

# PART 8

## WORKING WITH COMMUNITIES PLANNING AND IMPLEMENTING FOREST RESTORATION PROJECTS

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MOTIVATION IS FUNDAMENTAL  
COLLABORATION IS CRUCIAL  
PLANNING IS ESSENTIAL

*“Go with the people: live with them,  
learn from them, and love them.  
Start with what they know, build with what they have.  
But of the best leaders, when the task is accomplished,  
the people will say, we have done it ourselves.”*

- Chinese hermit-philosopher.





## RESTORING FOREST - REVIVING CULTURE



At Ban Mae Sa Mai, forest restoration has encouraged a cultural revival within the village. The villagers have adapted traditional ceremonies and initiated new cultural and social activities in response to the growing environmental awareness within their community.

Media interest generates motivation for forest restoration and pride in a community's cultural heritage. Left, village nurseryman, Naeng Thanonworakul peers through the viewfinder of a TV camera, during the filming of a BBC documentary at the village.



Peter Whitbread-Annarat



Peter Whitbread-Annarat

The village school children have formed their own bird watching club (above and left). They are trying to discourage bird hunting amongst villagers and are creating a bird sanctuary. FORRU provides technical support to this new group and Britain's Eden Project provided optical equipment and bird books.

At the end of each dry season, the villagers adapt an ancient ceremony to thank the spirits for helping to protect their planted trees from fire. Offerings of pork, whisky and paper money are made.

The villagers revived a traditional ceremony to pay homage to a "holy tree" (above) in one of the last fragments of natural forest in the Mae Sa Valley. In this way, they remind themselves of the importance of forests and the need to restore them.

Villagers, FORRU staff and forestry officials enjoy a shared meal (right) and build better working relationships after thanking the spirits for a fire-free dry season.



Peter Whitbread-Annarat

Ban Mae Sa Mai lies in a diverse forest landscape (above), which includes remnant natural forest, restored forest, agricultural land, water sources and village infrastructure - a good example of the new concept of forest landscape restoration (FLR), currently being promoted by the International Union for the Conservation of Nature and other organizations (see Box 7.1).



# WORKING WITH COMMUNITIES

## PLANNING AND IMPLEMENTING FOREST RESTORATION PROJECTS

Whilst it is essential that forest restoration is carried out using the best science available, human aspects are equally important. These include the motivation and resourcefulness of local people, as well as gaining the co-operation of government agencies. Without consideration of these social realities, even the most scientific forest restoration techniques may fail. Although FORRU-CMU is a research and education unit (not a social development organization), its staff has worked closely with local communities to test the feasibility of the restoration techniques developed by the unit. In 1997, FORRU-CMU established a model community tree nursery at Ban Mae Sa Mai, the largest Hmong village in northern Thailand, and worked closely with the village's conservation volunteer group to establish experimental forest restoration plots. FORRU's collaboration with this community, and subsequently with others, has allowed exploration of various social issues, including motivation, work practices and cultural sensitivities. Therefore, in this Part, we share this experience and present some guidelines on the organizational aspects of forest restoration. For a more comprehensive overview of the social aspects of forestry, please refer to the publication list of the Regional Community Forestry Training Centre (RECOFT) (<http://www.recoftc.org>).

### SECTION 1 – MOTIVATION IS FUNDAMENTAL

Economic benefits are the most obvious and measurable sources of motivation for villagers to participate in forest restoration. These include employment, harvesting of forest products, income generated from ecotourism development and so on. However, villagers often regard less tangible benefits, such as improvement of the environment (*e.g.* erosion control, water supplies *etc.*), maintenance of cultural traditions or political gain, as more important reasons to restore forest.

#### What are the economic motives for forest restoration?

Although some communities may volunteer their labour for forest restoration work, others may take the view that, individuals who work on the project are fairly paid. Therefore, project budgets should include salary payments for those who work full-time on the project (*e.g.* project organizers, nursery managers *etc.*) and daily rates for casual labour (*e.g.* for weeding, fire prevention *etc.*). If forest restoration is considered to be a community activity, in which all community members participate equally, then a contribution to the funding of community projects is appropriate, such as the improve-

ment of school buildings or water systems *etc.* In most projects, both forms of payment are made, since some tasks (*e.g.* planting) involve the whole community, whilst others are carried out by a few individuals (*e.g.* seed collection, nursery work *etc.*). This income can significantly boost the economy of a community. Direct payment is, therefore, a strong motivation for community involvement in forest restoration. It conveys the important message that forest restoration is a valuable activity, which is appreciated by society at large.

