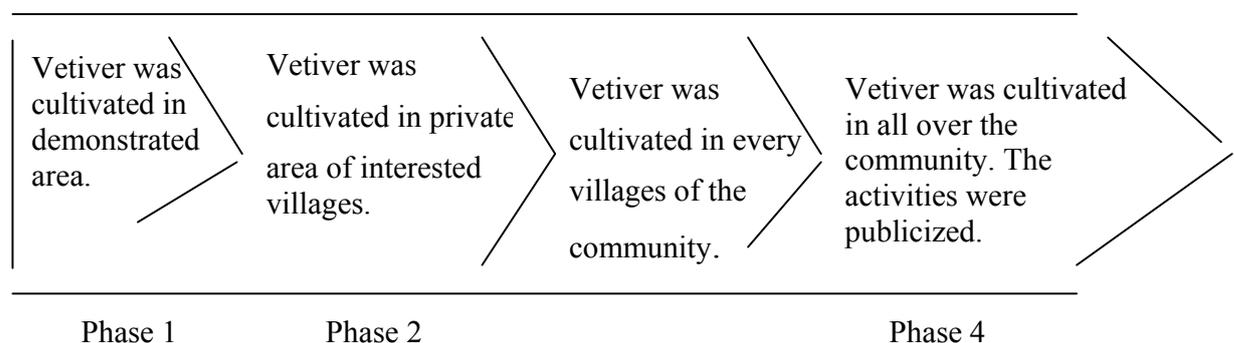
The implementation was divided into 4 phases as follows:

Phase 1 In order to show the benefit of growing vetiver, the grass was cultivated in the demonstration area selected by the community.

Phase 2 Vetiver cultivated in the private area of interested villages was encouraged. Motivation reinforcement was applied and every activity was closely observed.

Phase 3 Through public participation Vetiver was cultivated in every villages of the community.

Phase 4 Vetiver was cultivated in the appropriate community's area. All the activity steps and the accomplished success were brought to the attention of other national and international communities.



5. IMPLEMENTATION DETAILS

Phase 1: October 2003 – December 2004

- The PTT launched the project. An “Idea Sparkling” symposium was organized to introduce the use of and benefit from vetiver.
- A workshop was conducted for the community’s leaders and volunteers. They were brought to see a real vetiver cultivation area in ChiangMai in the north of Thailand.
- The community spent more than 5 months before it could accept the idea of vetiver cultivation. Meanwhile, the PTT staff continually added more information. Finally, the community decided to accept a demonstration plantation, which was settled at Ban Rai village. Vetiver was then cultivated in the selected area where the provided Karen chili, strawberry, lily and some fruit trees were cultivated. The motivation at this stage was the high market price of the products from those cultivated plants.
- The “Huay Kayeng’s Vetiver Cultivating Day” was organized. The vetiver stalks were distributed by H.S.H. Prince Bhisatej Rajani, the director of the Royal Project Foundation who also cultivated the grass together with the Huay Kayeng people.
- The PTT staff was assigned to observe the growth and development of the plants such as Karen chili, strawberry and some kinds of flower cultivated in the vetiver cultivated area.
- It was concluded that, at this first phase, an emphasis was put on the cultivation of valuable crop more than the vetiver. Then some farmers began to see the importance of soil and water conservation and also the benefit derived from vetiver. An intention to adopt vetiver cultivation into their own land was emerged as a result from participating in the first phase activities.

Phase 2: January 2005 – September 2005

- The first group of people who had seen the worth of vetiver cultivation in the demonstration area notified their agreement. Such a request of the community who simply saw the benefit derived from vetiver and agreed to cultivate it was such an “outward-oriented development” of the community itself without any commitment from outside. The PTT therefore organized a meeting to disseminate the information on to interested persons and informed that the company would sponsor the community’s vetiver cultivation and provide vetiver stalks with no limits.

- In the PTT's registration to be a vetiver cultivator, it was found that from 8 villages, 55 households participated. That was 4.18 % of all the community's households.
- The "Delivery of Vetiver Grass to Home" by the PTT was arranged.
- An expert who gave advice was sent to the house of each registered member.
- A PTT staff was assigned to full time stay in the village in order to monitor every activity steps and gave advice promptly.
- The vetiver cultivators were taken to Ranong and Surathani provinces where they could exchange their experiences with the ones who cultivated vetiver to conserve soil and water in the durian and mangosteen orchards.
- By applying what they learned in the educational excursion, the vetiver cultivators improved their techniques of vetiver cultivation as follows:
 - Vetiver was cultivated in a steep area to prevent soil erosion.
 - In the plains, vetiver was arranged as a circle around a tree and in a steep area, as a semicircle in front of a tree to conserve the soil surface. The moisture was also preserved by vetiver mulch.
 - The vetiver leaves were used as a component to make a compost fertilizer.
 - Vetiver was cultivated around vegetable beds and the vetiver leaves were used as mulch to cover the beds.
 - Young vetiver leaves of the low-land varieties such as the Srilanka or Sonkla 3 were used as cow feed and as bedding for piglets after birth.