Community Integrated Pest Management in Indonesia

Institutionalising Participation and People Centred Approaches

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Contents

ANNEXES

Acronyms

AR	Action Research
BPH	Brown Plant Hopper
CIPM	Community IPM
FSG	Farmer Study Group
FAO	Food & Agriculture Organization of the UN
FTOT	Training of Trainers of Farmers
GMO	Genetically modified organism
ICP	Inter-country Programme
IIED	International Institute for Environment & Development, UK
IPB	Institute of Agriculture (Indonesia)
IPM	Integrated Pest Management
IPPHTI	Indonesian IPM Farmers' Association
IRRI	International Rice Research Institute
LSD	Lembaga Sosial Desa (Village Social Institution)
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
NLG	National Learning Group
PHP	Pest observers
PLA	Participatory Learning and Action
PRA	Participatory Rural Appraisal
PPD	Plant Protection Department
PPL	Extension workers
SLPHT	Sekolah Lapang Pengendalian Hama Terpadu (Integrated Pest Management Farmer's Field School – IPM FFS)
TAP MPR	Ketetapan Majelis Permusyawaratan Rakyat (Decision of People Consultative Assembly)
TOT	Training of Trainers
TRIPS	Trade Related Intellectual Property Rights
USAID	United States Agency for International Development
WTO	World Trade Organisation

Glossary

Sawah	Paddy field
Rumbaian	Panicle or tassel of the paddy plant
Gadung	A kind of poisonous cassava
Menthek	(Javanese language) A kind of pest that makes young paddy plant to be swift
Kepinding Tanah	Nezara viridula
Matun	Mow the paddy field
Bawon	The wage system of the harvest which is the labour being paid by the gain.
P3A	Perkumpulan Petani Pengelola Air (Farmer's association for water management)
Gulma	Weeds
Garu-Luku	(Javanese language) Plough
Pranata mangsa	The Javanese traditional farming calendar system based on season
Petung	The traditional wisdom of calculation system to provide the best time in doing everything
TS	or TsP Trysodyum Phosfat (the type of the chemical fertilizer)
Sego Megono	Traditional meal for Javanese ritual initiation (the mix of rice and jackfruit)
Ler	The step after plough, plain the land before to be planted
Sundep	Scirpophaga innotata
Sepet	Coconut loafer
Selapanan groups	The group that meet in every selapan (35 days).
PB	(Abbreviation) Padi Baru, the hybrid rice varieties
Mitra Tani	The name of an NGO that works on farmer rights issues. Mitra Tani based on Yogyakarta province.

Executive Summary

Integrated pest management emerged in Indonesia in the late 1980s as a reaction to the environmental and social consequences of the Green Revolution, whose centrally designed and imposed packages did not fit well with diverse, locally-specific ecological conditions and undermined farmers' own knowledge of how to manage their farms. Following a devastating pest outbreak brought about by the use and abuse of pesticide applications in rice farming, the government introduced a national IPM programme in 1989. This focused on improving the technical knowledge, organisational ability and management skills of farmers, pest and disease observers, extension personnel and bureaucrats. A cooperative programme between the United Nations Food and Agriculture Organisation (FAO) and the Indonesian Government specifically pioneered methods for training rice farmers to understand plant-pest ecology.

The FAO programme centred on farmer field schools (FFS) which are schools without walls. Its aim was to make farmers experts in their own fields, enabling them to replace their reliance on external inputs, such as pesticides, with labour management, skills and knowledge. Over time the emphasis of the programme shifted towards community organisation, community planning and management of IPM, and became known as Community IPM (CIPM). This broadening of IPM to encompass the community has evolved as farmers, and the programme, realised that growing a healthy crop involves addressing a range of issues that affect the whole (local) agricultural system and the communities who depend on farming for their livelihood. The goal of this strategy is to institutionalise IPM at the local level.

This study assesses the extent to which Community IPM has been institutionalised in Java (Indonesia) by examining three areas of change:

1. Policy reforms at national and local levels.
2. Social and environmental impacts of Community IPM in a variety of local settings.
3. Organisational changes within government bureaucracies, FAO and other support agencies.

Participatory research methods were used by multidisciplinary and inter-organisational teams of researchers to analyse policies, organisations and impacts. The inquiry was carried out within the broad tradition of Participatory Action Research (PAR); the aim was not only to conduct research, but in the process to also bring about political change and the empowerment of those involved.

Main findings

Policy reforms

The research found that there is clear evidence that policies and legislation have both positively and negatively influenced the spread of participation and the institutionalisation of Community IPM. Initial high level policy support for IPM had its roots in an ecological and political crisis. The creation of this policy space from above was critical in giving birth to what was to become Community IPM. Several other government policies which indirectly supported and promoted greater farmer participation included:

- Reforms that reduced or minimised the role of the military in politics and in the everyday life of farmers.
- A new emphasis on strengthening civil society and human rights.
- Decentralisation policies and the financial decentralisation laws, which opened up space for farmer groups to carry out advocacy and to organise at district level.
- Abolition of the floating mass policies which banned political parties from operating in rural areas.

Other policies are inhibiting the expansion of Community IPM. These include inequitable property rights over land and other natural resources; the current drive for economic growth based on the free market and agricultural trade liberalisation; and a new approach to food production which emphasises agribusiness, land consolidation and contract farming.

Impacts

The impacts of scaling up and institutionalising Community IPM have been remarkable. Over one million rice paddy farmers are now involved in this national programme in Indonesia. Through its emphasis on farmer to farmer training, action research, policy dialogue and other participatory processes, Community IPM has transformed livelihoods through security of income, food supply, health and a more

invigorated rural civil society. It has also strengthened social assets by supporting farmers' efforts to build associations and networks, giving them a stronger voice and improved means of collective action and mutual aid. Beneficial environmental impacts include significantly reduced pesticide use, increased biological and genetic diversity, and a more holistic approach by farmers to maintaining the complex ecological balance of rice agroecosystems.

However, the degree to which gender issues have been taken into consideration in large scale Community IPM is not clear cut; more is now being done to address this complex area.

Organisational factors

The research examined the role of external support organisations in the spread and scaling up of Community IPM. While farmers' organisations or farmers' groups have been key for the spread of Community IPM, many external organisations have also played a role, especially the FAO Technical Support Unit. Part of the success of this Unit was its emphasis on learner centred and process oriented approaches, rather than on fixed blueprints driven by targets and indicators imposed from above. It also practised its deep belief that 'farmers can do it' and thus pursued farmer led processes. The Unit was key in fostering new attitudes and skills among pest observers and extension workers. Before being assigned to the field, government staff were specially trained in adult education and participatory methods. As an organisation, the FAO Unit was also able to be relatively flexible and responsive, developing new curricula and matching capacity building with evolving farmer needs.

However, the research found little evidence that the culture and practice of participation in the Community IPM Programme has fundamentally influenced the higher levels of government bureaucracies, which are still top down in their approach to development. This was a deliberate strategy on the part of the Community IPM programme, which was acting on the assumption that only farmers can 'institutionalise' FFS activities and that the adaptive management of complex agroecologies needed first and foremost a community level focus. This emphasis on sustainable institutionalisation at the village level is particularly noteworthy because most donors and external support agencies have relatively state-centric views of 'institutionalisation'. The Community IPM experience suggests alternative possibilities for the scaling up and mainstreaming of good practices and innovations.

The clearest signs of organisational change are to be found within provincial, district and sub-district level government departments. These more local arenas for change are important because farmers in the sub-district have always been on the receiving

end of policy. In many sub-districts, IPM farmers have started a farmers' civil society movement, and have influenced district and local policies, re-orienting agricultural development activities towards more sustainable practices.

Main conclusions

The study finished by identifying the key enabling conditions and drivers for change for Community IPM in Indonesia:

1. Policy spaces from above and below. Enabling national policy decisions by the State were complemented by farmer led attempts to contest and shape policies from below.

2. Actors with emancipatory values, attitudes and behaviours. The history of IPM shows that innovative, charismatic and/or dynamic people have championed changes in policies, field practices, training and organisations. Field observations in this study also highlighted the central importance of professional attitudes and behaviour in enabling or inhibiting the scaling up of people centred IPM innovations/projects.

3. Farmer centred learning and critical education which promotes ecological knowledge for sustainability, both among farmers and those who work with them.

4. Enabling organisations which emphasise farmers' abilities, promote organisational learning and which are flexible in their structure and procedures.

5. Existence of safe spaces where farmers can get together, share problems and decide on action. Linking together these safe spaces and local groups into broader federations has helped farmers capture power back from centralised, top down agencies.

6. A context in which farmers have some control over funding decisions and allocations made by local, national or international funding bodies.

Research leads to action

The commitment of the research team to the principles of participatory action research led it to not only analyse impacts, policies and organisations but also to actively influence policy processes and institutions. Discussions involving all relevant actors in the research, including representatives of government, NGOs, farmer organisations, academic institutions and the media, resulted in a decision to package the variety of issues and problems facing small farmers into one statement: the need for Indonesian "peasants/farmers' rights to be protected from the Green Revolution".

This led to a variety of campaign strategies, including a national IPM farmers' congress and the development of a charter for peasants' rights (see Annex 5 of this report). These activities, together with the strengthened voice of farmers brought about by the Community IPM process, have built a groundswell of support for a national peasants' movement in Indonesia.

1. Introduction

The Indonesian Integrated Pest Management (IPM) programme is an example of a large scale participatory approach to the management of complex agroecological dynamics. Farmers are engaged in self discovery learning and other Farmer Field School (FFS) activities in a search of safer and more ecological forms of pest management in rice agroecosystems. Over one million rice paddy farmers are involved in this national programme in Indonesia.

In recent years, with the emphasis shifting to Community IPM, the programme has provided a range of support to farmers' organisations active in local advocacy issues. The broadening of IPM to encompass the community has evolved as farmers, and the programme, have learnt during the last decade that growing a healthy crop involves addressing a range of issues that affect the whole (local) agricultural system and the communities who depend on farming for their livelihood. These issues, which affect the welfare of farm families and local environments, include management of irrigation, processing and marketing, and land certification. Generally, these issues have been under top down control for more than 30 years, with farmers having no voice in a system mired in widespread deception and corruption.

The Indonesian Community IPM programme was chosen as one of the case studies for the IIED-IDS action research on *Institutionalising People Centred Approaches and Participation in Natural Resource Management*. The overall aim of this case study was to identify how, and under what conditions, participatory natural resource management can be scaled up and institutionalised. The study used a Participatory Action Research (PAR) approach to analyse and reflect on:

- institutional dynamics, procedures and cultures of bureaucracies that make policies, plan, implement, monitor and evaluate the IPM programme interventions;
- institutional dynamics of community-based organisations and supporting institutions involved in these IPM interventions;

- well-being and livelihood security of vulnerable social groups who are frequently marginalised by large scale development initiatives, such as women, low income people, and landless or near-landless farmers;
- state of the physical environment and natural resources in which these participatory programmes and projects have been implemented; and
- policies that influence the dynamics of large scale participatory processes.

This report first describes the research methodologies used. The main outcomes of both the analysis and the PAR process are then presented, drawing on the voices of different actors involved in learning and action. Emerging conclusions and lessons learnt for the institutionalisation of people-centred processes and participation are brought together in the final part of this report.

1.1 A history of IPM in Indonesia[1]

Three decades ago, an immense social and economic experiment was launched in Indonesia. The experiment, which has subsequently come to be known as the Green Revolution, was largely based on an 'engineering' approach to smallholder agriculture. The main assumption of the approach was that small scale farm productivity could be raised if farmers had better access to certain inputs and used them according to a set of prescribed instructions. This approach was most successful when farmers had access to improved irrigation systems, improved varieties of rice, wheat, and corn, and increased availability of inorganic fertilisers for the nitrogen responsive improved high yielding varieties. Small farmers, particularly those in well-irrigated areas with good soils, responded positively to the opportunities that easier access to these inputs presented. Farm productivity increased substantially. The average rice yields in the region doubled between the 1960s and the 1990s.

However, the centralised agricultural research and extension systems were unable to take into account the pronounced agroecological diversity within Indonesian regions and even within villages. The inclusion of routine pesticide[2] applications in the input packages often caused severe ecological disruptions, most notably the rise of pest resurgence and resistance. Rather than reducing production risks for small farmers,

1. This section draws on John Pontius et al (2002).
2. Pesticides are chemicals that are used as biocides to suppress unwanted organisms. They include herbicides, fungicides, bactericides, insecticides, rodenticides, and so forth. Usually the 'active ingredient' in a pesticide is also toxic for other organisms than the one for which it is intended. The herbicide Paraquat, is a favourite means of suicide in some Asian countries. In rice, the main pesticides used are insecticides. Pesticide use can usefully be examined in the context of different approaches to pest management: (1) industrial and green revolution; (2) IPM; (3) organic agriculture informed by agroecology (Pimbert, 1991).

the input packages frequently generated new, more serious, threats to the sustainability and profitability of small scale cultivation. Together with this ecological disruption came new threats to farmer health and the introduction of millions of tons of poisonous substances to the fields, waterways, food, and homes of rural people.

The inability of Green Revolution programmes to tailor input use to local conditions extended beyond pesticides to inorganic fertilisers and seeds. Centrally designed packages did not fit well with diverse, locally-specific soil conditions. The top down extension of these packages did not give farmers the knowledge they needed to adjust them to their fields. Improved varieties were also introduced uniformly without assessment of local needs and conditions. In many regions, production risks were often actually increased while local biological diversity was dangerously reduced. As a result, variation in yields increased in step with average yields and the marginal productivity of physical inputs began a long downward trend. More and more inputs were needed to achieve ever smaller incremental increases in production per unit area (Kenmore, 1991).

Of equal, if not greater importance, were the social implications of the engineering approach to farming systems. The government agencies that sprang up to disseminate Green Revolution technologies were target oriented and often rigid in their interpretation of their mission. The pressure that these agencies put on small farmers to use inputs in accordance with centrally determined recommendations contributed to a 'de-skilling' of rural communities. Farmers were expected to be 'progressive' and 'adopt' new technologies rather than be active innovators. The traditional multi crop *tumpang sari* system was considered unproductive and therefore replaced with the monoculture crop of paddy. Traditionally important and informal uneducated agriculture advisers known as *mantri tani* were also replaced by formal, more 'educated' agriculture extension government workers of PPL.

Moreover, the Green Revolution influenced political dynamics within rural areas. Military staff were posted in villages. The government introduced new institutions and organisations to mobilise farmers and other villagers. A floating mass policy was adopted, banning political parties from operating in rural areas. The traditional independent farmers' forum and civil society organisations of *rembug desa* were replaced with the "Village Council" of LSD (Lembaga Sosial Desa). Later on the government replaced this with a quasi-government controlled village level governance organisation (the LKMD).

The ecological base of this edifice was vulnerable and lacked resilience. In the early years of intensification, rice crops were sprayed three to four times each season. By the mid-1970s, pest outbreaks became common in rice monocultures and paddy

fields were destroyed in many areas. Heavy pesticide applications could not protect the paddy. At the same time, cases of pesticide poisonings increased. Many farmers died from the unsafe use of pesticides in rice and its associated crop rotation systems.

> *"I had a miscarriage when I was 30. My pregnancy reached 3 months by the time; still I had to work in vegetable farm near my house. The accident took place one week after I sprayed mixture of insecticide* Dursban 20 EC *and fungicide* Antracol 70 WP. *I saw stars and I felt my entire body limp by the time. A moment later, I vomited. Then I was carried to the hospital. They told me that I was intoxicated and my future child was hopeless...,"* said a woman peasant in Padang Luar, Wets Sumatera Barat (Resiko-Resiko Kimia dan Janin, PAN Indonesia, 1995).

Pest problems significantly increased and a previously minor pest, the Brown Plant Hopper (BPH), became a major problem through the destruction of its natural enemies. A serious BPH outbreak devastated most rice growing areas in 1986. These massive BPH outbreaks were largely induced by a policy that subsidised pesticides to the tune of US$100 million a year.

1.2 The IPM Programme

This massive BPH outbreak led to a presidential decree in 1986 which contained three major measures:

1. Pesticides were only to be used when other methods of pest control had been proved to be ineffective.
2. Types of pesticides and methods of application should take into account the need to conserve natural pest enemies.
3. Pesticides that might cause pest resurgence and resistance or other damaging side effects were banned altogether.

This resulted in banning the use of 57 brands of pesticide on rice and also led to the establishment of a national IPM programme in 1989. This programme aimed to increase the capacity of farmers and field workers to make sound field management decisions based on IPM principles[3]. National priority was given to improving the

3. Integrated Pest Management (IPM) seeks to combine a range of complementary pest control methods in a mutually enhancing way. IPM can rely on five control methods: 1) cultural pest controls (e.g. the manipulation of sowing and harvest dates to minimize pest damage, intercropping, crop rotations); 2) host plant resistance (the breeding of crop varieties that are less susceptible to pests); 3) biological control (e.g. the conservation of natural enemies, introduction of exotic organisms); 4) the wise and judicious use of pesticides along with information on economic thresholds; 5) legal control (the enforcement of measures that range from quarantine to land management practices on a wide area).

technical knowledge, organisational ability and management skills of farmers, pest and disease observers, extension personnel, bureaucrats in key ministries and the public. The FAO/Government Cooperative Programme on IPM was initiated around this time and pioneered methods of training rice farmers to understand plant-pest ecology. Farmer training in rice IPM emphasised four principles in particular:

1. Grow a healthy crop
2. Observe the fields weekly
3. Conserve natural enemies
4. Farmers are IPM experts

The aim of the FAO programme was to make farmers experts in their own fields; farmers cannot simply cut their use of external inputs, such as pesticides, and still expect to maintain output. External inputs must be substituted by labour management, skills and knowledge.

The FAO programme centred on farmer field schools (FFS) which are schools without walls.

The core activity of these schools is field observation. Farmers are encouraged to observe their fields carefully and to use visual methods for analysis (diagrams, maps etc.). For example, in a method known as agroecosystem analysis, farmers draw the rice plant in the centre of a large piece of paper, and include details of tiller numbers, diseased leaves, water level, rat damage, weed density and insect pest and predator population densities. The drawing is then used as a focus for discussion and for making pest management decisions. Insect life cycles are explored by rearing insects in an insect 'zoo'; this is also used to observe predation and parasitism. Dyes are used in knapsack sprayers to show farmers how much pesticide contaminates them when spraying. Farmers are also encouraged to experiment with planting times, varieties, cultivation practices, rotations and biological controls to explore their effects on pest populations.

1.3 From IPM to Community IPM

In the so called 'rice bowl provinces', which include North Sumatra, West, Central, and East Java and Yogyakarta, the emphasis of the programme shifted towards community organisation, community planning and management of IPM in the mid 1990s, and became known as Community IPM (CIPM). Community IPM is a strategy in which the Field School is a first step in the development of a community's

BOX 1

Important benchmarks in the development of Community IPM in Indonesia

1986 Presidential decree banning use of 57 pesticides in rice production, eliminating pesticide subsidies, and establishing IPM training for farmers

1989 First training of trainers (TOT) for IPM Field Trainers

1990 First FFS
First IPM training collaboration with NGOs
First Farmer to Farmer FFS, initiated by farmers
First IPM provincial policy decrees establishing working groups, defining IPM four principles, identifying FFS as training approach

1991 Pilot Action Research Facility in Karawang West Java
First health studies
First impact studies
First local government funding for FFS implementation

1992 Indonesian trainers support TOT in Vietnam
First follow-up activities to FFS – participatory planning, farmers conducting studies, fora for sub-district alumni communications.
First IPM gender studies

1993 First full Action Research Facility for Farmers

1994 First national programme supported TOT for farmer IPM trainers
First programme supported system of alumni communication fora
IPM field management system established

1995 First programme funded farmers' studies
First sub-district IPM farmer association established

1996 First farmer IPM trainer workshops
First provincial IPM farmers' congress
Ban of 28 active ingredients in pesticides

1997 First alumni planning workshops

1998 First participatory impact studies

1999 First National IPM Farmers' Congress
Indonesian IPM Farmers' Association established (IPPHTI)

sustainable management of its shared agricultural and ecological resources. The goal of this strategy is to institutionalise IPM at the local level.