Many framework tree species identified by FORRU-CMU yield economic products such as foods, traditional medicines, firewood or timber and some have cultural uses in traditional ceremonies (see Part 9). Non-tree species that colonize restored sites, such as bamboo, honey bees, various fungi *etc.* are also valuable. Provided they are harvested sustainably, such products can provide significant financial incentives for forest restoration.

However, many communities, which could benefit from harvesting forest products, are situated within protected areas, where it is currently illegal (in Thailand) to harvest such products. The Community Forestry Bill (at the time of writing, still under review by the Thailand Government), if made law, would remove



restrictions on the harvesting of forest products in areas designated as community forests. However, no forest products could be harvested if there is no forest from which to collect them. Consequently, several communities are restoring forests now in anticipation of having them declared community forest, if or when the new law ever comes into force.

Forest restoration projects can also generate income as ecotourist attractions. Community leaders and NGO officers come to learn from them and academics come to study them. They provide excellent locations for school camps and study sites for student projects. The variety of habitats created attracts both birds and bird watchers. Income can be earned by providing accommodation, food and other facilities for this diverse range of visitors.

### **Can environmental benefits generate motivation?**

Most villagers are aware of the links between deforestation, soil erosion and deterioration of water supplies. Although deforestation in upper watersheds may have few consequences for communities in the immediate vicinity, it often causes siltation of rivers and flooding in communities lower down. These effects may cause conflict between upland and lowland communities, but they can also generate motivation for lowland communities to become involved in forest restoration projects, located many kilometers upstream. However, if watershed protection is to become a strong motivation for forest restoration, a greater understanding of the interdependence of the needs of upland and lowland communities must be developed.

### **Can cultural considerations encourage forest restoration?**

Yes. Forest products often play a vital role in local traditions, whereas the forest, or sacred trees within it, are often regarded as the homes of spirits. Forest loss can, therefore, affect a community's sense of identity and self-esteem. Cultural revival is, therefore, becoming an important motivation for forest restoration.

It is also possible for forest restoration itself to generate new cultural activities. For example, at Ban Mae Sa Mai, Hmong villagers revived a traditional ceremony to ask their guardian spirits for success with their forest restoration projects. At the end of each fire season, pork and whisky are offered to the spirits to thank them for protecting planted trees.

### **Can forest restoration be carried out for political gain?**

Yes. Politics can be the most compelling reason behind a community's participation in forest restoration – particularly the strengthening of land tenure rights. According to Thai law, any communities in protected areas may be evicted on the pretext that local people damage nationally important natural resources. Community involvement in forest restoration, therefore, sends an important message to the authorities - that local people *can* be responsible stewards of the environment.

Forest restoration can help to strengthen a community's claim to remain located within a protected area and can help to counter the image that villagers are the primary agents of deforestation.

In addition, ethnic minorities, who may be recent immigrants, can gain public support for citizenship rights, by contributing to national reforestation initiatives. At the local level, forest restoration helps to build better relationships between communities and local authorities.

### **How can motivation be sustained?**

Forest restoration projects require several years of commitment. Motivation can wane as people realize how much effort is involved. Sustained commitment by funding agencies and continuous technical support are both essential to maintain motivation.

Involvement of the community at all stages of the project, from planning to planting and monitoring, is essential to generate a sense of "community stewardship" of the project. Media interest in projects also generates a sense of pride, which helps to maintain motivation at the community level.



**Box 8.1**

**Pride and Politics: motives for participating in forest restoration**

At Ban Mae Sa Mai in northern Thailand, Hmong hill tribe villagers formed a partnership with FORRU-CMU to rehabilitate the watershed above their village, by experimenting with the framework tree species method. This project is demonstrating how scientific research and the needs of a community can be combined to create a model system for environmental education. Since Ban Mae Sa Mai is situated in Doi Suthep-Pui National Park, the villagers cannot legally exploit the planted trees economically – so what are their motives?