In moving to more farmer centred, participatory processes, CIPM is seen as a set of techniques, practices and policies that simultaneously increase farmers' skills in ecological crop management, reduce farmers' reliance on expensive off-farm inputs, protect agricultural biodiversity, help meet agricultural pollution prevention targets and help influence policy.

One of the strategic aspects of the IPM programme in Indonesia has been the reproduction of facilitators through Training of Trainers (TOT) programmes. The first TOT for Farmer IPM Trainers was piloted in 1992, a response to the fact that IPM trained farmers were already beginning to train other farmers. The TOTs focused on strengthening the leadership abilities of farmers selected as Farmer IPM Trainers. By 1994, Farmer IPM Trainers were integrated into programme field activities. In 1994-1995 about 30% of the Field Schools were being conducted by *Petani Pemandu* (local facilitators). The percentage rose as high as 50% in the ensuing years. Today there are over 10,000 local facilitators in the 12 provinces training farmers in rice IPM.

The IPM programme in Indonesia has thus been an evolutionary process. From a project aimed at controlling pests has emerged a farmers' movement. A time line and key moments in the history of the IPM programme are shown in Box 1. There are close to one million farmers involved in Community IPM in Indonesia today.

After more than 20 years of training farmers in Indonesia and Asia, the FAO Programme came to an end on December 31st 2002 with the discontinuation of all staff contracts. The FAO Programme was reviewed in November 2000 by an independent team of experts who recommended the creation of a new organisation to take a leading role in the further development and broader application of the Farmer Field School and Community IPM (FAO, 2000). Support for farmer empowerment, sustainable rural livelihoods and ecological agriculture continues through the work of a new regional and independent organisation called The Field Alliance (www.thefieldalliance.org). Moreover, IPM programmes are also implemented through the Government of Indonesia's departments of Agriculture and Extension.

In the next section we describe our research methodology for assessing the degree to which Community IPM has been institutionalised in Indonesia.

2. Methodology

Evidence of the extent to which Community IPM has been institutionalised in Indonesia was triangulated by examining three areas of change:

1. Policy reforms at national and local levels.
2. Social and environmental impacts of Community IPM in a variety of local settings.
3. Organisational changes within government bureaucracies, FAO and other support agencies.

Participatory research methods were used by multidisciplinary and inter-organisational teams of researchers (see below) to analyse policies, organisations and impacts. The inquiry was carried out within the broad tradition of Participatory Action Research (PAR) (see Table 1) (Smith et al, 1997).

Some of the key research questions that guided the Participatory Action Research process in Indonesia are shown in Box 2. The information generated was also used to better understand how, and under what conditions, participation in natural resource management can be scaled up and institutionalised.

2.1 Learning Groups

The core research team was composed of three REaD[4] staff, one representative from the Agrarian Reform Consortium, and two Mitra Tani staff (Annex 1). This core team prepared and coordinated the research, which was carried out at two levels, or 'channels'. Participatory action research (Table 1) was carried out along two channels. The first channel, or North Channel, conceptualised and facilitated the policy analysis of agricultural issues. The second channel, or South channel, was more concerned with grassroots activities and impact assessments. The core team started the process by doing the policy reviews and literature studies, and set up multi-stakeholder learning groups at both national and local levels.

4. REaD or Research, Education and Dialogue.

BOX 2

Box 2. Key research questions

At its most basic level, this action research explores six related sets of questions:

1. Conditions

- What internal and external factors inhibit or facilitate the spread of participatory processes and approaches from a small scale (pilot area or local level) to a large scale (countrywide programme or nationallevel)?
- What are the basic economic, social, political and institutional conditions under which participatory processes and approaches may be scaled up and institutionalised effectively?
- What policies and legislation influence, positively or negatively, the spread of participation in natural resource management (NRM)?
- What are the appropriate time frames for institutionalising and scaling up participatory approaches in different areas of NRM?
- What kinds of funding arrangements (e.g., funding priorities, levels and patterns of disbursement, forms of accountability, etc.) best support the shift towards more participatory NRM processes?

2. Capacity building

- What kinds of training, capacity strengthening and follow up are necessary to create the right 'skills mix' for staff of public agencies to use participatory approaches for NRM effectively on a large scale?
- What types of individual and organisational capacity building need to occur before participatory decision making processes can be institutionalised in local and external organisations?
- What are the institutional, pedagogical and resource implications of participation for organisations responsible for training the next generation of development professionals involved in NRM (e.g., universities, technical schools and training organisations)?
- What role does capacity building play in institutionalising participatory approaches to NRM and what is the gap between expected impact and actual impact?

3. Attitudes and Behaviour

- What incentives (e.g., economic, professional, social, etc.) act as catalysts for the spread and scaling up of participatory processes in large agencies?
- How do the organisational norms, operational procedures and cultures of bureaucracies change when agencies adopt participatory approaches?
- How do the attitudes and behaviour of officials and professionals change when they become involved in the use of participatory approaches, and what are the factors that encourage or bring about these changes?

4. Democratisation, Governance and Equity

- To what degree are gender and equity issues taken into account in the scaling up of participatory approaches in both external and local organisations?
- To what extent are the groups involved in the formulation, implementation and evaluation of participatory processes representative of the constituencies they are meant to serve (in terms of gender, social position, resource access, etc.)?
- What forms of governance (at board and management levels) can best integrate participation, gender and equity concerns in large, public bureaucracies?
- What might be the corresponding forms of democratic governance in village organisations and users groups involved in participatory NRM?

BOX 2, contd.

5. Impacts

- How do the key stakeholders (e.g., policy makers, field staff, local people, etc.) measure improvement (e.g., indicators, standards, methods)?
- What is the impact of scaling up of participatory processes and approaches, over space and time, on the:
- social dynamics, livelihood security strategies and well-being of low-income rural and urban groups and local organisations?
- organisational dynamics, operational procedures and cultures of large, public bureaucracies?
- nature of development assistance and the delivery and quality of aid?
- status of natural resources and ecological conditions?

6. Policy and Practice

- What are the most effective points of leverage for scaling up participatory approaches from a micro/local-level to macro/national-level?
- What are the policy, operational and resource implications for external support agencies, such as donors, committed to promoting the institutionalisation and scaling up of participatory processes and approaches in government bureaucracies?
- What effects do conflicts between national policies that work for people and sustainable NRM and those that frequently work against them (e.g., structural adjustment, trade liberalisation, land tenure, etc.) have on the institutionalisation process and the ability of government bureaucracies to operationalise and apply participatory approaches on a large scale?

Source IIED-IDS, 1999

The National Learning Group (NLG), or the National Alliance in NGO terms, was interdisciplinary and inter-organisational, consisting of key agency staff, academics, development practitioners, civil society representatives and donors. These people were from varied backgrounds and interests—organic farming development, integrated pest control, adult education, land reform, fair trade and gender mainstreaming, academics and government staff. The NLG's role was to:

- guide and contribute to the participatory action research
- help discover organisational and field-level needs that demand new approaches and methods
- assist in developing and refining these approaches and methods and support the scaling up of their use
- facilitate an action oriented and dynamic process of critical reflection, accelerated learning and innovation for policy and organisational change

Despite the group's diverse composition, it was united by members' commitment to a participatory action research (PAR) approach and to policy reform. By using PAR

TABLE 1

Comparison of PAR with other forms of research

	Empirical-Analytic Inquiry	Interpretive inquiry	Liberatory Inquiry (e.g. PAR)
Purpose	Experimental science in search of causal explanations and laws in order to make predictions	Interpretive science in search of subjective meanings and understanding in the world of lived experience	Liberating (humanising) science to create movement for personal and social transformation in order to redress injustices, support peace and form democratic spaces
Nature of Reality	A unique, real, social world exists to be studied by independent observers. Recognition is given to distinct, positive facts and observable phenomena	Pluralistic and relativist (multiple realities dependent on individual's perceptions) People make purposeful acts based on their perceptions of feelings and events and so shape their realities by their behaviour	The social world is humanly and collectively constructed with and within a historical context. People are active subjects in the world and are constantly in relationship of power: with the self, with others, with nature
Nature of Knowledge	Objective truth exists. Objectivity (detached neutrality) and value-free science is possible and desirable. Logical, deductive, rational findings. Knowledge is an end in itself	Knowledge is a social, subjective construction. Language contextualises the meaning of data. The method used justifies the knowledge produced	People can change their levels of consciousness through learning. Objectivity does not exist. Fundamental human needs drive the process of inquiry. Holistic dimensions of knowing
Methods	Experimental. Begins with a hypothesis. Validity and reliability are important. Defined time frame. People are "objects" of study. Quantitative data produced. Frequently dependent on complex statistics. Theory and practice are not directly related	Interactive, sometimes close, processes between researcher and subjects are needed to obtain meaning-ful data and insights into human behaviour. Qualitative data produced. Examples of methods: interviews, participant observation, case study, grounded theory	Dialectic of praxis (action-reflection process) within the historical and social context. Participants are active with ownership over questions, objectives, process. Many different, often creative methods e.g. interviews, drama, songs, PRA methods, video
Knowledge Produced	Technical, instrumental	Interpretive, interactive	Critical, spiritual
Values Reflected	Deterministic application: people are prepared for a given form of social life. Concerned with "maintenance or evolutionary change of status quo". Greater efficiency and control over behaviour and the environment	Humanistic application: "growth metaphor with self-actualisation of individuals within meritocratic forms of social life"	Transformative process. Belief in people's capacity to work together for equitable decision making and fair distribution of resources. Authentic commitment over the long term is needed to achieve individual and group-community empowerment

Modified from Smith et al, 1997.

the core research team aimed to further critical consciousness and empowerment as well as produce new knowledge. The learning process aimed for a concerted effort to build stakeholder involvement into every stage of the action research, from research design and methodology to management, facilitation, synthesis and advocacy on policy and organisational change.

BOX 3

A time line of activities by the NLG and researchers

Phase I: Project Preparation and Literature Review (January-March 1999)

Recruit research staff and initiate research core team

Literature review

Identify candidates of National Learning Group

Phase II: Planning and Implementation of the Research (April-June 1999)

Continue literature review on national policies relevant to farmers and IPM support agencies

Compile database on other participatory IPM projects in Indonesia

Hold long term monitoring meetings

Conduct orientation methodology workshop on participatory impact assessment. The workshop was conducted in two places: (1) in Yogyakarta in April/May 1999; (2) in Jakarta in mid-May 1999. The main objective of the workshops was to train staff of the IPM programme and other stakeholders (NGOs and government extension workers) in using participatory impact methodology to assess impacts on both local livelihood security and natural resource management in IPM field projects in different social and ecological contexts.

Local farmer facilitators' field work orientation briefing

Participatory impact assessment of IPM programme in 3 villages

Organisational analysis of FAO Programme and government departments

Test special mailing list: "peasants-rights@egroups.com" for research stakeholders

Phase III: Continue Research (July-September 1999)

Support National Congress of IPM Farmers in Yogyakarta

Conduct serial workshops on 'peasants' rights'

Support the establishment of the new national IPM farmers' organisation

Support the drafting of peasants' rights law

Campaign for and socialisation of peasants' rights via books and journals (WACANA)

BOX 3 contd

Phase IV: Documentation (October-December 1999)

Interviews and cross checking data

Complete organisational analysis

Produce and distribute the draft of *Institutional Profiles, Policy Papers, Process Analysis* and *Impact Studies*

Research Report Presentation in Hyderabad, India by Mansour Fakih

Phase V: Action Plan: Continue to support policy and institutional reform in agriculture (Jan-December 2000)

Distribute copy of peasants' rights draft to LLG and NLG for research inputs

NLG & LLG discuss revision of draft phase 1

Produce and distribute posters, leaflets, and banners for campaign on 1 million signatures to support peasants' rights struggle

Facilitate the National Farmer Meeting in Bogor, West Java

Phase VI: Build broader peasant rights advocacy's alliance (Jan-December, 2001)

Facilitate the Local Learning Group and National Learning Group form in 10 provinces

Peasant Charter declaration in Yogyakarta and Jakarta

Peasants' Rights draft publishing

Declaration of Peasants' Rights Day in National Conference for Peasants' Rights Movement

Phase VII: Continue to support farmers' movement in many districts (Jan-October 2002)

Facilitate and support peasants' participation in policy reform in many districts

Final report writing

In each study area, the Local Learning Group (LLG) was made up of local community organisers and farmers. The LLG was the centre and subject of the whole research and policy process activity. Its main role was to enable farmers (the primary stakeholders) to conduct participatory research for identifying, defining and redefining their key issues. The network of local learning groups' findings informed the work of the 'secondary stakeholders' who largely formed the National Learning Group. Thus research at the grassroots level was used for strategic issue formulation and fed into policy and institutional reforms. This working relationship, and the two-way communication between the Local and National Learning Groups, were key to maintaining coherence and focus on locally defined issues and aspirations.

The two channels described earlier came together in a middle channel: the process of policy and institutional reform. The core research team played a very important role

in connecting both channels and in moving research findings into the middle channel to support advocacy. Two secretariats were created and staffed to coordinate the whole process. The first was based in REaD, Yogyakarta, and was equipped with books, a database, computers, telephones, an Internet connection and a meeting place. This secretariat was an informal meeting space and was open 24 hours to allow different groups to meet at times convenient for them. The second secretariat was at the IPM-FAO offices in Jakarta, and was equally well equipped. This secretariat mainly provided secondary data on organisational issues and the process of IPM. Overall, REaD's role as facilitator, events organiser and recorder of process documentation was essential to guide the next steps.

Researchers used three types of analysis to assess the extent of institutionalization of IPM:

- Policy analysis
- Institutional analysis
- Participatory impact analysis

We now describe each in turn.

2.2 Policy Analysis

The main aim of this analysis, conducted by the NLG and the core research team was to better understand how government policies either facilitate or inhibit participatory and people centred processes. A range of interrelated questions was explored. For example: how do farmers and grassroots organisations influence the Indonesian bureaucracy to change policies to support participatory approaches? How are old and new policies and discourses interpreted by different actors?

To gain insights into the policy processes that have influenced the dynamics of Community IPM, key policy actors were interviewed and policy documents analysed. Members of the NLG and core research team facilitated the historical analyses of key policies and their effects on the institutionalisation and scaling up of participatory and people centred approaches. Interviews, field visits and focus group discussions were also held in villages in three rice growing districts in Java.

2.3 Organisational analysis

The National Learning Group and Local Learning Groups of farmers in Yogyakarta and Central Java used stakeholder and organisational analyses to understand the roles of different social actors in scaling up Community IPM.

BOX 4

A methodological outline for organisational analysis

- History and organisational biographies: Compare and contrast different organisations' histories over last 10-20 years.
- Relationships with other actors: Venn diagrams, network diagrams and flow charts to get different actors' perceptions on how the organisation relates to other organisations and groups, including the corporate sector.
- Qualitative dimensions: Semi structured interviews and focus groups to understand perceptions of different actors on organisations' quality of participation and operational procedures. Look at a) staff within organisations (different categories of staff, all hierarchical levels included in building perception map) and b) local villagers and farmers (rich, poor, excluded, men and women...)
- Individual biographies: Look at: a) case studies of champions of change and the networks and coalitions they are part of; and b) case studies on the lives of ordinary officials and other extension staff (both within FAO and government extension as well as NGOs involved). Focus on their livelihoods, family pressures, salary and remuneration, career histories and constraints.

Key organisations involved in Community IPM were analysed by:

- 'mapping' their institutional norms, operational procedures and organisational structures
- reviewing important strategy documents, policy papers, consultants' reports and evaluations of activities prior to, during and after adoption of participatory approaches
- conducting stakeholder analyses and interviews of key decision makers, practitioners and local people

The methodological approach used to analyse organisations and behaviour of some of their key actors is described further in Box 4. Box 5 gives examples of questions used to map out the relationships of different actors and their associated rights and benefits.

2.4 Participatory impact analysis

This analysis explored the different perspectives on how the large scale Community IPM programme has affected the:

- well-being and livelihood security of vulnerable groups, such as women, children, low-income people, migrants and landless or near-landless people, who are frequently marginalised by large scale development initiatives

BOX 5

Key Questions of Stakeholder Analysis

- Who are the parties with interests to the Indonesia IPM program, from the national, province, district, sub-district, to the village level?
- What are the responsibilities, benefits, rights of these parties, and the risks they face?
- How good is the relation among those parties or actors? (on a scale of 5 for a very good and close relationship to 0 for a bad/distant relationship or no relation at all).

No	Stakeholder	Responsibility	Rights	Revenue	Risk
1	DEPTAN (Dept. Agriculture)	Main Implementer	Propose: fund of allocation, area, infrastructure	Operational salary, Political power	Losing the people trust
2	DEPKOP (Dept. of Cooperation)	Support Implementer	Supplier decision	Idem	Idem

Stakeholder	Agric dept	Coopr dept	FAO	Fertilizer industry	Seed industry	Pest. industry	Buffer Stock agency	Farmer	Bank	IMF
Agric dept	-	5	3	5	5	5	5	1	5	5
Coopr dept	5	-	3	5	5	5	5	1	5	5
FAO	3	3	-	3	3	3	5	3	-	5
Fertilizer Industry	5	5	3	-	5	5	5	1	5	5
Seed Industry	5	5	3	5	-	5	5	1	5	5
Pest. Industry	5	5	3	5	5	-	5	1	5	5
Buffer Stock	5	5	5	5	5	5	-	1	5	1
Farmer	1	1	3	1	1	1	1	-	5	-
Bank	5	5	-	5	5	5	5	5	-	5
IMF	5	5	5	5	5	5	1	-	5	-

FIGURE 1: Bu Tutik, local women facilitator

FIGURE 2: Briefing local facilitator by core team before run PRA

FIGURE 3: Video based process documentation

Members of the core research team and the Local Learning Groups facilitated the participatory impact analysis in three districts in Java (Magelang, Grobogan and Kulonprogo). Participatory Rural Appraisal (PRA)[5] methods and focus group discussions were the main methods used. The Magelang study was supervised by NGO actors while the other two regencies were supervised separately by the Department of Agriculture and the FAO. Each of these organisations provides support to or/and run FFS programmes in these locations.

The following PRA methods were used in different methodological sequences, according to context:

- *Historical Flow and Time Lines.* To analyse the impacts of the evolution from the traditional era, through the Green Revolution era, to the IPM FFS era.
- *Social Maps.* To analyse the potential of village resources, farmers' access to and control of these resources, and identify social problems.

5. PRA has been described as a family of approaches, methods and behaviours to enable poor people to express and analyse the realities of their lives and conditions, and themselves to plan, monitor and evaluate their actions (Chambers 1992). PRA has at its core the convictions 1) that local people have the knowledge and ability to be the subjects of their own development, and 2) that those who facilitate PRA must pay particular attention to the way they behave when interacting with local people.