One of their aims is to improve the image of the village, since hill tribe people are often blamed for deforestation. The residents of Ban Mae Sa Mai aim to change that perception. They display considerable pride as they demonstrate to the project's many visitors how they have created closed canopy forest in three years, where formerly they grew cabbages. Now that some of the upper slopes are no longer farmed, the villagers have intensified their lychee orchards lower down the valley to maintain their income. They also earn extra income from an eco-tourism initiative, set up partly to cater for the growing stream of visitors to the project.

The planted areas are contributing to a nationwide project to restore forest on up to 8,000 square kilometres of degraded land to celebrate the Golden Jubilee of Thailand's King Bhumibol Adulyadej. So, this project also allows this ethnic minority to affirm its allegiance to its adopted country. The project's success was also publicly acknowledged by the Forest Department in 2000, with a silver award for tree care presented at the Queen Sirikit National Convention Centre in Bangkok.

Since they live in a national park, the villagers of Ban Mae Sa Mai risk eviction, as Thai law forbids people to live in national parks. Although enforcement of the law in this case is unlikely (since this is the largest Hmong village in northern Thailand), the villagers still feel the need to demonstrate to the authorities that they are capable of re-establishing and caring for forest in a protected area. Therefore, by restoring forest, the villagers re-assert their rights to Thai citizenship and to remain living in the national park.

Another powerful motivation for forest restoration is the preservation of water supplies. Thirty years ago, the village had to relocate from a site higher up the valley to its present location because the village's main water source dried up, due to forest clearance for crop production. Thus, the villagers are acutely aware of the link between forests and water and the importance of restoring forests in watersheds.

The villagers grow framework tree seedlings in their own community nursery and plant them out annually. They weed and apply fertilizer around the planted trees, protect them from fire and monitor their growth. Furthermore, the community also enforces its own regulations to prevent hunting and tree felling in the area, with fines for transgressors.

The village nursery and plots have become vital facilities for education, with frequent school events and workshops being conducted on site. Representatives from many other communities visit the village to find out how they too, can establish their own successful tree planting projects. Thus, the villagers of Ban Mae Sa Mai have converted their former cabbage fields into a classroom for forest restoration.



*A Hmong girl pots a tree seedling in Ban Mae Sa Mai's tree nursery. Providing a better future for children is a strong motivation for communities to restore forests.*



## SECTION 2 – COLLABORATION IS CRUCIAL

Forest restoration is rarely carried out by a single organization. Community groups, government departments, NGO's, funding agencies and technical advisers all play vital roles. Close collaboration among all these "stakeholder" groups is essential to maximize the benefits for all involved, ensure sustainability and prevent wastage of resources.

### Who are the "stakeholders"?

Stakeholders are individuals or groups of people that have any kind of interest in the area of land to be restored. They may also include those who may influence the long-term success of the restoration project, such as technical advisors, funders or government officials.

It is very important to involve all stakeholders in all stages of project planning and implementation. However, it is inevitable that different stakeholders will have different opinions about the eventual use of the restored forest and whose interests will be served by it. They may also disagree about which restoration methods will be most successful. The success of forest restoration programs often depends on resolving these issues early on in the planning process.

Any conflicts amongst stakeholders must be resolved through frequent meetings, at which records are kept for future reference. The purpose of these meetings should be to reach a consensus on a project plan, in which the responsibilities of all stakeholders are clearly defined to prevent confusion and replication of effort.

### How can collaboration be encouraged?

Even though different stakeholders may have different interests, common goals can usually be found. It is important to acknowledge the strengths and weaknesses of each of the stakeholders, so that a joint strategy can be devised, whilst allowing each stakeholder group to maintain its own identity. Once the capabilities of each stakeholder group have been identified, their roles can be defined and the tasks of each agreed upon.

This is often a tricky process, which is best carried out by a neutral person or organization that is familiar with the stakeholders, but not seen as authoritarian or gaining any benefit from involvement in the project. The role of the facilitator is to ensure all opinions are discussed, everyone agrees with the aim of the project and that responsibility for the various tasks is accepted by those most able to carry them out.

Collaboration is maintained when all stakeholders are content with the benefits they might receive from the project and believe that their contribution is beneficial to the project's success. When everyone is satisfied that they have had input into project planning, a sense of "community stewardship" of the project is generated (even though this may not mean legal ownership of the land or trees), which helps to maintain essential working relationships amongst the stakeholders.



*Planning together - FORRU-CMU staff, forest officials and Ban Mae Sa Mai villagers decide where to establish the first experimental framework species plots in 1996. Nearly a decade later, this collaborative partnership is still going strong.*



## SECTION 3 – PLANNING IS ESSENTIAL

The project plan defines the objectives of a forest restoration project; where it will be located and how it will be implemented. It is a working document, which allows for changes in the opinions of stakeholders, as new information becomes available, but each updated draft should represent the current consensus of all stakeholders. The act of writing and updating a project plan helps everyone to focus attention on the essential issues of **who** will do what, **when**, **where** and **how** and **how much it will cost** in terms of time, labour and money.

### What goes into a project plan?

A project plan must include a clear statement of objectives; a description of the site to be planted; the methods that will be used to restore forest to the site and a schedule of the activities to implement those methods. The plan should also include calculations of labour requirements and the costs of each activity.

### Objectives - why?

All activities depend on the project objectives. So, it is important that they are clearly defined and that they represent the consensus of all stakeholders. The objectives section of the plan should state the reasons why forest restoration is being carried out; the expected project outputs (*e.g.* forest products, water, political gains *etc.*) and who will benefit from them.

### Site description – where?

A detailed report on the site survey (see Part 7, Section 1) is an essential component of the project plan, so that land tenure issues are properly addressed and everyone understands the extent of the areas to be planted. This section of the plan should include a site sketch map (with GPS or map co-ordinates) and photographs of the initial condition of the site.

### Methods – how?

Review the various techniques described in this book and record which ones the stakeholders agree are the most appropriate to achieve the project objectives, considering the initial condition of the site.

### Work schedule – when?

An example work schedule is presented on the next page. Once the methods to be used have been agreed upon, they must be converted into a series of tasks, with dates assigned to each. Then, responsibility for carrying out each task can be distributed amongst the various stakeholders. It is a common mistake to underestimate the total time required to implement forest restoration projects. If trees are grown locally from seed, nursery construction and seed collection must begin 18 months to 2 years before the first planned planting date.

### How many people will be needed - who?

Forest restoration is hard work but, as with any arduous but worthwhile task, sharing the work amongst many people not only lightens the load, but also turns a chore into an enjoyable social event. The amount of labour available is the critical factor that determines the maximum area that can be planted each year.

Grand schemes, with ambitious aims to instantly replant vast areas, often fail because they do not take into account the limited capacity of local people to carry out weeding and fire prevention. It is better to plant small areas (which can be adequately cared for by the locally available labour force) annually, over many years, than to plant large areas in a single step and have the planted trees die of neglect.

Tree planting and aftercare, especially fire prevention, are usually organized as community activities *i.e.* the village committee requests that each family in the village provides one adult to work on each day that a scheduled task is carried out. The maximum area that can be planted each year, therefore, depends on the number



Table 8.1 An example work schedule. Once dates have been set for the tasks, add a column to record who will be responsible for organizing each one.

<b>Time relative to first planting event</b>	<b>Action</b>
2 years before	Stakeholder consensus reached. First draft of project plan. Start nursery establishment (Part 6, Section 1).
18 months before	Start seed collection and seedling production (Part 6, Section 2).
12-18 months before	Finalize plots to be planted in 1 <sup>st</sup> year (Part 7, Section 1).
6 months before	Check number of saplings ready for planting. Supplement with seedlings of local origin from other nurseries if necessary.
2 months before	Begin hardening-off (Part 6, Section 7); contact volunteer planters.
6 weeks before	Demarcate plot boundaries; mark natural sources of regeneration and slash weeds down to ground level (Part 7, Section 2).
1 month before	Label saplings to be monitored; prepare planting materials; apply herbicide (glyphosate) to re-sprouting weeds (Part 7, Section 2).
1 day before	Transport saplings and all planting equipment and materials to planting plots; brief planting team leaders (Part 7, Section 2).
	Planting event - early rainy season (June for northern Thailand) (Part 7, Section 3).
1-2 days after	Check quality of planting; adjust any badly planted saplings and remove any garbage from the planting site.
1-2 weeks after	Collect baseline data on trees to be monitored (height etc.) (Part 7, Section 5).
During first rainy season after planting	Weeding and fertilizer application every 4-6 weeks, as required (Part 7, Section 4).
End first rainy season	Monitor growth and survival of planted trees (Part 7, Section 5).
Start first dry season	Cut fire breaks; organize fire patrols. (Part 7, Section 4).
End of dry season	Monitor growth and survival of planted trees (Part 7, Section 5). Weeding and fertilizer application (Part 7, Section 4). Assess the need for maintenance planting.
1 year after	Maintenance planting – if needed.
2 <sup>nd</sup> rainy season after	Continue weeding, fertilizer application, as required.
End 2 <sup>nd</sup> rainy season after	Monitor growth and survival of planted trees (monitoring at this time provides the best prediction of likely overall success).
Subsequent years	Continue weeding in rainy season as needed, until canopy closure is complete. Monitor recovery of biodiversity and continue monitoring planted trees as needed (Part 7, Sections 4-5).