- *Impact Flow Diagrams.* To observe the impacts of the IPM programme on farmers' knowledge, decision making, communal efforts, information, the environment, organisation and gender relations.
- *Daily Routines.* To observe gender relations in households and implementation programme.
- *Institutional and Venn Diagrams.* To monitor individual farmer or group perspectives on the changing institutional context and relationship between organisations

Before starting the participatory impact analysis, the core team conducted orientation briefings with local farmers' facilitators in each Local Learning Group to familiarise the local facilitators with PRA and participatory impact analysis.

2.5 Process documentation

Comprehensive documentation was a very vital part of the whole research process. All the data gained from investigations, meetings and interviews were regularly updated and made available to stakeholders. This information could also be used as campaign and awareness raising material.

2.6 Building the full picture

The degree of institutionalisation of people-centred processes and participation is indicated by three dimensions of change:

1. Impacts on people and environment
2. Changes in policies and regulatory institutions
3. Shifts in organisational practice and norms

In the following three sections we look at what the analyses described previously reveal about the impact of the spread of Community IPM on these three areas.

FIGURE 4: Village level participatory analysis of policies for food and agriculture

3. Contradictory trends for Community IPM: enabling policies and emerging policy constraints

There is clear evidence that policies and legislation both positively and negatively influence the spread of participation and the institutionalisation of Community IPM. This section is based on the information derived from the experience and knowledge of members of the National Learning Group, as well as the village level discussions with farmers and local learning groups during the participatory impact analysis.

3.1 Enabling policies

As described in the introduction, IPM and FFS implementation were supported by a fairly comprehensive policy promulgated in 1986 by President Suharto. The new policy departure resulted from concern over pest outbreaks and impacts on imports. Scientists were able to persuade several ministers of the ineffectiveness of intensive insecticide use (notably, the Department of Agriculture remained unconvinced). The scientists proposed an IPM programme based on a farm level IPM strategy, IPM training for technical personnel who would train farmers, and limiting the availability of broad-spectrum insecticides. The inter-ministerial coalition supported the proposal and took it to the President. The result was Presidential Decree No. 3, 1986. The decree called for farmer and field worker IPM training, the banning of 57 broad-spectrum insecticides from use in rice production and the eventual elimination of subsidies for insecticides. The decree created a policy environment at all levels of government that ensured support for the implementation of IPM through FFS. In 1994, the Minister of Agriculture established a new decree which very clearly stated that IPM is an ecological approach and farmers themselves are the subject and the central focus of IPM development[6].

6. Whilst clearly positive, these enabling policies must be seen in the larger context of Indonesia. In 1992 total sales of pesticide were US$ 50 billion US Dollars and in 1996 sales doubled in value. There are 755 pesticides formulas of 328 active materials of pesticides still available today. The policy ban only affected 63 formulas of 22 pesticides. The level of pesticide ADI (Acceptable Daily Intake) in Indonesia is beyond the acceptable limit of WHO/FAO. Corruption in the ministry of agriculture has made it difficult for the policies to translate into an overall decrease in the use of pesticide in farmers fields. There is evidence that many elite and senior staff in the ministry of agriculture own(ed) pesticide factories.

These enabling policies were introduced in a context of crisis in rice production, government concern about its ability to provide cheap food to urban populations and other power bases, as well as an eagerness on the part of farmers to have more space to do things independently, without government interference.

Several government policies indirectly support and promote large scale participation. For example, the floating mass policies, banning political parties from operating in rural areas, have been abolished and the military doctrine on territories is changing. This has significantly reduced (but not eliminated) the involvement or interference of the military in the everyday life of farmers. The weakening of state-formed organisations and their imposition on rural communities is facilitating the spread of popular participation. Examples here include the weakening control of RT and RW (Rukun Tetangga, or Neighbourhood Association, and Rukun Warga, or Community Association) which were first established by the Japanese under the occupation and which were subsequently maintained by the Indonesian government.

Following World Bank promoted structural adjustment programmes beginning in the 1990s, state bureaucracy has been rationalised by closing institutions that inhibited participation (for instance, the Department of Social Welfare and the Department of Information). At the policy level, these changes were also reflected in the rationalisation or re-arrangement of overlapping policies, as well as the judicial review of several laws and regional regulations. This helped reduce the degree of overlap and contradictions between policies of the Department of Forestry, the Department of Agriculture, Department of Minerals and Mining, Department of Transmigration, and other departments relevant to natural resource management.

Decentralisation and financial decentralisation laws have opened up space for farmer groups to carry out advocacy and to organise at the district level. Responsibilities for agriculture are being increasingly decentralised in Indonesia. It is at the provincial and sub-district levels that Community IPM and FFS have found champions able to ensure their continuity. It is also at these levels that boundaries between departments within the ministry of agriculture have started to break down. Decentralisation has been enabling in the sense that it has created new opportunities for farmers and their communities. For instance, in provinces where agriculture is a significant part of the local economy the proportion of the district budget allocated to agriculture has increased (but this is not by any means always true). In other districts it has become possible for farmers (and others) to formally establish and support IPM as the preferred means of management, including reforming and strengthening the means for delivery of extension and other services to farmers. There is also widespread evidence that farmers' groups, including IPM farmers, are using decentralisation as a

means to gain a much greater say in the delivery of agricultural services (i.e. tailoring it to their expressed needs), the organisation of irrigation, and strengthening of farmers' rights to their land.

In the words of the NLG members, enabling policies for the mainstreaming of popular participation in Community IPM are grounded in processes in which *"The government and bureaucracy change their function from the social dominator to become the facilitator; the political system gives enough space for participation and democracy; government policies accommodate the existing social groups' interests; and there is guarantee of freedom and security to speak up, express opinions and become different".*

3.2 Disabling policies

The NLG identified a number of policies (agricultural and economic) and legislation on property rights that constrain the spread of participation through Community IPM.

A reversal of an earlier decision to ban dangerous pesticides significantly undermined the policy environment for IPM in the late 1990s. The ministerial decisions of SK Mentan No. 706/1998 were designed to promote the 2001 new Green Revolution (GEMA PALAGUNG),- effectively repeating the earlier top down BIMAS and INMAS Green Revolution program. In a single year, a transition government cabinet introduced six laws on pesticide use to legitimate the return of the Green Revolution approach to farming[7].

Markets have also become increasingly disabling. There is an increasing gap between the government's guaranteed floor price for agricultural produce and the price of other products, for example agrochemical inputs. Farmers everywhere are experiencing the debilitating effects of an increasingly severe cost price squeeze. This thus inhibits the spread of CIPM as farmers' incomes decline due to much lower sale prices given for their produce. There is a need and opportunity to find more effective ways for IPM farmers to market their range of products as pesticide-free or low/zero-residue, and thus obtain better prices. In this regard, assisting them to identify local markets where direct links are established between producers and consumers would be

7. The six policies are: SK of Minister of Agriculture No. 527/1999 yang drops the banning of 28 pesticide products of the previous policy of SK Ministry 473/1996, SK Ministry policy No. 706/1998 on organisation and mechanism of new Green Revolution of GEMAPALAGUNG (Gerakan Mandiri Padi, Kedelai dan Jagung) 2001. This law was supported by the new law SK Mentan No. 767/1998 to give permission on 30 pesticide products and SK Mentan No. 766/1998 on giving permission on 19 pesticide products. SK Minister of Agriculture No. 763/1998 gave permanent permission (IZIN TETAP) for 86 pesticide products. The SK Ministry of agriculture policy No. 760/1998 dropped the previous SK Mentan No.985/1997 on the use of pesticide only for the licensed and certified. The policy of Agriculture Ministry No. Kpts/ Mentan/ Bimas/ X/1998, on change on the policy of Agriculture Ministry N0. 07/SK/ Mentan/ Bimas/ X/1997; No 3/KPTS/Mentan/Bimas/V/1998 on Bimas Intensification program of paddy and horticulture 1998/1999.

helpful. There are examples of this approach already occurring in some locations (see Conclusion) but there is now no national enabling policy framework in place to promote these economic developments.

Another socio-economic factor that inhibits the spread of participation is the absence of a policy to limit the ownership of paddy fields. Nowadays anyone can buy paddy land, regardless of his or her involvement in farming. Land has changed status, shifting from a means of production and culture to a commodity. In 1960, one metre square of land outside Yogyakarta was worth 60 rupiahs. Today, the same land costs 1.5 million rupiahs, whilst the price of a bag of rice only increased from 55 rupiahs to 3000 rupiahs over the same period. It is increasingly impossible for farmers to buy land; all they can do is sell their land and move to the city. These economic incentives to sell off land discriminate against the spread of Community IPM by reinforcing the notion that 'there is no future in farming'.

Inequitable property rights over land and other natural resources strongly inhibit the expansion of Community IPM. In Indonesia, there are three kinds of relationship to the land:

1. farmers who own and cultivate their own land
2. absentee landlords who hire labourers to cultivate their land
3. farmers who sharecrop land

Land distribution is highly skewed, with larger farmers (those owning from 2 ha to more than 5 ha) owning 43% and 47% of the total arable land area in 1973 and 1993 respectively. By contrast the smaller farmers (0.1 to 0.49 ha farms) owned 12% (1973) and 13% (1993) of the total farm land area. In Java, some 60 to 70% of farmers are landless, and these numbers are growing. The accumulation of capital (land, seeds, production tools, post-harvesting tools, money, etc.) by a handful of individuals has enhanced social differentiation, particularly in rural areas. For example, the concentration of land ownership in the hands of very few people has caused most farmers to become mere tillers and workers.

This agrarian structure inhibits the spread of IPM. The IPM programme is implemented mostly by people who do not own the land on which they work. Most FFS attendees are usually small landowner farmers or landless peasants who till their landlord's lands. Absentee landlords prefer to go to night classes run by the government. This begs the question of who gains most from these efforts? These issues are discussed further in the section on equity (see section 5.2).

3.3 Emerging policies and concerns

The NLG's policy analysis and extensive consultation process identified several emerging policies and trends that could potentially undermine the gains of Community IPM in Indonesia, as well as inhibiting any further institutionalisation of participation in organisations, policy frameworks and practice. All of the following trends are perceived to pose major threats to people oriented and participatory approaches to natural resource management:

3.3.1 Agricultural trade liberalisation and free markets

The Indonesian drive for food trade liberalisation is based on the assumption and belief that economic growth can only be achieved through the free market and agricultural trade liberalisation. In this view, 'free competition' is the only possible driver of economic growth, and 'free markets' are efficient and rational mechanisms to allocate natural resources for human needs.

The main objective of the neo-liberal agenda is to liberalise trade and finance; to let the market set prices and inflation; to stabilise the macro economy and privatise state companies. Governments must stay away (Chomsky, 1999). For the government of Indonesia, the implementation of this neo-liberal order means:

1. Providing a free zone of growth such as the Trade Liberalisation of Asia Free Trade Association (AFTA), SIJORI (Singapore, Johor and Riau Growth Triangle), and other smaller economic growth triangles. Fourteen growth triangles have now been established throughout Indonesia.

2. Ceasing state and government subsidies to farmers on the grounds that subsidies conflict with the principles of free market and free competition in trade. This also means privatising state companies because these were basically established to subsidise the people and thus contradict the principle of the free market.

3. Abolishing the ideology of 'collective welfare' and the communal land property system as it is still practised among 'traditional' farmers, especially among indigenous people. The tradition of collective ownership and collective welfare is viewed as blocking efficient economic growth. Instead, the driving force of the economy should become the private sector.

4. Trusting natural resource management to those who are considered experts, the private business and agribusinesses, and not farmers and indigenous people. 'Traditional' farmers and indigenous people are seen as poor managers of natural resources.

BOX 6

The Indonesia Land Administration Project and the World Bank

One of the biggest World Bank projects in Indonesia is the Land Administration project. It is a 25-year mega project (1995-2020), involving the Government of Indonesia and Ausaid. The Land Administration Project, at a cost of US$115 million, is part of the World Bank's Structural Adjustment Programme and falls under the Indonesian Department of Land Resource and Management Planning. The official aim of the project is to redesign land administration and management; the main objective, however, is to promote an efficient land market and alleviate social conflicts over land, by accelerating land titling and improving the institutional framework for land administration. The rationale is to help Indonesia develop long term land management policies. The hidden agenda behind the project is to liberate the land market or to deregulate land policy in order to attract foreign agribusiness investment in Indonesia.

These interrelated processes are linked with policy shifts in support of corporate and contract farming.

3.3.2 New approach to food security through corporate farming

Achieving food security through corporate farming has become the new discourse in Indonesia and is being pursued under the official programme "Farmers' Empowerment Program to Achieve Food Security and Farmers' Welfare", referred to here as the food security projects.

The Indonesian government spent 600 billion rupiahs on this programme in 2000. It is envisaged that the food security projects will be implemented by introducing corporate farming in 13 provinces, reaching 140 districts, targeting around 400,000 hectares of farm land. Corporate farming is essentially large scale commercial farming; around 3,900 professional corporate managers manage and control 5,000 farmers' labour groups or about 600,000 farm labourers nationally. Corporate farming allows the use of high-tech approaches such as biotechnology. It operates by consolidating land owned by small farmers (which average 0.5 hectares in Java) into a minimum of 100 hectares to achieve an efficient economic scale for such farming (Box 6).

The programme is supported through the World Bank's Structural Adjustment Programme. Pursuing structural adjustment and a successful corporate farming strategy means the Indonesian government reforming their economic sector including agriculture, and reforming their land, taxation and decentralisation policies. Many observers believe that the policy reform taking place in agriculture-related sectors is a way to make it easier for the big agribusiness companies and transnational companies (TNCs) to operate, as well as to attract the TNCs to invest in agribusiness.

Such policies will displace farmers from their natural resources, especially land and forests. It is predicted that disputes over land will become the biggest problem faced by the country's farmers.

Thus agriculture is being transformed from being small farmer driven to becoming an industry of rice estates and agribusiness.

Many neo-liberal policies have been implemented in Indonesia, such as cutting state subsidies and reducing tariffs on agriculture products. Many other laws on tax, exports, patents, and the use of genetically modified organisms (GMOs) in agriculture, have recently been adopted by the legislature. Not only will these policy changes attract TNCs to invest in Indonesia's agriculture sector, but they will also force farmers to compete freely with the giant TNCs. Such unequal competition between the two will cause small farmers to collapse. Studies on the impact of trade liberalisation on small farmers in developing countries show how poverty, unemployment and environmental degradation have increased as small farmers lose control over natural resources and are edged out of the market (for a recent overview see Madeley, 2000).

NLG members and their informants anticipate that the spread of industrial corporate farming in Indonesia will undermine prospects for participatory and sustainable land use for several reasons:

1. Farmers' traditional role as food producers will be reduced, undermining and destroying their livelihoods[8]. Instead, trade liberalisation in investment and production in the form of contract farming will only benefit TNCs. Many TNCs have changed their strategy from direct control over land to control over the production process via 'independent' farmers under exclusive or tied up contracts. The company provides seeds, credit, and detailed technical instructions to the small farmers (for which they are later billed), on the condition that they sell only to the company, at a price unilaterally imposed by the company. In the process of turning petroleum and industrial products into canned vegetables sold to Jakarta supermarkets, the least profitable step, the one where all the risks of bad weather and pests are concentrated, is the actual farming. Thus farmers assume all the risks of crop losses, whilst the company keeps the profits from farm chemical sales, shipping, processing and wholesale distribution.

8. Corporate farming as it has been practiced in other parts of the world has had (and still has) disastrous impacts on farmers and the environment. For example, in poultry farming in the US, the production contract was the means through which corporations like Cargill, Continental Grain, and Ralston Purina took control of chicken production from the 1950s onwards. Within 10 years the percentage of US chicken production under contract went from 4% to 92%. A US Department of Agriculture study in 1967 concluded that chicken farmers were impoverished because of their lack of bargaining strength in dealing with the corporations (Watts, 1990).

2. Corporate farming will displace a culture whereby farmers were central to the economy and production process. In the past, the role of small farmers has been very central in agriculture production, being able to keep and reuse seeds. One of the effects will be that poor farmers will have no choice but to sell their land as they experience steeper cost-price squeezes.

3. Corporate farming in the context of free trade policies is a means of reorienting domestic production in each country away from national consumers and towards the export market[9].

4. The larger, richer farmers prefer to rent their land to big agribusiness than to share it with tenants because this ensures longer term and greater financial benefits. Agribusinesses usually do not use FFS/IPM since they are driven by profit and rely on chemical inputs. Agribusinesses inhibit participation since they hire workers from distant areas, not locally.

Policies that displace farmers from agriculture for the sake of profit are basically undermining their livelihoods, destroying farmers' organisations and making regenerative practices such as community IPM impossible on any meaningful scale.

However, the threats posed by the new food trade liberalisation and corporate farming policies have created a new awareness amongst small farmers and a resistance to globalisation. New 'peasant' movements have emerged in every region in the country. The Agrarian Reform Consortium and the Peasants' Rights Movements launched by North Sumatra Small Farmers' Union, the Friends of Small Farmers movement in central Java, as well as the IPM farmers' movement, together have created one of the biggest alliances in the history of farmers' movements in Indonesia by establishing the recently declared Peasants' Rights Movement. This movement is a strong reaction to the neo-liberal approach of trade liberalisation and especially to the corporate takeover of food and farming. These emerging social movements are organising and campaigning to protect the livelihoods and culture of Indonesian rural communities, and are claiming rights to food and farmer sovereignty. They argue that genuine food security and participation of farmers can only be realised in a system where the sovereignty of farmers' organisations and activities is guaranteed. Farmers and others

9. Many researchers have looked at how this kind of farming has negatively affected farmers and strengthened big agribusiness. For example, in the 1980s across Central America, as new exports were promoted and the growing of staple foods for local consumption was undercut, region wide per capita production of corn, beans, and rice dropped 13, 33 and 6 percent respectively. By the end of the 1980s, in Costa Rica, foreigners owned more than 50% of the country's agricultural businesses and dominated exports of macadamia, citrus, flowers, ferns, house plants, papaya, mangoes and melon (Watts, 1990).

must be able to exercise their human rights to define their food and farming policies, as well as having the right to produce their food in accordance with the diversity of their socio-cultural and ecological contexts.

Discussions on how to bring about organisational and institutional change for the mainstreaming of people-centred approaches and participation must be seen in this new context.

4. Organisational Analysis

In this section we analyse the role of external support organisations in the spread and scaling up of Community IPM. In every village where farmers' field schools exist, farmers' organisations or farmers' groups have been key for the spread of Community IPM. However, many 'outsider' organisations have also played a role as facilitators and supporters. The FAO, national universities and research institutions, and independent contractors for specialised studies (evaluation and pesticide regulation), have provided technical assistance to the National IPM Programme. Of these the biggest supporter of the programme has been the FAO. The Indonesian government also has a strong interest in the programme and has provided strong political support, with several Indonesian government ministries and bodies involved at all levels.

First we describe the catalytic role of the FAO Technical Support Unit, then present evidence for organisational transformation for large scale participation.

4.1 The FAO as a catalyst for change

The pest outbreak in rice and the ensuing crisis (see section 1.1) provided an opportunity for the FAO-Government Cooperative programme to bring new styles of working, procedures and attitudes into agricultural extension in Indonesia. The efforts of innovative, charismatic and/or dynamic individuals (champions) and other key actors within the FAO technical team and at different levels of government created the space for organisational experimentation at this time. Over time the FAO Community IPM Programme worked hard to build alliances, both vertical and horizontal, between supporters of change. Strong champions of change developed conscious strategies to allow rice farmers to get off the pesticide treadmill and take pest control decisions into their own hands. The emphasis on FFS training and education for critical consciousness were key levers for change in this respect, and are discussed separately below.