of participating households. As community size increases, an “economy of scale” comes into effect, meaning that a larger area can be planted with fewer days labour input from each household.

The labour needed for most tasks (except fire prevention) is area-dependent (*i.e.* the greater the area planted, the more days labour are needed). To prevent fires, teams of 8 or so fire

watchers are required to be on duty day and night, regardless of the size of the planted plots (from 1 to about 50 rai). For small areas, fire prevention uses more labour than all other activities combined. In larger communities, the sharing of fire prevention duties amongst larger numbers of households greatly reduces the labour input required per household (see Table 8.3).



AREA-DEPENDENT WORK		Person-days labour per rai		Total person-days labour required for areas of...		
		1st Year Planting	2nd Year Maintenance	1 rai	10 rai	50 rai
Site preparation	4 people/rai <sup>1</sup>	4	0	4	40	200
Planting	8 trees/person per hour over 6-h. 500 trees/rai <sup>2</sup>	10	0	10	100	500
Weeding and fertiliser application	4 people/rai 3 times year <sup>1</sup>	12	12	24	240	1200
Monitoring	2 people/rai (optional) <sup>3</sup>	4	2	6	12	24
Fire Breaks (2 years)	Depends on edge:area ratio <sup>4</sup>	-	-	4	12	28
<b>Total for area-dependent work&gt;&gt;</b>				<b>48</b>	<b>404</b>	<b>1952</b>
<b>FIRE PREVENTION (AREA INDEPENDENT)</b>						
		1st Year	2nd Year	1 rai	10 rai	50 rai
Fire lookout team and fire fighting	90 days; 8 people/day caring for up to 50 rai <sup>5</sup>	720	720	1440	1440	1440
<b>GRAND TOTAL&gt;&gt;</b>				<b>1488</b>	<b>1844</b>	<b>3392</b>

Table 8.2. - Estimated person-days labour required for each forest restoration task over two years. All tasks, except fire prevention, are area-dependent. A “rai” is the standard measure of land area in Thailand. It is 40 x 40 m. 1 ha = 6.25 rai.

<sup>1</sup> Adjust according to weed density.  
<sup>2</sup> Reduce if naturally occurring trees or live stumps are present.  
<sup>3</sup> Reduce for larger sites by sampling a few rai only.  
<sup>4</sup> Depends on the shape and distribution of the plots  
<sup>5</sup> Required both day and night.

At the outset of any forest restoration project, stakeholders must be aware of labour commitments both to plant the trees and to care for them until canopy closure occurs, after which no further maintenance is required.

Project planners must also address the crucial issue of whether labour will be donated voluntarily or whether daily rates for casual labour must be paid. If the latter, then labour costs will dominate the budget. From FORRU’s experience, if villagers really appreciate the benefits of forest restoration both to individual families as well as to the community, and have strong motivation, they are usually willing to work on a voluntary basis. Because fire prevention generates immediate broad benefits for the whole community, it is the activity most likely to be supported with voluntary labour.

Table 8.2 provides a template to aid calculation of labour requirements during the first two years after planting. After that, labour requirements fall considerably but vary, depending on the extent of canopy closure and weed sup-

Table 8.3 - Person-days labour required per household to restore forest to areas from 1 to 50 rai (including fire prevention) over 2 years.

Area planted (rai)	Number of households in community			
	10	50	100	200
1	149	30	15	7
5	165	33	16	8
10	184	37	18	9
25	242	48	24	12
50	339	68	34	17

pression. Therefore, from the 3<sup>rd</sup> year onwards, labour for weeding *etc.* must be individually reassessed, depending on the condition of each planted plot.

If work is declared a community activity, with each household required to provide one person for each activity, the total workload per household declines as the number of households in the community increases. Table 8.3 shows the number of person-days of labour needed from each household for different sizes of areas planted over 2 years.



## What are the costs?

Prices for materials and labour depend on local conditions. Here we can only provide a few guidelines to help you to estimate costs:

**Nursery costs** include i) nursery construction and equipment; ii) consumable materials and iii) salary or daily rates for a nursery manager and helpers.

Construction of a community nursery need not be expensive. Use of locally available materials, such as bamboo, can help keep costs down. A nursery lasts many years. So, construction costs represent only a small fraction of the total costs of tree production.

Reduce tree production costs by using local media such as rice husk and home-made compost instead of commercial potting mixes. Although many such materials are essentially “free”, don’t forget to factor in the labour and transportation costs of collecting them. The only nursery items, for which there is no effective natural substitute, are plastic bags or containers. Plastic bags cannot be used more than once, so the cost of the bag is the largest monetary cost of tree production.

One nursery manager should have overall responsibility for running the nursery and for ensuring that enough high quality trees are produced of enough species by planting time. This may be a full-time or part-time salaried position, depending on the numbers of trees to be produced. Casual labour may be voluntary or daily rates paid as required. Nursery work is seasonal, with the heaviest workload just before planting and lighter workloads at other times of the year.

At current rates<sup>1</sup>, a simple community tree nursery, with a capacity to produce 10,000-20,000 saplings per year, can be established for about 15,000-20,000 baht. Sapling production costs average about 2.0-2.5 baht per plant (including materials and labour). Therefore, the cost of the trees required to plant 1 rai is about 1,000 to 1,250 baht<sup>1</sup> (assuming a planting density of 500 trees per rai; =US\$162-203 per hectare).

**Planting, maintenance and monitoring costs** can be divided into i) materials, ii) labour and iii) transportation. Materials for planting include glyphosate herbicide, fertilizer and a bamboo pole and cardboard mulch mat for each tree planted. Add to the budget the cost of 1-1.5 litre of glyphosate concentrate per rai.

Half a 50-kg-bag of fertilizer is required for each rai with 4 applications in the first year and 3 in the second. Therefore, add the cost of 3□ bags of fertilizer per rai. Corrugated cardboard for mulch mats can be bought by the kilogram at recycling centres, but ask local shop-owners to donate their cardboard waste to the project. Bamboo stakes may be bought or cut from degraded areas by local labour. At current rates<sup>1</sup>, the cost of these materials amount to 2,000-2,500 baht per rai (assuming 500 trees per rai).

Labour is the most costly budget item, with fire prevention being the largest labour cost. Therefore, the financial viability of forest restoration often depends on the extent to which paid labour can be replaced with volunteers. It is usually easy to find people from local schools and businesses to help out on planting day. Fire prevention is usually designated a voluntary “community activity” by village committees. Therefore, weeding and fertilizer application are the two activities that are most likely to require paid labour.

To calculate labour costs, begin with the figures in Table 8.2. Look at the suggested labour per rai required for site preparation, planting, weeding and fertilizer application, monitoring and fire-break cutting. Remove any activities, for which voluntary help can be obtained. Then recalculate the total number of days labour required per rai over two years. Multiply that number by the number of rai to be planted and then by the local daily labour rate to get the total cost of area-dependent labour. Next, consider the size of the fire prevention team needed. In northern Thailand, fire prevention is usually necessary for 90 days from mid-January until the end of April, 24 hours per day. Multiply the number of people on the fire prevention team by the number of days required and the daily labour rate to get the total fire prevention costs per year. Transportation costs depend on the distance from the nursery to the planting site and must be calculated individually.

Provided that at least fire prevention is done voluntarily, current total costs in Thailand, amount to approximately 10,000 baht per rai (=US\$ 1623/ha), including tree production and all materials and labour for planting, maintenance and monitoring over 2 years. If all field labour is voluntary, the price of trees and materials totals 3,500 baht per rai (=US\$ 571/ha)<sup>1</sup>.

<sup>1</sup>Cost calculations made in 2005