However, no less important was the FAO unit's relative but continued capacity to organise and re-organise for change. The FAO Community IPM programme was coordinated from an organisational unit with dedicated resources. It was also allowed some continuity of action over time and was able to attract innovative and committed

TABLE 2

Organisations and agroecological management: the contrast between blueprint and learning-process approaches

	Blueprint	Process
point of departure	nature's diversity and its potential commercial values	the diversity of both people and nature's values
keywords	strategic planning and development	participation and local definitions of well being, empowerment
locus of decision making	centralised, ideas originate in capital city	decentralised, ideas originate in village and municipalities
first steps	data collection and plan	awareness and action
design	static, by experts. Design of technologies and systems reflect and reinforce priorities of more powerful actors	evolving, people involved. Broad citizen control on design of technologies and systems
main resources	central funds and technicians	local people and their assets
methods, rules	standardised, universal, fixed package	diverse, local, varied basket of choices
analytical assumptions	reductionist (natural and economic science bias)	systems, holistic
management focus	spending budgets, completing projects on time, market performance and shareholders assets	sustained improvement and performance, focus on right to food, health and other indicators of locally defined well being
communication	vertical: orders down, reports up	lateral: mutual learning and sharing experience
evaluation	external, intermittent	internal, continuous
error	buried	embraced
relationship with people	controlling, policing, inducing, motivating, dependency creating. People seen as beneficiaries and consumers	enabling, supporting, empowering. People seen as actors and citizens
associated with…	normal professionalism and corporate power	new professionalism and democratic decision making
outputs	diversity in conservation, and uniformity in production (agriculture, forestry,...) the empowerment of professionals and corporations	diversity as a principle of production and conservation the empowerment of citizens and local communities

(adapted from David Korten, 1984 and Pimbert, 2002)

staff, both at the front line and senior management levels. Much of the change strategy was focused on building skills, assets and capabilities of rice farmers through FFS and the development of new curricula to meet new needs in multiple and evolving contexts (see later).

Whilst some elements of the change strategy were centrally designed, with inputs from outside professionals (e.g. soil ecologists, health epidemiologists, gender specialists), the organisation allowed for considerable discretionary powers at lower levels and the periphery. Many localised initiatives were allowed or actively encouraged to adapt principles or generate their own culturally appropriate innovations. As an organisation, the FAO Community IPM Programme in Indonesia thus valued learner centred and process oriented approaches over fixed blueprints driven by targets and indicators imposed from above. The process oriented management system used to support farmer led community IPM activities is compared with the more conventional approach to organisational management in Table 2.

Many outsiders visiting the Jakarta based office of the FAO Community IPM programme have been struck by the informal work atmosphere and positive interactions between expatriate managers, senior staff, front line workers and secretarial or support staff. Staff associated with the Community IPM programme elsewhere in Java are also generally perceived to be working in a positive and supportive environment. The organisational culture stresses the need to expect the unexpected and learn to deal with it. Staff are generally given opportunities and the confidence to take risks. Much emphasis is placed on sharing new information quickly and widely through photocopied documents, e-mail, internet or informal briefings and staff meetings. The structure and way of working of the organisation gives some space to staff to do new things, reflect and share lessons with others in teams, meetings, conferences, exchange workshops and work assignments both throughout Indonesia and, in some cases, elsewhere in Asia. Learning from the surrounding environment is thus encouraged along with personal growth.

These are all features typical of learning organisations in which change is driven by reflection and communicative action (Table 2). Ongoing monitoring and 'being in touch' with the pulse of FFS and farmer groups give staff feedback on how the Community IPM programme is doing. Both successes and problems faced by the programme are discussed with a view to enhancing understanding and developing more appropriate actions. In the broadly supportive and caring environment that marked the last decade of the FAO programme, it was not uncommon for staff to share their thoughts on the 'big picture' as well as more routine issues. Deeper doubts about the dynamics and failings of the Community IPM programme could be openly shared among different categories of staff. An example of such critical and open reflection is given in Box 7. The feeling that it is safe to doubt and 'speak one's mind', not just about successes but also failures, is key for learning oriented organisations.

BOX 7

IPM: who benefits?

On selection of the participants, our dream at the moment was to have true peasants, with hope that party gain the most benefit from this IPM programme would be the vast majority of peasantry: the tillers and peasant workers. Then we plan a selection programme for assigning FSS-IPM participants through preparatory meetings of FSS-IPM using mapping techniques and other participatory activities. In many cases I have witnessed, this activity was rarely (read it: never) done. The extension workers (government staffs) prefer to take the easiest way: leave it to the village chief and/or other village apparatus to select the participants, so that, when the FFS-IPM began, the participants were ready. Consequently, many of the FFS-IPM participants were the family or kin of those village officials. They, in fact, are elite farmer: sawah (paddy field) owner and master to the peasants who never work at his land for they hired many workers and tillers. In many cases, the FFS-IPM guided by the farmer was a bit more capable in involving the true peasants. From this dynamics in FSS-IPM, the same things creeping to next activities: local facilitators and IPM forums at village, sub-district, and district level consist of those village elites. It's no wonder that in the IPM forums, we met with the neat farmers, more over the local facilitators. This was really not representing the vast majority of peasantry in our country.

On the other side, the tenant and the tillers that only have their own body said that there is no need for them to involve with the FSS-IPM. "It's wasting thoughts, wasting the energy and time!" that was the common commentaries the said. Instead of join in FFS-IPM, they prefer to work to make money for the day's meal. It's not their problems whether the farming activities is sustainable or not. Indeed, according to them, to cultivate the paddy is seedling and then put the fertilisers, matun (weeding the field) and then it's okay to leave it to hunt for another job in other area, then come back for the harvest. We have not found ideas to plan the activities on peasantry Is there any idea we can develop? We completely agree that the problems are not on the sawah. The problems were their social life, but unfortunately IPM activities in FFS only talk about sawah. If there were a social problem shown up, the local facilitators or extension workers could not do anything.

Extract of a communication to FAO colleagues sent by Zambani (FAO Community IPM staff), on 5 February 1999.

Moreover, the FAO Community IPM organisational network invested much time in communicating its vision and spreading lessons learnt to the wider world so as to scale up and institutionalise participation. Over the years, much effort was put into identifying champions at the macro (ministerial, policy or donor) level, the meso (middle management) level and the micro (front line government/NGO workers, farmers) level. Cajoling, persuasion, rational argument, press statements, conference presentations, speeches and taking risks in supporting more radical partners all combined to challenge attitudes, procedures, knowledge and ways of working that were blocking the institutionalisation of Community IPM.

4.1.1 An emphasis on learning and professional re-orientation

In many ways the FAO technical support programme to the Government of Indonesia played a catalytic role in fostering new professional practice and behaviour in crop protection.

After the official launch of the IPM national programme, the FAO and the department of agriculture began to re-train the government employed PHPs (pest observers) and PPLs (extension workers). Before being assigned to the field, government staff were specially trained in adult education and participatory methods. Previous training of PHPs and PPLs had taught them target oriented approaches. The FAO-led training imparted a new perspective; one which viewed farmers less as targets and more as people capable of solving their own problems. The IPM Farmer Field Schools were also meant to re-establish an emancipatory paradigm of education (see below), reversing much of the top down and anti participation practices of previous government run farmer education models.

The FAO team developed training curricula and designed a training process based on adult education principles, group dynamics and participatory methods that emphasised learning from experience. Some 500 PHP staff were initially recruited to participate in the Field Training Facilities (FTF) over a period of 14 months. A thousand PPLs were trained. To date over 2,300 field Pest Observers (PHPs) have been recruited to participate in the intensive 14 months IPM specialist training. To further support field implementation, over 5,000 food-crop extension workers also received training in field-based IPM.

During their training, government staff learn, practise and stringently discuss the principles and practice of IPM, the design of participative education for farmers, the basic principles of learning from experience and group dynamics, as well as how to grow a rice crop and the agronomic principles behind paddy farming. The training is done over two rice planting seasons and one dry season. Field Supervisors (FS I) oversee the Field Training Facilities for the rice-planting season. Following their training government staff will enrol in university for one semester to get a diploma in ecology and agronomy.

After finishing the FTF curriculum, the PHPs and PPLs are then sent to the villages. They are encouraged to spend time in the fields observing pest and plant diseases intensively side-by-side with the farmers. This process allows both government staff and farmers to continue to learn. Staff trained in this way often comment on how this approach differs from normal practice in government departments (see Box 8).

BOX 8

Interview with Pest Observers (30 September 1999)

What is the difference between IPM under the Ministry of Agriculture and IPM under the FAO programme?

(Pest Observer I) *Pest observers under the government IPM programme already knew about the participatory methods, for the pest observing need the dull participation of the farmers. When the national IPM programme was implemented, the participatory methods were deepened and intensified more. The difference is that formerly the pest observers used contact persons (individual approach) and now, under the FAO-Government IPM programme, the PHP use the group approach.*

(Pest Observer II) *When IPM was under Ministry of Agriculture, the pest observers' main task was observing the pest and plant disease on the field, and then make recommendations. With the IPM national programme, PHPs were recruited as programme staffs. Before they implemented the programme, they were all trained in the Field Training Facilities, where its participatory methods made us have to go down into the paddy field with the farmers. It is really learning together in intensively observing the pest, while giving the farmers some useful ideas on observing the pest. The second matter taught was group management. After the FTF, the training was followed by rice IPM for one year. In the past, when still under Ministry of Agriculture, the IPM programme was only conceptual, but when it became a national programme, the IPM then became operational. What is learnt is what you practice in the field, using the adult participatory education methods. Before other trainings were held annually, but only for a shorter time.*

(Pest Observer III). *FFS-IPM would make its alumni smart, expert, skilful, so that they can solve the problems. FFS-IPM is only a gate; the importance of it was we would like to show to the farmers that they have opportunities and potential to develop…..Farmers not considered as the object, but friends and subject of the education…. How the farmers would be able to take decision on their life, it needs a long process of participatory. Actually, our PPL friends in government know this, but they fail to implement it in the practice.*

(Pest Observer IV) *Before we have FTF training, we only deliver the message from the top or package information came from the central government, that farmers must be like this or like that, doing this and that. Our training was about how to use the gun to shoot the (determined) aims. FTF taught us about how to give the gun to the farmers so that the farmers themselves can use it as the tools to solve their problems.*

To date the IPM national programme has trained some 2,300 people, 2,000 PPLs and almost 1,000,000 farmers in 12 provinces. The training, funded by the United States Agency for International Development (USAID), cost US$32 million or around 62 billion rupiahs (out of the total national IPM budget programme of 107 billion rupiahs over five years). A survey of 10 provinces done by the Indonesian IPM Farmers' Association (IPPHTI) showed that 540 out of 629 activities were locally funded or at least contained a contribution from local funds (both from farmers' funds or the district/province government budget). In many places, FFS alumni and farmers are centrally involved in the three dimensions of Community IPM: learning, knowledge generation and organising.

BOX 9

A Critical Theory Perspective of Learning and Human Interests

Humans approach knowledge with an "orientation toward technical control, toward mutual understanding in the conduct of life, and toward emancipation from seemingly "natural" constraint" (Habermas, 1971). With this statement Habermas presents the three cognitive interests all humans share which form the basis for their interest in learning: the technical, the practical, and the emancipatory. These three cognitive interests grow out of three distinct areas of human social existence: work, interaction with others, and power (Ingram, 1987).

Areas Social Existence	Domains of Learning	Characteristics of of the Domain
Work	Technical	1. Technical control of environment 2. Characterized by: Instrumental Action 3. Goal: effective prediction & control of reality 4. Use of empirical sciences
Interaction With Others	Practical	1. Understanding and meaning of social processes 2. Characterized by: Communicative Action 3. Goal: the meaning of interactions and patterns 4. Use of historical hermeneutic sciences
Power	Empowerment	1. Internal and environmental factors that inhibit our control over our own lives 2. Characterized by self-reflective action 3. Goal: able to differentiate between factors that are beyond our control & those 'assumed' beyond our control to expand our area of action. 4. Self-reflection, critical thinking

4.1.2 Emphasis on education for critical consciousness

As a support organisation the FAO unit has purposefully linked training in new skills with a larger educational philosophy based in part on Freirian notions of critical consciousness (Freire, 1993). The basic framework of the educational approach from which all methods and techniques were derived is based upon the taxonomy of learning put forward by sociologist Jurgen Habermas (1971). This learning framework does not break education down into the usual 'cognitive, affective, psychomotor' areas, but rather addresses three more fundamental human interests, which can be delineated in brief as follows: the technical domain of work, the domain of interaction and communicative action; and the domain of emancipatory action for empowerment[10]. The main elements of this critical theory framework are summarised in Box 9.

10. This section draws on Pontius, Dilts and Bartlett (2002), see chapter 5 and references therein.

The Critical Theory Framework presented above provides a basis for thinking about the FFS approach. While the initial objective for learning might arise from the technical domain, the learner will not necessarily be able to apply that learning if the practical and empowerment domains have been ignored. What is learned about a technical interest needs to be applied in a social context. This demands interaction with the real world. The learner needs to know how to explain and talk about what has been learned relating to a technical interest. In many cases learning about a technical interest cannot be applied before the learner has been freed from factors once assumed to be out of his/her control. The learner assumes a problem is external in nature only to discover that it is internal and, therefore, amenable to remedy through the learner's actions. Having discovered this, the learner becomes free to use technical knowledge. Thus whilst the different domains of learning (technical, practical, empowerment) can be discussed separately, they cannot be contained by separate categories. The FFS approach unifies these domains in an integrated and integrative educational process.

The general purposes of FFS learning associated with the technical domain concerns the management decisions that have to be made by a farmer applying IPM principles. These decisions primarily concern agronomic and ecological factors. FFS alumni live in a world where non-IPM alumni may not only not understand IPM but also be openly antagonistic to farmers who refuse to apply pesticides. Thus learning in the FFS connected to the interaction domain must serve several purposes focused on helping other farmers to understand and apply IPM principles, plus organising and collaboratively managing local IPM programmes. The empowerment domain aims to help farmers become able to identify 1) factors that inhibit their control over their lives and 2) means of reclaiming power over their own lives. Self-reflection or critical thinking which examines both the internal and environmental factors that inhibit our control over our own lives produces empowering knowledge.

Table 3 gives examples of how the general purposes addressed by an IPM FFS are related to the three learning domains identified by Habermas (1971).

4.1.3 Tailoring FFS curricula to evolving needs

As farmers gained new skills, capabilities and confidence, the need for new learning was in many cases accompanied by appropriate methodological and conceptual support by outside professionals acting in a facilitating role. As a result, the principles of FFS are now being extended from rice to other crops such as vegetables and cotton, from IPM to integrated nutrient management, plant

TABLE 3

The Learning Domains and the FFS approach

Learning Domain	The Purposes of the FFS Approach
Technical	1. Alumni manage use of agricultural inputs based on their analysis of field conditions and knowledge of plant requirements. 2. Alumni able to analyse ecological conditions based on understanding of field ecology. 3. Alumni design and implement field studies that will help them increase knowledge of ecological and agronomic issues. Agroecosystem analysis, special topic activities, comparative studies and additional field studies conducted during FFS all affect the technical skills of farmers.
Practical	1. Alumni able to effectively collaborate among themselves and with others. 2. Alumni facilitate/participate in group processes aimed at identification, analysis, and solving problems. These processes characterised by communicative action.
	3. Alumni facilitate learning among others so that IPM becomes the accepted approach to rice growing in their village. 4. Alumni organise community action to resolve agriculture problems. Specific leadership skills related to this domain include discussion skills, questioning, analysis, problem solving processes and communication skills.
Empowerment	1. Alumni have developed skills that support critical thinking. Able to identify and analyse field problems and take action to solve those problems in common with others. 2. Analytical skills of alumni result in expanded area of action. They are able to organise community action, information networks, village IPM programmes. 3. The possibility of, and the need for, progressive replacement of more naïve perceptions by more integrative and more discriminating perceptions (Friere, 1968) is a direct result of the critical analysis that takes place within an FFS.

Modified from Pontius, Dilts and Bartlett, 2002

breeding, participatory health monitoring and the management of natural resources, and from technical domains to broader engagement with policy issues, advocacy and local governance (see www.communityipm.org; FAO Mid Term Review, 2001).

In organisational terms, the FAO programme on Community IPM was thus able to be relatively flexible and responsive, developing new curricula and matching capacity building with evolving farmer needs. Agroecosystem analysis and

BOX 10

Evolving curricula for evolving needs

A wide range of curricula have been developed on various topics: soil fertility, plant, pests, diseases, natural enemies/bio-agents, farmers' organisation forums and advocacy on farmers rights. Many farming systems covering all types of rice, vegetables and other crops have had curricula prepared for them, varying from rice-rice; rice-secondary crops; rice-vegetables; vegetables-vegetables. Three training curricula were developed by IPPHTI together with FAO ICP Indonesia: *Field Guide on Strengthening Farmer Trainers*; *Field Guide on Organising Farmer Science*; *Field Guide on Organising Farmer Advocacy*. Two training manuals were developed by FAO ICP Indonesia: *Field Guide on How to Conduct Impact Studies*; *Field Guide on How to Conduct Studies on Tungro Disease*. One curriculum was developed by IPM farmers and field leaders: *Field Guide on Participatory Ecology Training and Soil Management*.

Curricula preparation is based on farmer demands and is developed by IPM farmer trainers with support from the Programme. They are then tested and used directly in training, and are designed to be flexibly adapted to local needs.

methods for group dynamic were initially used to enhance farmers' ecological literacy as it related to plant-insect ecology. Farmer IPM trainers and researcher/scientists learnt facilitation and presentation skills and how to develop basic experimental designs to analyse and quantify ecological phenomena. Learning to analyse policy, deal with high level decision makers in government, produce a newspaper with a print run of 10,000 are all key in enabling farmers to become organisers, planners, advocates and activists seeking to influence policy processes (Dilts, 2001).

The development of new curricula for FFS has been key for continued organisational relevance and delivery of flexible responses to changing needs (Box 10). Senior trainers within and beyond the Asia region have played important roles in the development of the IPM programme, as trainers, networkers, developers of curricula, participants in strategising, and in leadership roles.

FFS curriculum development is a moment where knowledge becomes relevant and validated in different contexts. It is one thing to carry out purely scientific research to identify pests, establish their life cycles, the pheromones that attract them, their population dynamics, natural enemies, etc., for which on-station research is very important. However, it is quite another thing to develop an IPM curriculum that works at the farm and rural community level. Such field research involves farmer practices, lifestyles, knowledge of local conditions, negotiation of collective action, and the development of appropriate technologies. Curriculum development is already a highly participative process usually requiring many iterations before it is complete. It is also an on-going process specific to each locality and

agroecosystem. As Community IPM broadens to new crops and other aspects relevant to farmers, the demand for farmer-led curricula development will become more important. For example, the participatory health monitoring in Indonesia is a new activity that features a methodology for discovery learning by pesticide users of the immediate consequences of spraying on their own health. The activity energises local people, and provides an avenue for awareness raising and empowerment (Murphy et al, 1999).

Curriculum development is therefore one of the important interfaces or vehicles that has allowed external organisations to connect external knowledge with site specific ways of knowing. To some extent, the FFS curriculum concept has allowed the FAO support programme to break away from organisational procedures typical of the transfer and technology model and shift to a more process oriented role, providing diverse options for self-discovery learning to farmers.

4.1.4 Emphasis on people centred organisational culture

Community IPM seeks to institutionalise IPM at the local level by putting farmers in control of the process of planning and implementing their own IPM programmes. This is based on the deep belief that 'farmers can do it' and a solid commitment to 'people centredness'. This reflects the professional culture of the FAO technical support unit for Community IPM, which generally values 'farmer led processes' and sees them as important indicators of success. This is for example expressed in the remark of a senior trainer: *"It's their, the farmers programme, not ours"*. This reflects an organisational desire to let go. Indeed, there is a strong sense of achievement whenever FFS graduates and Farmer Trainers have become the driving force and the owners of the programme.

Another cultural trait of more enabling organisations such as the FAO is one of trust and confidence in farmers' ability to do what professionals have been trained to do. As a former FAO Assistant Director General once stated *"IPM is founded upon, and driven by, 'development heresy'"*. This faith is central to the culture of the more enabling organisations and professionals involved in spreading Community IPM (Box 11), an achievement thought to be impossible a few years ago.

Mental blockages or prejudice that usually translate into disabling organisational practices can be dissolved by an enduring belief in people's abilities and capacity to make history. Commitment to emancipatory values and the possibility of transformation are fundamental to the culture of enabling organisations and professionals.

BOX 11

An organisational and professional culture of reversals and empowerment

The innovations in the history of FFS have in part been based on breaking down deeply embedded mental stereotypes that cast farmers and rural people in subservient and helpless roles. The movers and shakers behind the Community IPM programme have generally held deeply empowering beliefs about human beings and their capacity to transcend their limitations when given a chance. Russ Dilts, the former Director of the FAO Community IPM Programme in Asia, identified at least four development heresies proven to be wrong.

1. Farmers as experts. At the outset, few believed that farmers could even identify insects, let alone deal with something as abstract as field ecology. But soon, most of the disbelievers had seen with their own eyes that farmers could indeed master 'complex' agroecology.

2. Farmers as trainers. We postulated that if farmers could master the process of 'discovery learning' in their own fields, they could also facilitate other farmers in their learning. The first 'Farmer to Farmer' IPM field schools emerged spontaneously. They were then built in as an integral part of the programme. Currently, nearly 50% of all IPM Farmer Field Schools are organised and run by IPM Farmer Trainers. Over 20,000 field school graduates have gone on to be trained as Farmer Trainers and conduct field schools for other farmers.

3. Farmer researchers. Most believed that farmers would be limited to simple experiments and 'demplots'. However, in hundreds of locations farmers are currently engaged in field scientific investigations of complex local problems. Farmers are undertaking programmes previously thought impossible, such as the rearing, breeding, spreading and maintaining of complexes of biocontrol agents (parasitoids, virus, bacteria) while training other farmers in their use. Now, IPM 'farmer researchers' are often invited to national research meetings on IPM to present their findings and their programmes. Needless to say, researchers unfamiliar with the independence, intelligence, and diligence of IPM farmers are initially shocked. These same researchers found that a significant number of farmers were outproducing research stations. This flew in the face of the opinions of many experts who viewed farmers as the main problem in agriculture production instead of recognising them as potential problem solvers.

4. Farmer as strategic planners, organisers, advocates and activists. IPM planning and organising activities now extend from the neighbourhood to the national arena. There are many examples of farmers now holding dialogues with government ministers. Organised IPM farmers are slowly gaining increasing access and much greater leverage over local, regional and even national policies. Here too, patronising views that cast farmers as passive actors in need of professional help and guidance were proven wrong.

Modified from Dilts, 1999

4.2 Evidence for organisational change

While the FAO-Government IPM programme in Indonesia has developed ways of working and cultural norms that are consistent with the needs of participatory local adaptive management and self-discovery learning, these kinds of organisational reversals that put farmers and their innovations first have been all too rare in Indonesia. They have remained relatively marginal in government bureaucracies responsible for agricultural research and development, and within the FAO more generally.

4.2.1 Transformation within bureaucracies?

The National Learning Group and researchers looked hard for the kinds of organisational changes that would indicate the institutionalisation of participation witihin government. However, there is little evidence that the culture and practice of participation in Community IPM has fundamentally influenced government bureaucracies. Overall, the FAO-Government programme on Community IPM has had little enduring effect at higher levels of the bureaucracy. Relatively more progress and change have occurred at the provincial and district government levels.

In April 1998, the FAO-Ministry of Agriculture project came to an end. The FAO core group, which designed the programme several years ago, became trainers in the training education conducted in 12 Asian countries (among them Laos, Bangladesh, China and Thailand). These trainers then actively conducted projects in Indonesia until 2002, though no longer in cooperation with the Indonesian Ministry of Agriculture. They maintained a good relationship with the IPM-FFS alumni farmers, for example in their support for the PHT farmers' National Convention in July 1999 (discussed below) and for several meetings to determine strategic issues as well as strengthening IPM farmers' organisations in several areas. Post 1998, as an extension of the programme the FAO has also continued to support PHP and PPL personnel who wished to conduct FFS-IPM activities in the field. The FAO has even funded several of their activities (outside of their status as government workers) with other FFS alumni farmers.

Now that the national IPM programme has ended, the Ministry of Agriculture has conducted a feasibility study on the possible extension of the programme. Insiders and outsiders believe that participatory methods will probably be increasingly used by the Ministry of Agriculture. However, in the government context the IPM programme could easily become corrupted, being used as a tool for domesticating and dominating farmers, so that they will follow the government programme by consent, not in the context of empowerment. The participatory IPM activities contradict the existing top down nature of the government's development approach.

This conflict between the two approaches has created difficulties for government extension staff. According to several IPM field workers they face a dilemma: on the one hand they are trying to pursue participatory approaches but on the other they must conduct their work in accordance with central instructions, which do not always meet farmers' needs. Some government field workers express their concern:

> *"We thought there will be change in the body of the Ministry of Agriculture, but apparently that has not been the case. We know now that when the programmes are finished we will revert to the same old patterns from projects and targets that determined from the top to the instructions (juklak dan juknis). For example, we had to make the GEMAPALAGUNG programme [see footnote 8] a success, a programme that very much contradicts to the principle that is held all this time. For the officials (dinas) sides we know also that many are disturbed by the application of programmes that violated their conscience. Nevertheless, what is there to do? We will have to go back to the old jargon: uniform, obedience and target…"*
>
> (Nanang, the government field extension workers of PHP and Nangsir, government field extension workers of Yogyakarta Province)

Moreover, there are indications of farmer resistance towards government programmes. The co-optation and domestication problem is one of the most serious threats to the continuation of the Community IPM programme. Although all written government documents clearly maintain that participation is the basic principle of IPM, the IPM programme and training objectives, the government project implementation mechanisms are now very top down and centralised, with targets decided in Jakarta.

In broad terms, lack of real change in organisational culture, structures and procedures were the main obstacles for the uptake and institutionalisation of Community IPM in the bureaucracy. The following were particularly, but not exclusively, true for higher levels of the government hierarchy.

Organisational culture

The dominant authoritarian culture in the halls of the Ministry means that critical IPM farmers who suggest or demand changes become known as 'awkward customers'. These farmers are even considered subversive. This has happened to Indonesian IPM Farmers' Association (IPPHTI)[11] members who dared to protest about government

11. See Annex 3 for more detail about the activities of the IPPHTI.

policies which were permissive towards the distribution of pesticides. On one occasion in a meeting in his office, the Minister of Agriculture described the IPPHTI as the FAO's farmers, not government supervised ones. The PPL supervised Kontak Tani are seen as the government's farmers because they behave 'well', are not anarchical and always maintain a degree of respect towards their 'father' (the Minister himself). Deeply ingrained hierarchical and authoritarian mindsets are fundamental constraints for popular participation in natural resource management.

Lack of trust and transparency are further impediments to change, along with corrupt practices. Farmers' distrust for the government bureaucracy has grown to include the Department of Agriculture itself. The IPPHT has lobbied for several structural and working changes in this department. One of these is the disbanding of the Pesticide Commission or its separation from the Ministry of Agriculture, because it is seen to be not only staffed by bureaucrats who neglect to monitor pesticides, but also as colluding with pesticide manufacturers.

The Ministry of Agriculture obviously wants the national IPM programme to continue because it is high profile and can provide lots of money to the Ministry and especially to elite groups. The Ministry is largely dominated by people who are not on the side of the farmers; the government vision for the IPM programme involves cheaper, faster and more efficient methods promoted through standard messages spread through radios, television and the printed media. The direct instruction and training to farmers is to be done through old extension practices. The concept of a learning organisation that embraces mistakes and builds on experience is largely used as a rhetorical device.

Organisational structure

Whilst there have been a few important champions of change within the government and at ministerial level, hierarchical structures have made it hard for innovators and supporters to effectively work for change. Sympathetic individuals have been scattered across departments or between government bodies. Rapid turnover rates have often meant that high level champions, including at the ministerial level, have been replaced by individuals who do not share the same commitment to or interest in supporting shifts towards more participatory and sustainable forms of agriculture[12].

12. From 1999-2001, Indonesia was led by three presidents and three Ministers of Agriculture. Each Minister had a different priority on agricultural policies. For example, the massive "Gemapalagung 2001" programme (intensification of rice, secondary crops and maize) implemented between 1998-1999 was not conducive for the development of IPM in the agricultural community. During that time, the restrictions on pesticide use and sunset clause of 21 active ingredients laid out by Ministry of Agriculture in 1996 was overruled. But later, in late 1999, this overruling was postponed owing to lobbying by several government agencies, NGOs, IPM farmers' associations and environmentalists.

Moreover, discussion about issues of organisational structure and process has not been encouraged or has become taboo. The disciplinary orientation of separate government departments and/or units within a given department conspire against joint efforts to respond to local needs. This compartmentalised structure has hampered cross-sectoral, interdisciplinary work needed to more closely reflect farmers' holistic realities and livelihoods. Finally, organisational structures have remained male dominated, with little or no female representation in different staff categories and managerial positions.

Organisational procedures

For the high level bureaucracy, the IPM programme has had a minimal effect on work procedures. Promoting and doing Community IPM activities are not part of the job descriptions and responsibilities of the agricultural department staff. Nor is Community IPM actively embedded in the planning of agricultural services. One of the conditions of the World Bank's National IPM Project was that job descriptions for Pest Observers (PHP) be revised to reflect their new role as IPM trainers. Yet despite repeated attempts to get these revisions, which would have reflected the reality of their roles under that project and this programme, the project ended with no change in job descriptions being achieved.

There are no incentives and rewards to encourage more innovative and dynamic staff. In fact, the skills and experiences of government staff who worked with the FAO Community IPM have often not been valued when they returned to their former departments. This reflects some of the problems that surfaced when staff were trained and subsequently worked under the FAO programme. During staff training, an important problem was whether a participatory approach was seen merely as a technical issue or a positional and spiritual one. Committed staff tended to be very dynamic and embodied the participatory 'spirit' in all aspects of their lives. By contrast the more conventional government workers bring a 'top down' quality to training and their use of participatory methodologies. The lack of enabling incentive structures in government services partly explains why innovation and new ways of working within bureaucracies have been stifled. Moreover, the superior conditions of staff working under the FAO programme complicated things further (Box 12).

Nowadays there is more of a gulf between the farmers and government staff who have reverted to top down practices. The FFS trainers are now marginalised in the Ministry of Agriculture. Their skills and experience are no longer relevant for the Ministry, which is more supportive of the agribusiness route to food production. Government procedures are making the agribusiness approach more attractive for

BOX 12

Incentives and rewards for organisational change

As FFS facilitators working under the FAO led programme, government staff enjoyed better facilities than the regular government extension workers of the PPL. For example, each IPM field facilitator was provided with a means of transportation and received special additional wages for field visits, unlike regular government extension workers. Farmers' meetings facilitated by the IPM facilitators received extra money and a 'consumption' fund for the participants. Whilst the regular extension workers did not receive any information and methodological support from the government, the FAO IPM facilitators received information, books and other training facilities and options. These differences in reward structures and resources made regular extension workers feel discriminated against and resentful at times.

Modified from Dilts, 1999

farmers, and there is a risk that CIPM farmers could become drawn into this corporate approach if networks are weakened. The government's agribusiness credit scheme programme is particularly divisive in this respect. In two areas there are examples of the CIPM network disappearing and farmers taking up an agribusiness credit scheme promoted under the government's Food Security Programme, adopted in 1999 (described in section 4.1.3).

4.3 Evidence for community level institutionalisation of IPM

The institutionalisation of community IPM has involved scaling up change from the micro (pilot projects, regions) to the macro level (larger geographical areas and inclusion of more farmers). However, it is noteworthy that there has been relatively little scaling up from the FAO technical support programme to higher echelons of the government bureaucracy. Instead, the emphasis has been on institutionalising IPM at the community level where local actors can more readily access local government services and funds, as well as gain more control over regulative institutions.

The clearest signs of organisational change are to be found within provincial, district and sub-district level government departments. These more local arenas for change are important because farmers in the sub-district have always been on the receiving end of policy.

With the ending of the national IPM programme in 1999, staff from the Department of Agricultural Extension, specifically the IPM Field Leaders from the Crop Protection Centre, were required to return to their routine duties as Pest Observers (PHPs). Fortunately, the FAO support programme had already made provision for this by shifting responsibility and capability for delivering training in Farmer Field Schools (FFS) to FFS alumni farmers. The programme also established and expanded

mechanisms to: a) provide follow-up farmer training through a programme of Training of Trainers (TOT) courses and b) develop and disseminate training materials (e.g. FFS curricula) to farmer trainers. This conscious decision to build the assets and capabilities of farmers encouraged further decentralisation of Community IPM and a dynamic of change driven from below.

One of the strengths of the IPM farmers' programme has been farmers' success at forcing the government's agriculture extension workers and Village Agricultural Cooperatives to adopt participatory approaches. This has meant that farmers are not being pressured to use broad-spectrum pesticides, and neither do credit packages require farmers to use pesticides. Local sources of funding have been very important over the last decade. The role of local government has been particularly enabling in providing funds for the FFS and IPM farmer led activities. Overall, 40% of activities were funded through the local government budget (provincial and district) and 30% were self-funded by farmers. Of the remaining 30% of funds, 20% came from the national IPM programme (only up to November 1999 when the programme was closed) and 10% from the FAO.

The institutionalisation of local level financial support to FFS is perhaps the most enabling aspect of the district government bureaucracy:

> *… costs (of FFS) range from about USD 0.30 to USD 27 per participant, with a clustering of around USD 8-10 per participant. …almost all of the funding for these courses, conducted during the last year, has come from farmers and local governments. This is a clear, concrete indication of the degree to which CIPM is supported at the provincial and district level. With regard to the issue of mainstreaming, this is a much more important form of support than nominal (paper) support for CIPM at the national level. A similar pattern of local support is also apparent for TOT courses.*
>
> (FAO review, 2000)

Both the continuing evolution of local level IPM farmers' groups and the decentralisation of government services to the district level make obtaining funding from local sources more possible. In recent years there has been greater emphasis on and success with assisting farmers' groups to access funds from these sources, both as one-off support for specific activities and, most importantly, as a regular local government budget item.

Another indication of organisational shifts in local government is their engagement in dialogue with farmer groups and their representatives. Local IPM farmer associations have been conducting their own congresses at provincial and district levels. They

have chosen their coordinators and management teams and developed action plans. These associations usually receive strong support from local governments. The governors and heads of districts (Bupati) not only provide some funds, but they also come to the congresses and talk with farmers.

In the context of decentralisation and the granting of more autonomy to regions, district and provincial level governments play increasingly important roles in policy making and organisational design. In many sub-districts, IPM farmers have started a farmers' civil society movement, and have had an immediate influence on the formation of district and local policies on agriculture and farmer livelihoods. Many sub-district and village agriculture policies have been influenced by IPM farmers' organisations, re-orienting agricultural development activities towards more sustainable practices. Farmer led activities focus on reforming laws on farmer rights over irrigation systems, the freedom to plant seeds of their choice, changes in land use laws, farmer credit and reforms that allow farmer organisations to be part of village decision making institutions. Village development projects have included human resource development in the form of funding support for farmers planning IPM activities. Therefore, IPM activities are increasingly affecting not only policy reform at sub-district level, but also at the village level.

5. Participatory Impact Assessments

The impacts of scaling up and institutionalising FFS/Community IPM to include more people and places have been remarkable. When measured against more conventional indicators of 'project performance', this participatory approach to natural resource management and social learning has delivered many dividends, including the creation of self reliant IPM training capability, development of new CIPM curricula, partnerships between government and farmer groups, forums for communicative action, influencing policy processes locally and nationally, enhanced capabilities of farmers, scientists and policy makers. This is borne out by the more detailed participatory impact assessments presented in annex 3. This section presents a summary analysis of how Community IPM has influenced assets (natural, social, human, physical and financial) and issues of equity and governance. Evidence for impacts was drawn from village level participatory assessments like the ones described in annex 3 and independent reviews such as the FAO Mid Term Evaluation of the Community IPM programme (FAO, 2000).

5.1 Impacts on livelihood assets

Through its emphasis on farmer to farmer training, action research, policy dialogue and other participatory processes, Community IPM has transformed natural, human, financial and social assets into improved livelihoods through security of income, food supply, health and a more invigorated rural civil society.

5.1.1 Human assets

Large scale Community IPM has created and strengthened human assets by supporting farmers' efforts to train other farmers, using concepts and methods that promote critical thinking and improved decision making. By and large, IPM training has provided farmers, both men and women, with many of the necessary intellectual tools to address a broad range of social, economic and environmental issues that affect their lives and livelihoods.

The approaches used to establish Community IPM enhance the analytical, decision making, and leadership skills of alumni. All of the Farmer Study Groups

(FSGs) have Farmer IPM Trainers among their membership. They have the process skills to conduct FFS and other activities that enhance critical thinking. All of these groups have conducted field studies, have worked on new practices to enhance yields and income, and all of these groups want to help other farmers to do the same. In all of the case study villages there is evidence that others are learning from FFS alumni.

Farmers are gaining in power both through enhanced informal recognition of leadership ability and the formal positions of leadership in local government and village associations to which they have been nominated. Participatory learning allows farmers to become more confident, assertive and empowered. Farmers regain the competence to make rationally based decisions about the management of their crops (in contrast to the instructions which were part and parcel of the Green Revolution packages). They also gain social competence and confidence to speak and argue in public. These qualities help farmers to approach officials and lobby for resources, organise farmer movements, and take on leadership positions in Farmers' Groups. These qualities and the enhanced status of IPM farmers is recognised by officials and other farmers too.

> *"I think that we women work better together as a group. Our discussions are more open and we make sure that everybody gets to say what she is seeing in the field and give her opinion about her observations."* Alifah, Mangunsari Village

> *"Now you find that we have a farmers' movement. Without waiting to be told to do so, farmers are organizing . . . Now we village officials just follow along."* Soepono, Village Head, Cilapar Village.

> *"After completing their IPM Field Schools these farmers no longer wait for instructions from officials."* Eko Sugiyanto, PHP

> *"They take action to solve their problems. I just follow them."* Ms. Latifah, Village Head, Kaligondang Village

5.1.2 Social assets

The Community IPM process has transformed and strengthened social assets in fundamental ways by supporting farmers' efforts to build associations and networks, giving them a stronger voice and improved means of collective action and mutual aid.

At village level, Community IPM has successfully created a space for farmers to build their own independent organisations. Now farmers can hold meetings and training

sessions without being supervised or controlled by the military. By publicly stating its support for IPM at a national level, the Indonesian government has made it possible for farmers to set up their own independent FFS and networks. And having put themselves on the local institutional map, FFS alumni organisations are becoming institutionalised through the legitimacy accorded to them.

As Community IPM is institutionalised at the village level, civil society is also strengthened. For example:

- The interests of members in a community, especially the more marginalised, gain a 'voice' and are taken seriously as part of the decision making process of that community.
- Decisions affecting a community are reached via a more open and inclusive process.
- Benefits of community decisions flow in many directions; they are not the exclusive property of one segment of the community.

Farmers nurture FFS-related spaces for communicative action and value them as a source of renewal and new life. The groups have 'presence' in their communities. That presence has given the groups and their members a voice. For example, Yakub Syah writes of Tirta Bumi's building as being a nest, a birthplace of IPM farmers. In Suryanih a member of the Turangga group writes that FFS alumni not only are creative, but also have many friends. Cinta Alam FFS can organise its alumni and others for advocacy activities. Farmer Study Groups have a high profile and are thus important socially to their villages.

Before FFS-IPM, farmers tended to do things alone. After participating in FFS-IPM farmers develop the skills, confidence and commitment to act and work together on an increasing range of technical and social issues, such as developing a savings and loan venture and obtaining credit for chemical fertilisers. Clearly social assets have been enhanced and will continue to grow because these people are committed to their groups and to helping their communities.

Community IPM farmers are now more vocal and active in local politics and dialogues with government, influencing local natural resource management policies and budgets (in some districts). Farmers have established a regular direct line of communication with their local legislators. Several appeals by farmers have been listened to, accepted, and acted on by district legislators. For example, in one district water use fees, which were being paid to local government by farmers, are now collected and managed by the farmers' water user associations. In Nusa

Tengarra, farmers were able to obtain funds and equipment from the local government. Inappropriate agricultural development policies have been successfully rejected. Village level development funds have been increased and directed to agriculture. Many agricultural university students want to join the farmers and support their activities nowadays. Women farmers' associations have also grown, and CIPM farmer associations are increasingly made up of a mix of men and women.

All these developments both reflect and reinforce a dynamic in which social assets are being regenerated through Community IPM.

5.1.3 Financial and physical assets

The sustainable agricultural practices associated with the spread of CIPM generally improve incomes and food security. There is strong evidence that as pesticide use has gone down, profit margins and rice yields have gone up (FAO Review 2000). Farmers save immediately on production costs and increase their profits. Economic studies show that IPM alumni saved an average of Rp 135,000/person/season on their expenses by readjusting their fertiliser rates and by eliminating their use of pesticides. They have also experienced increased yields and thus their incomes have increased by Rp 252,000 /person/season on average. This, combined with the lower production costs, means that incomes have increased by Rp 387,000 /person/season.

Farmers' observations and all other indications show that improvements in crop husbandry, including better pest management, result in higher yields.

> *"Since I have begun applying IPM principles my yields have gone up. I am now averaging between 600 and 700 Kg. from my plot. I am very happy because of this"* (Riswoyo)

> *"After attending the Field School I changed my approach to farming. I learned that by applying insecticides I was increasing my costs as well as increasing my risks. Insecticides kill both pests and natural enemies. If I don't spray, the natural enemies do my pest control work for me. The Field School also helped me to learn about balanced fertilisation and planting distances. I first started to apply IPM principles without telling anybody. My yield for the first season went up to 350 Kg. Since then I have averaged around 400 Kg"* (Sunani).

At the household level, Community IPM is directly linked to food security. Farm families are the primary consumers of their own production and epidemic outbreaks

reduce their food supply. Instability in production negatively affects incomes, even if they are not marginal farmers. All the indications are that pregnant women and young children are the first to suffer damaging under-nutrition. With reduced costs for pesticides and increased output, the income benefits increase farm households' capacity for investment in the farm business and education to further develop their livelihoods and also their capacity to purchase other essential food. Rural income growth in general contributes to employment and increased purchasing power.

In the longer term, Community IPM lays the foundations for future improvements in the financial and physical assets of rural communities by enhancing capacities, allowing facilities such as village laboratories and training centres to be built, as well as strengthening credit and revolving funds.

5.1.4 Natural assets

> *"IPM has been very profitable to me. We no longer have the problem of buying pesticides which are expensive and which we can't say have been of any benefit. Our rice is safe, there are no dangerous residues, and, more importantly, we are protecting our environment."*

Rice covers the largest area in Java and receives most pesticides in total. Rice plants grow in water and pesticides enter the water system, affecting aquatic life and the quality of water for other users. Community IPM significantly lowers pesticide use since FFS trained farmers rely more on cultural practices and the management of natural enemies to control rice pests. The approach has other ecological benefits:

- There is evidence that biological diversity (especially birds, fish, amphibians and arthropods) is greater in the rice fields of farmers who have adopted Community IPM. The regeneration of biological diversity in and around rice paddies also allows for new livelihood generating activities (e.g. local marketing of wild foods, and fish) and enhanced household food security. Eels (a food that many people enjoy) are now present once again in great abundance in IPM farmers' fields.
- In several villages, farmers have set up or re-created seed banks to maintain the genetic diversity of rice and other crops at the community level.
- Village level breeding of starter bacteria is being done to accelerate the decomposition of organic fertiliser material and enhance the biodiversity of soils.
- Whilst no nationwide epidemiological studies have been carried out, trained farmers report fewer instances of acute or chronic pesticide poisoning.

BOX 13

The ecological dynamics of an irrigated tropical rice agro-ecosystem

The key variables and processes that determine the dynamics of an entire ecosystem in irrigated tropical rice are outlined below (see Settle et al. 1996, for details):

Key process 1: **Energy is stored as organic matter in the soil and brought into the system by micro-organisms and detritus-eating insects. (See Figures 5 and 6)**

From the time that water first floods a farmer's field in preparation for planting, organic matter--derived from residues from the previous crop cycle, organic waste in irrigation water and algal growth, provides the energy for an array of micro-organisms. The energy flow begins with bacteria, being eaten by protozoans and rotifers, and continues upwards to larger zooplankton. In a parallel flow, detritus-eating insects, such as the larvae of flies and beetles, and especially the minute but abundant Collembola, feed directly on decaying organic matter, including material floating on the surface of the water. This process is fundamental to aquatic systems, and will be found in all irrigated rice systems.

Key process 2: **Aquatic plankton provide food for filter-feeding insects.**

The small to intermediate-sized zooplankton and the phytoplankton found in all flooded rice fields provide food for filter feeders (midges and mosquitoes). Densities of chironomid midge larvae have been observed in irrigated rice fields in the thousands/m2 range. Again, abundant midges and mosquito populations are a general characteristic of rice systems.

Key process 3: **Larvae and adult plankton-feeders and detritus-feeders provide a consistent and abundant source of alternative food for generalist predators from early in the season, until after harvest.**

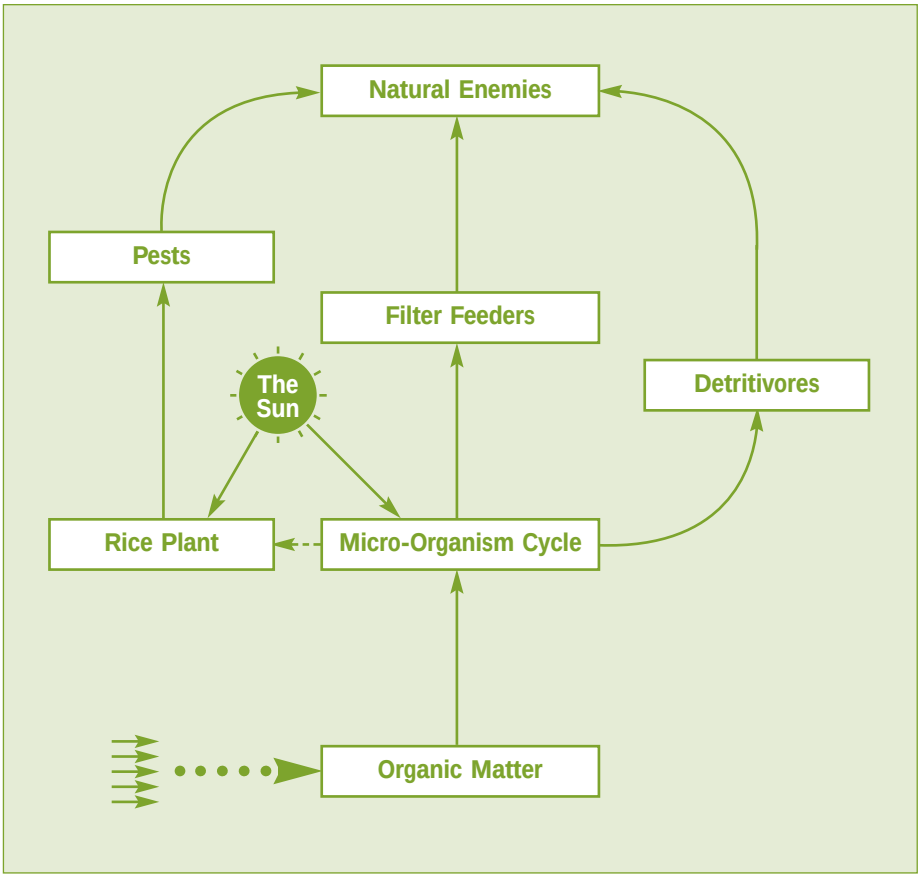
The existence of abundant alternative prey effectively "decouples" predator populations from a dependence on the pest populations, giving predators the opportunity to develop well in advance of the normal pest populations. As a result, mortality of pest populations due to predation is high -beginning with early-season pest migrants and carrying forward throughout the season. This process minimises the likelihood that pest populations can "escape" control by natural enemies and reach outbreak levels. Furthermore, high populations of detritivores found in harvested stubble fields assure a continued food source for generalist predators for some time after harvest. Consistently low pest populations in tropical rice result from the fact that natural enemies-especially generalist predators-are not directly dependent on pest populations. Rather, there are three separate avenues for energy flows to natural enemy populations: 1. from organic matter via micro-organism cycles and filter-feeding insects, 2. from organic matter via detritus-eating insects, 3. from the rice plant via herbivores. A more detailed elucidation of the energy-flow diagram and predator prey relationships for tropical irrigated rice at the functional group level is shown below in Figures 6 and 7.

On the whole, consumers are increasingly concerned about the health risks posed by pesticide residues in food, demanding safer food in the market place or through campaigns that highlight the values of Community IPM.

The building of natural assets is not limited to the FFS trained farmers. Other farmers are using the same practices as alumni.

FIGURE 5

Trophic-level Energy Flow Diagram for Tropical Irrigated Rice
(modified from Pontius et al., 2002)



The conservation and sustainable management of natural assets has also gained from an enhanced understanding of the ecology of rice agroecosystems (See Box 13 and diagrams). Knowledge of the soil-plant-pest and predator dynamics that drive the rice agroecosystem and maintain its overall structure and functions has led to new practices that further regenerate natural assets in and around rice fields. For example, the fundamental role of organic matter in structuring trophic relations in rice paddies has led to the incorporation of soil ecology in the curricula of several FFS/FSG. Many farmer groups are now doing studies on the use of organic fertilisers and farmers are building their soils by using composted organic materials obtained in and around their villages. Ecological knowledge thus informs the local adaptive management of rice agroecosystems and surrounding landscapes by farmers.

FIGURE 6

Functional-group Level Energy Flow Diagram for Tropical Irrigated Rice (modified from Pontius et al., 2002)

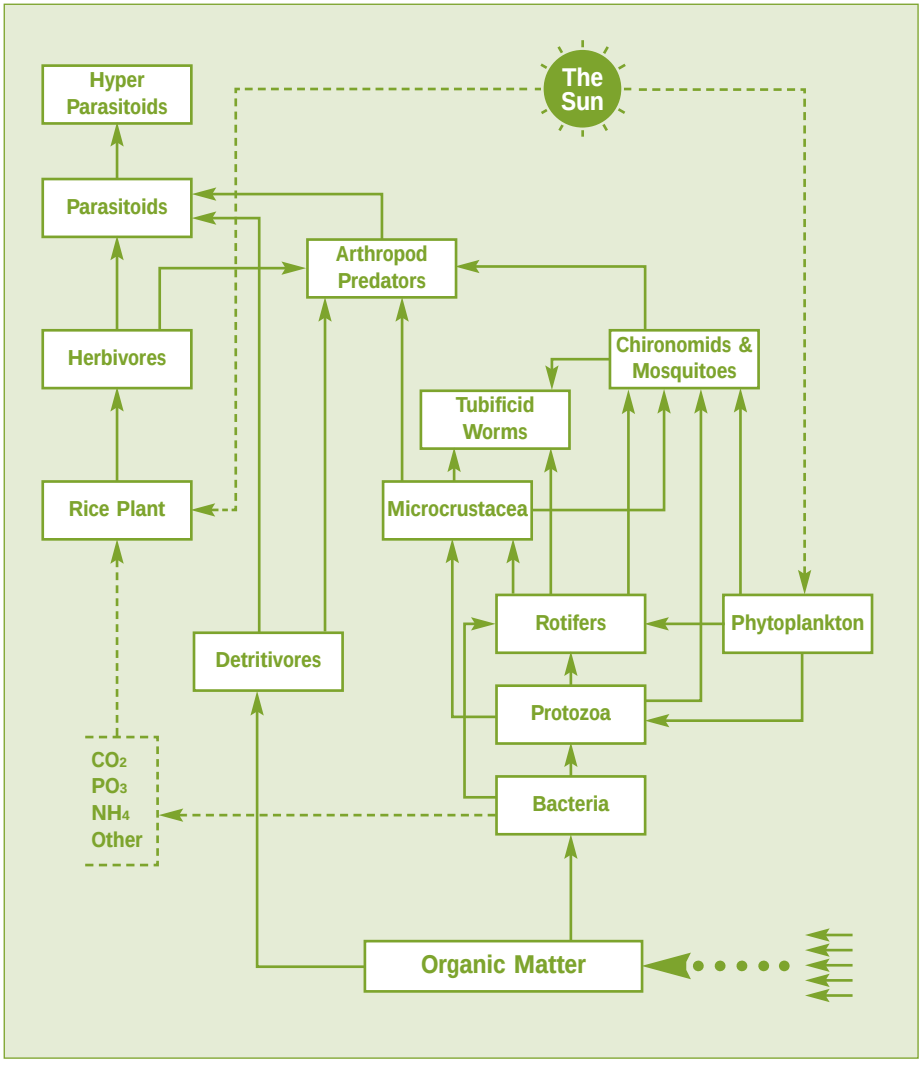


FIGURE 7

Trophic level population dynamics in a field in West Java, 1992 (modified from Pontius et al., 2002)

Northwest Java Season 2

5.2 Impacts on gender, equity and governance

5.2.1 Gender

The degree to which gender issues have been taken into consideration in large scale Community IPM is problematic. Some claim women are well represented in the CIPM programme, whilst others say that although gender is inherent in the notion of participatory development, it is still not automatically addressed. Gender inequality is deeply rooted and perpetuated through tradition, religious belief as well as development policies, including the IPM programmes. Gender as a social and cultural construction of the relationship between women and men contributes to inequality and discrimination against women in rural society, including domestic violence towards women.

A number of external constraints prevent women's full participation in FFS, attending TOT courses or being active farmer trainers:

- In many of Indonesia's cultures women need permission from their husbands (or fathers) to attend, especially where all or most of the other participants are males; in some cultures it is simply not accepted for women to participate in group activities with men who are not their husbands or close relatives.
- Practical difficulties in scheduling activities so that they do not clash with the wide range of other family support tasks for which women bear primary responsibility.
- The degree of acceptance of male farmers to having women as part of a group or as a trainer.

The FAO and other external agencies supporting the Community IPM programme have been aware of the need to address gender issues. They have trained hundreds of women in FFS and there is also a substantial number of women who have participated in TOT for IPM Trainers, including women farmers. However, the previous National IPM Programme had to select and train staff from the District Agricultural Service who were mostly men. This resulted in, and reproduced, a strong gender bias in the subsequent behaviour of those who received training. In some provinces, all women PHPs received basic and advanced training, but the number of women PHPs in the province was small. Since then, and with the adoption of FFS on gender and farmer-to-farmer as the primary mode of providing training, it has been possible to redress this imbalance to some extent.

By 2000, the FAO technical support programme openly recognised that not enough had been done to address this problem. It began actively exploring practical means

FIGURE 8: Women and rice farming

Women farmers plant on dry land

"Plant our hope and harvest our luck..."

Women farmers sell the products at a low price

Cycling from the field, riding their fate...

Selling leaves for extra income

for increasing the participation of women in all aspects of the IPM programme and making gender issues an integral part of all IPM training courses.

A participatory approach to gender mainstreaming was adopted by the FAO technical support programme in 2001. The aim is to incorporate both men and women farmers' concerns and experiences as an integral part of the design, implementation, monitoring and evaluation of IPM policies and programmes. It involves several steps:

1. Establishing gender core facilitators and a participatory research team. This team becomes the FFS facilitators for gender mainstreaming.
2. Data collection. The research team establishes gender equality indicators, such as access, participation, control, benefits, burden and level of violence. These indicators are used to collect data on gender issues, gender equalities and gaps in farmers groups, households and communities.
3. Analysis. The data are analysed by the farmers themselves to understand the degree of women's marginalisation, subordination, burdens and violence against them. This also helps them understand whether the IPM programmes and policies have contributed to these problems.
4. Action: farmers themselves establish and implement measures to reduce and eliminate gaps between women and men. What will increase women access to, control over, and benefit from the resources of IPM programme as well as their activities? What will expand women participation in the IPM farmers' organisations, programmes and processes?
5. Monitoring and evaluation.

Over the last two years, local gender learning groups have been set up at the district level with the aim of discussing all CIPM policies. If policies are found wanting then internal advocacy is relied on to bring about more gender equitable reforms. Women farmers involved argue that gender will become an important component of the curriculum of FFS. The aim is for 40% of FFS members to be women. Moreover, gender debates have been opened up by vocal women within the largely male dominated federation of FFS/IPM Farmers (IPPHT). Organisational cultures are being challenged by arguments which emphasise that mainstreaming democratic participation calls for gender sensitive policies and practices.

5.2.2 Equity

Village level discussions on property rights highlight equity as a key issue in scaling up and institutionalising participatory approaches. A common perception among

BOX 14

Land ownership and IPM

In **Klajuran** village, farmers on average own productive land of about 1000 m^2. Almost one-third of the population is made up of farmers of small dry fields, usually working as peasant workers on land owned by several rich farmers (there are few farmers owning land of more than 1 hectare). In this village, there are around 50 IPM participants, 20 percent of whom are landless peasant and tenant workers. Two participants are farmers with lands of more than 1 hectare and the rest (76%) are smallholders.

In the village of **Mangunsari**, of the 114 resident families, two own more than 3 ha, 51 own less than 1 ha and 60 are landless. The IPM participants are quite variable, including large holding farmers and smallholding peasants, landless peasant and tenant workers. Seven peasant workers and six smallholders have adopted sustainable farming (*pertanian lestari*) without the use of chemical fertiliser, chemical pesticides and genetically altered seed (*bibit unggul*) after following IPM FFS because of their concern for environmental sustainability, and the lower production costs such approaches incur.

In the village of **Toroh**, Grobogan, 60% of farmers own land of less than 0.25ha. Land holding size per family is declining through subdivisions in the process of inheritance. Participatory mapping shows that nearly a half of all land in the village is *bengkok* land/land owned by the village (*norowito*). Farmers with no land and smallholders usually work land owned by village notables. More than half the IPM participants in the village are village notables and their families.

poorer groups is that equity within farming communities has never been a key priority for the Community IPM programme and its external support agencies. For example, social maps done in villages reveal that the FFS programmes run by NGOs and government largely missed the landless farmers. By and large the genuine participation and commitment of a significant proportion of the landless population to the Community IPM process has been minimal or non existent. The programme also does not tend to represent the very wealthy who have little interest in IPM, nor part-time farmers, farmers in marginal areas and those with very little land who do not grow paddy rice.

The structure of land ownership and class, namely the relationship between landowners, peasant and tenant workers, is also influential in the support or rejection of sustainable farming ideas. Semi-feudal modes of production do not promote equitable farmer participation in sustainable farming practices like IPM.

Landowners have the greatest say in the choice of seeds, fertiliser, and approaches to pest elimination, even though it is often the workers who bear these input costs. Thus, it is clear that the peasant workers stand to risk the most from harvest failure, especially as the small land they own or farm are their primary source of sustenance for their families. It is no wonder that smallholders, tenant or peasant workers are more oriented toward results.

This has been an obstacle to the IPM Programme, which ultimately puts the onus on peasant and tenant workers to rehabilitate the agroecosystem despite the fact that the land isn't theirs and can be taken from them any time. It is the landowner, who might never have put his feet onto his muddy fields, who will obtain the long term profit, often without spending any money at all (Box 14).

Participatory dialogues with farmers and rural people emphasise these broader equity issues, such as who should bear the costs of environmental repair and the regeneration of natural resources. IPM and other LEISA[13] programmes offer ways of reversing environmental degradation caused by long term and systemic chemical exposure. But the reduction or even eradication of chemical inputs can lead to a drop in harvests, and even heighten the risk of harvest failure. The farmers who lost out because of inappropriate Green Revolution packages now have to bear possible losses associated with land regeneration and environmental care. Thus, the cost of repairing land destroyed by the Green Revolution is put in the hands of already burdened farmers. The government which promoted Green Revolution farming, transnational chemical fertiliser and pesticide companies and others that reaped rewards have never been made responsible, let alone asked to support the rejuvenation of land and natural resources spoiled by chemical inputs.

Field level observations and dialogues with farmers confirm that the majority of farmers feel burdened when told to shift from using chemical inputs to more environmentally friendly ways of farming. This has been one obstacle to the spread of IPM. Farmers argue for more equity; their double burden could be made lighter by making TNCs and government more accountable for past actions that caused widespread environmental damage.

5.2.3 Governance

> *"Never in my wildest dreams did I think that a programme about 'bugs' would bring the dawn of democracy and liberation to Indonesian villages"*
> Journalist, novelist, environmental activist Mochtar Lubis in 'The World Paper'[14]

As one of the NLG members shrewdly observed: *"Community IPM is a project of democratisation without saying it"*. This understanding of the dynamics of institutionalising Community IPM is now widespread among many farmers and their supporters in government, the research community and NGOs. The incorporation of advocacy training in FFS has led to renewed political activity, with farmers organising,

13. LEISA: Low External Input and Sustainable Agriculture
14. Cited by Pontius et al., 2002

negotiating and working for change in policies and institutions, at both local and national levels. There are several documented examples of the impacts of large scale popular participation on governance and policy processes:

- The spread and dynamics of Community IPM has contributed to a climate in which the place of pesticides, especially insecticides, is increasingly questioned. There is now a growing realisation that insecticides have led to, rather than prevented, epidemic outbreaks of Brown Plant Hopper (BHP) in rice. Increased farmer awareness and demands by the IPM Farmers' Association in Indonesia may have contributed to the re-imposition of the ban on the more toxic pesticides.
- At sub-district levels, IPM farmers have had one immediate effect on local policy. Many sub-district Heads have instructed villages to broaden their development activities. Village development projects should now include human resource development in the form of funding support for farmer planned IPM activities. Farmers have organised to help Villages Heads to realise this policy and have been able to lever funds at the village level to support IPM activities. Thus IPM activities are not only becoming part of sub-district policy but also of village policy.
- Community IPM dynamics have successfully created space for farmers to influence state budgets, by persuading the government to 'take over' the programme to make it sustainable, from local level up to national level Many village councils, for example, decided to fund IPM field schools in their village. Many district level governments have also put IPM field schools in to their routine annual budgets. The government at the provincial level has contributed funds to extending and intensifying Community IPM.

In these processes of changing and democratising governance, farmers' organisations usually begin to arrange their own needs and criticise the village budget, and then plan the advocacy needed for re-budgeting. Reclaiming rights to water use and the influencing of policy on water distribution at the district level are good examples of how farmer led advocacy is democratising policy processes on natural resource management.

6. Influencing policies and institutions: the role of the NLG

As a part of this research, the National Learning Group's commitment to the principles of participatory action research (see Table 1) led it to not only analyse impacts, policies and organisations but also to actively influence policy processes and institutions. The main idea behind the establishment of the NLG was, after all, to involve a wide range of actors (government staff, NGOs, farmer organisations, academics, journalists…) in defining the issues and outcomes of the action research as well as developing options, solutions and an action plan. They came up with some key areas on which to campaign. An overview of the NLG's activities in this area is summarised in Annex 4. The participatory action research process has brought about some significant changes and initiatives which are explained in this section.

6.1 Visions of IPM futures in Indonesia

The National Learning Group used interviews, group discussions and plenary meetings to elicit views on the future of Community IPM in relation to farmers' livelihoods.

Many FAO programme staff interviewed would prefer the IPM programme to be handed over to farmers and to see the Indonesian IPM Farmers' Association (IPPHTI) strengthened. This scenario envisions a diminishing role for the Ministry of Agriculture. There is a strongly held view that the more the bureaucracy is involved in Community IPM, the more distorted the target becomes and the greater the overhead costs. Thus, a farmer controlled programme would be more efficient. Farmers have proven their managerial capability to run their own programme. Thus in the future if any outside donor wants to fund an IPM activity they could contact a farmers' organisation, either at village or national level, directly. However, this option is not free of risk. Central and the district government will feel excluded, thus minimising their chances of obtaining fortunes.

Many government IPM field workers who have a strong commitment to a culture of participation also feel that it would be better if future national government run IPM programmes be stopped because in the past the project had been used by

government staff to dominate farmers and to use it in corrupt ways. Another advantage of farmers running the programme would be avoiding corruption, – though surely not in all instances. The IPM programme should thus be directed towards a movement managed by IPM farmers at sub-district level by strengthening the Farmers Field Schools and horizontal linkages and networks.

In this vision, farmers are located at the centre and are the subject of the IPM movement. The IPM farmers' movement therefore becomes an independent movement, and an autonomous civil society organisation with space to choose its learning systems and agricultural focus. Government and other external organisations act as facilitators and supporters, enabling farmer groups and local communities to develop their own concept of sustainable development. This vision defined the NLG's campaign strategy.

6.2 Advocacy priorities for Community IPM versus the Green Revolution

After engaging in local learning groups' study process and discussing outcomes in the National Learning Group, many specific interconnected issues came to the fore. These issues can generally be categorised into three areas:

1. Control over the means of production: farmers' overriding problem. The main problem is a land ownership and tenure system that hinders IPM and environmentally sound agriculture.
2. Marketing and post harvesting activities. A key problem is the government's floor pricing policy.
3. Production techniques and processes: including the degree to which chemical fertilisers and pesticides are used, as well as the relationship between government extension workers and farmers, farmers' organisations and farmers' knowledge production.

The most crucial part of any advocacy process is deciding how to package the issues so that they will be supported by as broad an audience as possible. After a rough long process, farmers and NLG members finally agreed to package the variety of issues and problems into one box: the need for Indonesian *"peasants/farmers' rights to be protected from the Green Revolution".*

6.2.1 Supporting an IPM farmers' congress

The next step for the local and national learning groups was to identify effective ways of presenting and communicating these key issues to the broader community. The

FIGURE 9: The FFS/IPM farmers' congress in Yogyakarta (1999)

strategy chosen was to create and support national events on IPM. This included supporting a farmers' congress in June 1999, organised by the farmer IPM trainers and held in Yogyakarta (Java).

The congress was attended by more than 500 participants from 12 rice-bowl provinces. Its general aims were to respond to recent constraints and challenges faced by IPM farmers, particularly focusing on government policies that undermine or ignore the principles of the Community IPM Programme. The congress was also an auspicious time for the farmers to start campaigning for community IPM and enlisting broader support from Indonesian society.

The congress included public debates between farmers and the Sultan of Yogyakarta and the government/minister. The NLG invited mainstream figures to also publicly share their experiences of the Green Revolution. For example, a public statement by university-based scientists and agriculturists described the failures of the Green Revolution and the damage it has inflicted on farmers' livelihoods and the environment. This public statement coincided with the organisation of press conferences and press releases to promote the IPM farmers' congress.

The organising committee rejected the offer of financial support from pesticide companies, which wanted to hold their own exhibition and promote their products during the event. The farmer committee also successfully negotiated with government officials that they would not use this event to promote their own agricultural programmes. These points later influenced the latest Ministry of Agriculture policy on

BOX 15

The aftermath of the congress

"After coming home from the congress, we all suddenly felt very strong. Gone is the fear that has plagued us and the problems we are facing suddenly became clear. As soon as we arrived in our respective villages, we immediately moved. Tardy KUT (farmers credit), Social Welfare fund that has been corrupted by village officials, nepotistic and corrupt Farmers Cooperatives, PPL that has become formulators, each one has been the target of our protests. We were even brave enough to face ten members of the representatives members", said Supradi, a farmer from Jember, and Marno a farmer from Bojonegoro.

Almost every territory reacted similarly to their problems on their return from the congress. Tens of hundreds of farmers gathered to demand changes; they brought these demands immediately to those parties that are most connected to them and are considered part of the problem. IPPHTI farmers' demonstrations suddenly reached the local newspapers. They also consolidated and planned their actions together at the provincial level. Their target was the Minister of Agriculture who, in his early tenure, frequently conducted official and territorial visits.

"The new Minister of Agriculture is in a tight position as he is forced to deal with critically minded IPHHTI. This new minister was an FAO person too and could not believe that the PHT farmers he once knew well are now charging the government that has supervised them before," said Zambani, an FAO Indonesia staff member.

pesticides. Finally, several strong political statements and action plans came out of this first national IPM congress. The statements were centred on the issue of farmers'/peasants' rights and represented an important watershed in the post Suharto regime. One of the decisions of the congress was to establish a national FFS alumni organisation, the Indonesian IPM Farmers' Association (IPPHTI).

This congress is recorded as the biggest farmers' meeting in the New Order era. Many issues on farmers' rights surfaced during the congress and it became the catalyst for the emergence of an Indonesian IPM farmers' movement (Box 15).

6.2.2 Peasants' Charter and farmer movement: building broader alliances for policy change

Following the congress, REaD held a peasants' rights alliance meeting in Bogor (West Java) on behalf of the NLG. The meeting agreed plans for a more systematic and scheduled farmers' rights advocacy. It was also decided to draft a farmers' rights charter, revise national laws and share responsibilities for advocacy work and liaison with farmer groups. In May 2000, a follow-up meeting was held in Yogyakarta. The meeting agreed to merge and unite the issue of farmers' rights with the question of agrarian reform into a common framework and social movement.

BOX 16

Examples of province level meetings on the peasant rights charter

On July 18-19 2000, the NLG, in cooperation with the Agriculture Department of Gadjah Mada University, held a seminar. Differing from previous events, the seminar positioned farmers as speakers, with the NGO, government, regional parliament (DPRD), private businessmen, the university, mass media and students as members and participants in the discussion. The event encouraged farmers of Yogyakarta and Central Java to formulate the Yogya-Central-Java Farmers' Charter. The charter is composed of 6 statement points on the position of Yogya-Central Java farmers in connection to their rights over land, culture, market and freedom to organise themselves. The peasant's charter was then declared in a Yogya-Central Java Farmers General Meeting on July 29th 2000 at Gadjah Mada University in an event covered by the national and regional media. The General Meeting was wholly coordinated and held by farmers themselves who created their own Yogyakarta Farmers Committee. The NLG from Yogyakarta and Central Java played a support role.

On 24 November 2000, the representatives of Yogyakarta farmers held a meeting with the Governor of Yogyakarta, the Sultan Hamengku Buwono. The representative farmers from 4 districts proposed a permission to the rights of cultivating land (magersari) to the Sultan so as to be used by farm labour and small holder farmers. Academics and the press also attended the meeting.

A process of continued revision of the draft Peasants' rights charter was supported by the NLG and broader coalitions. Throughout the process, comments and feedback were also asked from a wide array of secondary stakeholders and from the broader farming community. Varied experiences and battles heightened awareness within the movement that only the farmers themselves are competent in fighting for the birth of a national policy. Farmer organisations have the capability of pressuring and bargaining with the decision making elites. Outside parties could only play support roles in strengthening farmer led efforts.

The NLG, with the help of several NGOs and students, also facilitated broader public understanding and support for the Peasants' rights charter through campaign tools such as banners, a million signature book supporting farmers' rights and agrarian reform, posters, leaflets, and thousands of copies of the farmers' rights draft. In Bandung, the KPA printed thousands of books on the Agricultural Law (UUPA) revision no: 5 1960. The entire campaign and socialisation tools were then distributed to NGOs, farmers' organisations and concerned parties throughout Indonesia. There have been various other events in several regions. More generally, the NLG played a catalytic role in facilitating a series of province level and national meetings that helped generate broad support for the Declaration of Farmers' Rights (see Box 16)

At the national level, the NLG held a National Farmers Meeting at the Institute of Agriculture (IPB), Bogor in September 2000. 150 men and women farmers from 25 provinces and 56 Indonesian NGOs and other social movement activists attended the meeting, which had two important outcomes:

1. Demanding admission of guilt from the IPB to farmers for being the agent of the Green Revolution in Indonesia. Several academics and researchers from IPB apologised in the forum, speaking in their personal capacity and not in the name of their institution.

2. The further development of the draft Indonesian Peasants' Rights Charter, comprising seven position statements on the violation of Farmers' Rights in Indonesia. The full text of the Indonesian Peasant Charter is given in annex 5.

In March 2001, the NLG was present in a meeting at the Human Rights Commission (HRC) office to prepare for the Indonesian Farmers National Conference hosted by the HRC. The meeting was to be a medium whereby violations toward farmer's rights all over Indonesia would be addressed and where discussion would take place in order to rectify the problems in conjunction with the Human Rights Commission and several other connected central government officials. To welcome the conference, a farmers action was held to demand the solving of the case of the appropriation of thousands hectares of farmers land to build a dam. The event has revealed many stories of farmer's rights violations to his land and violence conducted by military apparatus and hired thugs toward the farmers.

The Indonesian Farmers' National Conference, themed *Agrarian Reform for the Protection and Fulfilment of Farmers' Basic Rights*, was hosted by the HRC and held in Cibubur, West Java on April 17-20 2001. The conference was attended by 154 people, among them members of the Human Rights Commission, Vice President Megawati Soekarnopoetri, NGOs and representatives of Indonesian farmers' organisations. The conference produced six resolutions: (1) to the Head of Police on the violence and arrest of farmers fighting for their rights in various regions in Indonesia; (2) to the Minister of Agriculture on genetic engineering in agriculture; (3) to the Ministers of Economy, Finance and Industry and Trade on the liberalisation of trade that harms farmers; (4) to the Human Rights Commission on the forming of a Joint Secretary in the Commission to fulfil and protect farmers' basic rights; (5) to the President, the Supreme Court and political parties on the creation of an agrarian court; and (6) to the Assembly Representative on the creation of a TAP MPR on Agrarian Reform and Natural Resources Management.

FIGURE 10: Farmer coalitions organise for change

A day before the National Conference, the NLG held a national seminar on genetically modified organisms (GMOs) in Jakarta. National level farmers' organisations, academics, the press, policy makers and NGOs attended the seminar, which formulated a demand by farmers to reject genetically engineered agricultural products.

At the time of writing, many of the social and human assets generated through the Community IPM programme are being mobilised to secure implementation of The Peasant Rights Charter, with its emphasis on food sovereignty (see annex 5).

7. Lessons from the research process

7.1 Learning group reflections

Learning group members were encouraged to critically reflect on the participatory action research process they were engaged in. Recurring cycles of reflection and action allowed them to identify several lessons about the process of producing knowledge and on the learning groups' way of knowing.

The main idea behind the establishment of the NLG was to involve a wide range of civil society actors on defining the issues and outcomes of the action research as well as developing options and solutions. In the project, the inclusion of a cross-section of stakeholders in the NLG created a shared feeling of ownership of the process and outcomes. The informal, relaxed atmosphere of the NLG space sustained the commitment of actors who did not necessarily agree on everything (see Boxes 17, 18 and 19).

BOX 17

An insider view on the National Learning Group dynamics

It was very interesting to carry out the policy analysis using historical flow methods in focus group discussions. NLG participants consist of people from various backgrounds and having concern on different issues; from land reform, gender, organic farming, to integrated pest management. They also vary in gender, age, and life experiences of different era. The discussion was set up as an informal one, took place at a humble cottage. It had succeeded in creating the friendly and relax atmosphere, so that the gap among the farmers' assistant activists was dispersed. Lots of data and information, which often untouched in the official history, revealed in the chat about and black humours, bitter jokes of the hard times in the past:

In 60s, many people in Gunungkidul district ate remains of cassava, so enormous number of people get ill from busung lapar(HO) everywhere. That period was known as era of Begaber, cassava waste. Starvation was everywhere. Even people cannot sleep well for the rat could bite their toes. However, exactly during that severe period many innovative farmers emerge to introduce their excellent innovations, say Pak Mujahir introduce Mujahir fish, Pak Mukibat introduce superior sweet potato from his efforts of cross breeding the old ones. There are several other farmers like Pak Jayus, etc. it was in the Green Revolution era, when the people have enough food, the (farmer) creativity extinct… (Amir Sutoko, Mitra Tani staff)

BOX 18

Extracts from the notes of National Learning Group members and the NLG log book

National Learning Group (NLG) is not a formal organization, since it does not posses a hierarchical structure. The title of this organization was not even declared officially to avoid formalities that sometimes limit the interest of the people to join in. NLG is just a community where people can learn together, and with this format, it can unify activists from different backgrounds, different issues and strategies, different projects, and different ideologies. What is the appropriate strategy that can accommodate many different people with different ideologies to be able to co-operate in voluntary works for some time? Personal approach is seen as the appropriate strategy. So then invitations started to be delivered through telephone, one by one, for a relax discussion without missing out the very substance of NLG. To gather 10 people was quite an achievement considering their different agendas. These 10 people then invited their partners with the same perspective and commitment to join. Again, with personal approach, not in a framework of a project or an organization.

Meetings started to be held, with the spirit of learning, - just as the title of the NLG invited us to do-, with full of discussions and sharing. Each person is a source, a teacher, as well as a student. NLG doesn't have routine meetings. In a meeting held in Kaliurang –Yogyakarta, formed an input on policy analysis and organisational analysis; a meeting in UGM formed critical reflection of scholars' role on peasants' subjugation; meeting in Wisma Realino Yogyakarta formed the first draft on peasants' rights; and meeting in Wisma Gizi Bogor formed a strategic plan of peasants' rights advocacy. At the time, NLG has become an alliance to support peasants' involvement in peasants' rights advocacy; and not merely a facilitator of action research. A division of role and function became clear, as described below.

Function/Role	Guarantor
Secretariat	REaD-INSIST
Processing inputs for draft of peasants' rights	Francis Wahono (Cindelaras, Yogyakarta)
Draft socialization & peasants' organizing	Nugroho Wienarto (FAO, Jakarta) Simon Hate (FAO, Jakarta) Petrus Saridjo (NGO Forum for Peasant in Java) Henry Saragih (Federasi Serikat Petani Indonesia) Triyas Gepeng (Mitra Tani Yogyakarta) Amir Sutoko (Mitra Tani Yogyakarta) Nangsir (Pest observer) Nanang (Pest observer)
Lobbying	Noer Fauzi (Agrarian Reform Consortium) Indro Surono (Elsppat) Erpan Faryadi (Agrarian Reform Consortium)
Campaign	REaD Arief (Duta Tani Karawang) Damayanti Bucjory (Bogor Agriculture Institute)

FIGURE 11: A learning group member sharing reflections on the past and the future

At the beginning, the action research was mainly conducted by several practitioners and activists concerned with the IPM issue. However, as the process unfolded many NGOs' activists, academics, government staff and students with a variety of concerns started to join in.

The role of the National Learning Group was key in developing an action plan to take forward the action research findings and critical reflections by actors engaged in the process. In this action research, the action plan and follow up were jointly worked on by IPM/FAO and civil society actors; the FAO IPM farmers groups, non project IPM farmers, university based intellectuals, NGO activists, independent researchers, and the FAO-IPM staff, staff from the World Bank, and government staff. The action plan received extensive support from these institutions or/and from well placed champions within these organisations. The process was characterised by a concerted effort to build stakeholder involvement into every stage of the action research and advocacy for policy and institutional reforms. Building effective partnerships requires the more powerful partners to hand over much control over the process. Only then can the weaker partners be the main owners of the process.

Involving a wide range of civil society actors in participatory processes is not easy and requires time and commitment. Therefore, the strategic issues chosen must be holistic and beyond the specific issues and sectoral interests of different actors. Conflicts of interests among organisations often occur during the process. This puts

BOX 19

Reflections of National Learning Group members

The National Learning Group (NLG) did not confine itself to a socially disengaged research role. As part of the participatory action research process it increasingly played a catalytic and supportive role in the emergence of an alliance for peasant's rights advocacy all over Indonesia. Nowadays the NLG is the biggest supporter of the all Indonesia peasant's rights movement. Reflecting on these processes of learning and action, some of the NLG members shared their thoughts below.

Some worries….

"I'm afraid that the spirit of NLG won't be long lasting. Dealing with farmer issues really needs strong stamina, and big courage to take the 'long and winding road'. Who are activists with strong stamina and with no fear to work alone? Weak stamina will bring the advocacy work to less optimum result. In the future, it needs consolidation among farmer organization, as they will act to be the subject of change; where the support of activist will determine more on the objectives, strategy design and division of role and responsibility. Building strong farmer organization, struggling for policy reform (including Peasant Rights Acts) and developing self-reliance farmers organization are some important agendas that needs to be elucidated in each level of each area."
WITORO, The Director of Nastari Foundation BOGOR, WEST JAVA

Some criticism, with intention to join in…

"Why the events were most regularly conducted in Yogyakarta, whilst many farmers are not there. Those in Jakarta were only "sharing" about peasant rights without quick action. Just try to limit the 'wants' and try to be empathetic. NGO activists should be humble and detain their own organization/group/network by giving most attention for the 'need and situation' of the farmers as the main subject of the empowerment. Let's keep on moving, invite more friends to make national network all over the country.!"
PETRUS SARIJO, Director of LESMAN BOYOLALI, CENTRAL JAVA

Some pessimism…

"In relation with NLG, its image is very local. Its agenda is only for Central Java and no attention is given for other region. NLG is also less including more potential parties, and lack of longer perspectives; in a sense that it's not prepared to facilitate the need for sustainable movement. It looks like as if the alliance is only established for achieving certain targets, and after its next agenda is abandoned. NLG needs stronger 'glue', even though peasant's rights issue has been considered to be 'uniting'. This might be the consequence of their other agenda, so that this alliance is only made up for immediate need. And will become 'cold' after. I think NLG lacks sense of sustainability".
SHANTY KUSUMA, Babad staff PURWOKERTO, CENTRAL JAVA

BOX 19 contd.

Some good news…

"By NLG, we could work more efficiently, because of the supports of experts from many different background. Information dissemination becomes faster and problem solving are getting more holistic and less impartial. In grass root level, this network leverages confident among farmers because of the support of many parties. With more fair information dissemination, they could gain many materials for comparative study. Personally, I could gain more knowledge on marketing, on appropriate location for my plants, and more varieties of organic products that I could sell for broader market, better price and better qualities. Its job description is also pretty good; field facilitators responsible to facilitate farmers and farmer groups on each sub-district as well as performing organizer roles, whilst the event organizers responsible to manage NLG's meetings, and the system supports responsible to facilitate logistics by providing fund, data and network of information, as well as provide media of information as part of people's education"
ARDIYATI, a member of activists alliance for peasant's rights supporter YOGYAKARTA

"learning group method conceptually is more ideal in emerging issue and movement to be achieved together. In group level, we talk in the language of mass proponents, ideas, techniques, etc in a bigger and richer framework. Its advantages are clear: empowering the movement towards transformation, strengthening solidarity, conflict management and more support and networks for future movement nationally as well as internationally. For my organization, NLG has enriched methods and approach on our movements."
INDRO SURONO, Coordinator of ELSSPAT BOGOR, WEST JAVA

"My motivation for joining NLG is because I believe it's way much better to work together than to work alone. I gain more useful inputs when I'm in a 'shortage of theoretical framework' on my field works. As I do realize that it's not easy to find discussion partner for what I'm working on right now, so my involvement with NLG is very useful even though it's still in an early stage; mostly in deconstructing, rebuilding and reshaping farmers organizing. I could be in the "same room" with others to deal with the same issue. NLG has helped in providing new reference towards better and more systematic work in the future,"
FAJRI NAILUS SUBHI, Coordinator of JKPM WONOSOBO, CENTRAL JAVA

Some expectations…

"As a concept and an effort to build Peasant's Movement dynamics, for me nowadays, the existence of NLG is a must. But its existence will be meaningful only if it could build a culture that put forward progressive thoughts and activities in relation with peasant movement that at the end of the day will give benefits for more people. In short, NLG dynamics should act as motor for Indonesian Peasant Movements. In this way, it won't only be remember for a span of a project. This idealism will be coming into reality only when LLG as reinforcing variable growing everywhere and building dynamics of the same agenda. The support for LLG's development will be determinant for the success of the whole (as what ReaD does) effort. Without it, NLG will be just a place where people can share their restlessness. NLG could act directly as well as indirectly to support LLG. Indirectly means NLG could support the emergence of many other instruments, like ReaD"
TRIYAS GEPENK, Excecutive Secretary of MITRA TANI, YOGYAKARTA.

a lot of responsibility on the core research team and NLG members to act as mediators, consolidators of solidarities and bridge builders. Some of the dilemmas and doubts raised by this PAR are reflected in comments made by different NLG members (Box 19).

REaD still acts as a facilitator connecting and convening farmer led movements with wider social movements. The NLG now functions more as a supporting system that props up the activities needed for policy and organisational change at the regional and national levels. The LLG positions itself more at the front line, catalysing and supporting actions from below for policy and institutional reform. These groups are still active after the action research programme ended.

7.2 The meaning of 'participation'

Both the National Learning Group and core research team members also critically reflected on the strengths and weaknesses of PRAs and other participatory methods used in this study.

In the Indonesian context, government and NGOs largely adhere to the same paradigm of developmentalism, using participatory methods to further development programmes (participation in development). Participatory methods have been increasingly used as another tool for co-opting community assets for the advantage of external actors (Box 20). This has been particularly evident in government and NGO programmes funded by the World Bank and other international donor institutions as well as projects that involve multiple stakeholders and conflict resolution methods. The Reformation Order has given a pseudo-democratic nuance to participation, strengthening a participation space that becomes even more 'pseudo'.

Participation must no longer be seen as a way of involving people in the development activities, but must instead be defined as a community's struggle against domination by the powerful in all areas of life (political, economic, social and cultural). Without being rooted in an educational ideology that fosters critical awareness, PRA and other participatory methods become technical instruments that can be used by oppressors to 'tame' their victims.

For the NLG and core research team this meant that PRA methods needed to be used in a critical way, reflecting the view that methods are not deployed in neutral ways (see Table 1 on research modes). The following were seen as pre-requisites for conducting PRA for social transformation:

BOX 20

Participatory methods for domination or liberation?

Most NGOs in Indonesia use PRA tools to assess needs and problems in village areas. The facilitator usually starts off with a project framework in his/her mind. For instance in a dryland agricultural project approved by a donor agency, the facilitator would direct all the PRA processes to the problems of dry fields, such as erosion, water source and types of long living plants. The tools mostly used include transects and mapping to identify potential landslides, the distance and number of water sources and potential of good-growth plants in dry areas. Aside from that, seasonal calendars and daily schedules would be used to calibrate free times where the community could be involved in meetings and conduct the project. The outcome and recommendation of the programme can be easily guessed, as it would clearly be in line with the expectations of the facilitator. Issues that emerged which did not fit the facilitator's agenda would be ignored.

Thus, the facilitator would require the community to spend time and effort with all sorts of facilitation tools, such as seeds, chalks, and pieces of coloured paper. The atmosphere would seem lively, with people running to and fro gathering tools, but the facilitator would be forgetting several very basic facts. Such an analysis will only scratch the surface and will not reveal the community's structural problems. PRA outcomes thus tend to focus on the number of eroded hectares, not on the structure of land ownership; the types of seeds the village owns, not on where previous seeds went and who owns the remaining seed stocks; on how many water resources the village has, but not on who controls them.

The recommended activities that would result from such use of PRA methods in community level research would usually be no different from the programmes conducted by the government. All too often in Indonesia the role of many NGOs is to replace the function of the government, with a method that falsely appears to be bottom up. In this disabling context, PRA loses its ability to become a tool for the identification and transformation of structural problems.

- PRA must be embedded in a deeper educational process in order to foster critical awareness for liberation from dehumanising forms of development.
- PRA must be part of a research dynamic for emancipation. This means that PRA must allow the marginal to speak out about taboo subjects.
- PRA and other participatory methods must become tools that expose the injustice of the system, and the links between the exploitative economic system and the dominant political and hegemonic cultural systems that prolong poverty and marginality.
- After creating critical awareness and deconstructing the myths hidden within their social system and structure, PRA must become a vehicle for social transformation, giving birth to social movements for change.

8. Conclusions: enabling conditions for the institutionalisation of Community IPM[15]

The Community IPM programme in Indonesia has aimed to institutionalise FFS mediated activities at the community level. Relatively little effort has been put into reforming government departments, particularly at a higher level of the bureaucracy. It was assumed that 1. only farmers can "institutionalise" FFS activities and 2. the adaptive management of complex agroecologies needed first and foremost a community level focus. This emphasis on sustainable institutionalisation at the village level is particularly noteworthy because most donors and external support agencies have relatively state-centric views of "institutionalisation". A given project must somehow become an ongoing programme of the national government with its own budget. The Community IPM experience suggests instead alternative possibilities for the scaling up and mainstreaming of good practices and innovations.

Holistic in its evolution, the Community IPM programme seeks to not only institutionalise participation in organisational procedures but also in policy frameworks, in the attitudes and behaviour of actors, in the theory and practice of science as well as in action.

The social ecology of this change process is complex and messy, with no simple linear cause and effect relationships. However, this study suggests that there are key interacting variables driving the scaling up and institutionalisation of Community IPM. In this concluding section we present a summary of the key enabling conditions and drivers for change that this study identified for Community IPM in Indonesia.

The dynamics of institutionalising participation and Community IPM in Indonesia have been facilitated by six mutually reinforcing factors, each of which we discuss below:

1. Policy spaces from above and below
2. Actors with emancipatory values, attitudes and behaviours
3. Transforming environmental knowledge and ways of knowing

15. This section draws extensively on Pimbert, 2003a and 2003b.

4. Organisational change

5. Funding responsive to farmers needs

6. Communicative action and empowerment

8.1 Policies

Initial high level policy support for IPM had its roots in an ecological and political crisis. Genetically uniform rice monocultures promoted by the Green Revolution were particularly vulnerable to outbreaks of pests induced by the use and abuse of pesticides. The pressure for change was triggered by the combination of another Brown Plant Hopper (BPH) outbreak in 1986 and the threat that the outbreak would result in large imports of rice. The possible impacts of rice imports on dwindling foreign currency reserves and public confidence led to a new policy departure that was broadly supportive of IPM and FFS at all levels of government. The creation of this policy space from above was critical in giving birth to what was to become Community IPM.

Several other government policies indirectly supported and promoted greater farmer participation:

- Reforms that reduced or minimised the role of the military in politics and in the everyday life of farmers.
- A new emphasis on strengthening civil society and human rights, – including freedom of speech and the right to create independent, citizen based organisations.
- Decentralisation policies and the financial decentralisation laws, which opened up space for farmer groups to carry out advocacy and to organise at district level.
- Abolition of the floating mass policies.

An important emerging initiative is a regional autonomy policy which has the potential to stimulate local economic power through the formation of various regional regulations. Under this evolving policy framework, local communities identify and inventory local economic assets (at village level), whilst the government takes a facilitating role. Local people become decision makers about the economy and have the rights to manage their own natural resources. Also, there is an unambiguous and transparent mechanism for sharing natural resource assets between the people and the state. These relatively new developments will be important for CIPM futures.

There is also a need to find more effective ways for IPM farmers to obtain the value-added from marketing their products as pesticide-free or low/zero-residue. In this

regard, helping them identify local markets which ensure direct links between producer and consumer is key; there are examples of this approach already happening in some places.

8.2 Actors

8.2.1 Champions and coalitions for change

The history of IPM shows that innovative, charismatic and/or dynamic people have championed changes in policies, field practices, training and organisations. The contributions of these champions within organisations and as part of broader coalitions for change have been key at all levels and at all times. For example, champions within the scientific community persuaded the inter-ministerial coalition of the need to shift to ecological pest management in rice. In turn, the champions among this inter-ministerial coalition persuaded President Suharto to introduce Presidential Decree No. 3 in 1986, calling for a national IPM programme and FFS. Other champions were then quick to act and fill the new policy space, moving the IPM/FFS training programme to the lowest level in the system, in the field with farmers. Top-bottom linkages and alliances between innovative and dynamic individuals within high level government and local level front line staff and farmers emerged. These top-bottom linkages have been crucial for influencing the middle of the system (heads of government departments, managers, local government and village heads…), which is often more resistant to change.

8.2.2 Emancipatory values, attitudes and behaviours

Experience shows that it is the attitudes and values of individuals that really make the 'champions' and 'local heroes'. Field observations in this study have highlighted the importance of professional attitudes and behaviour in enabling or inhibiting the scaling up of people centred IPM innovations/projects. Many features of normal professional attitudes and behaviour are particularly damaging for the scaling up of Community IPM and genuinely people-centred processes: dominant and superior behaviour, gender and upper to upper bias, taking without giving, failure to honour raised expectations, rushing, and being extractive.

Changes in attitude and behaviour link closely to the way the CIPM Programme has been designed and structured. The transformational education used in FFS training requires field facilitators to live with farmers in the community, building empathy and trust through continuous sharing in meals, events and sorrows. *"Otherwise, divorce and troubled relationship between field facilitators and farmers"* will be the consequence, as one NLG member commented.

In Community IPM, facilitators are valued by their peers to work together with, rather than for, farmers. They no longer instruct farmers to follow recommendations but depend on the farmers to test recommendations. Participatory behaviour and attitudes are seen to matter more than methods and procedures in the spread, scaling up and institutionalisation of 'good practice'. Changing attitudes and ingrained patterns of behaviour involves learning to abandon behaviour and ways of working that have become routine and habitual (unlearning).

The FAO technical support unit has tried to encourage behavioural and attitudinal change as part of a process of professional reorientation and organisational transformation that values education for critical consciousness. Fostering and sustaining the people friendly attitudes needed for the scaling up of Community IPM has implied changes in the operational procedures, reward and incentive systems, culture and career patterns within the FAO-Government Cooperative IPM programme.

The values and ideologies of many champions and local heroes have also been informed by a desire to confront an immediate social and ecological threat. Simply put, farmers are putting their crops, their health, and their environment at severe risk through massive abuse of highly toxic pesticides that are aggressively promoted by multinational agrochemical corporations and the government. Unlike most mainstream organisations dealing with agriculture, the FAO IPM programme fostered an explicitly ecological approach to crop protection together with more radical sustainable agriculture values.

However, progress in the frontier area of personal change has been uneven, largely because of higher level organisational constraints within the FAO itself and the government bureaucracy. But parts of the FAO Community IPM Programme have been relatively atypical in nurturing more emancipatory attitudes, behaviours and values in their work. And this has made a difference.

8.3 Transforming knowledge and ways of knowing

8.3.1 Ecological knowledge for sustainability

New knowledge made it possible to shift the material basis of rice production from reliance on pesticide inputs to a more ecologically informed approach to pest control and whole farm management. Ecological knowledge of pest–predator dynamics and of the key variables that structure tropical rice agroecosystems was a fundamental pre-requisite for the institutionalisation of Community IPM.

Rice is one of the most researched crops and scientists working in the National IPM Programme were able to build on that knowledge. Specific breakthroughs in understanding the ecological dynamics of food chains that sustain the natural enemy complexes of rice pests made more ecologically and economically viable forms of rice farming possible.

New agroecological knowledge allowed for a shift in management practices that re-involved farmers' skills in rice production. The locally specific ecological pest management technologies also supported more autonomous decision making by farmers, allowing them to regain some control over their lives. Farmers' opportunities to re-connect with the land were enhanced through a participatory process of discovery learning and stewardship of the key ecological variables that structure rice agroecosystems.

Research in the applied ecology of tropical rice farms shows that ecosystem and landscape dynamics tend to be organised around a small number of nested cycles, each driven by a few dominant variables, as can be seen in many other managed systems studied over the last 20 years (Gunderson et al., 1995).

"A small number of plant, animal, and abiotic processes structure biomes over scales from days and centimeters to millennia and thousands of kilometers. Individual plant and biogeochemical processes dominate at fine, fast scales; animal and abiotic processes of mesoscale disturbance dominate at intermediate scales; and geomorphological ones dominate at coarse, slow scales….the physical architecture and the speed of variables are organised into distinct clusters, each of which is controlled by one small set of structuring processes. These processes organize behavior as a nested hierarchy of cycles of slow production and growth alternating with fast disturbance and renewal" (Gunderson et al, 1995).

Identifying and understanding the dynamics of these "structuring variables" provides a practical basis not only for sustainable agriculture, but also for the sustainable institutionalisation of 'good practice'. It is significant that the development, scaling up and institutionalisation of participatory IPM in other crops has been/is constrained by a lack of this kind of ecological knowledge.

8.3.2 Farmer centred learning and critical education

At heart, Farmer Field Schools (FFS) are a form of social learning, negotiation and effective collective action that focuses on society's relationship with nature. The early rationale and proponents of FFS for rice farming recognised that effective pest management required coordinated action at the community level. The aim was to make farmers experts in their own fields.

A whole suite of innovative methodologies and procedures were then developed and used to facilitate and structure a process of self discovery learning and participatory action by farmers. As farmers gained new skills, capabilities and confidence, the need for new learning was in many cases accompanied by appropriate methodological and conceptual support by outside professionals acting in a facilitating role. The variety and depth of the social learning that has taken place in the Indonesia FFS-Community IPM Programme is edifying in this regard.

The scaling up and village level institutionalisation of Community IPM was thus dependent on three enabling educational foundations. First, the programme aimed to continuously build farmer capacities. Next, new systems were primarily developed through training that helped re-build those local assets (social, human, physical..) needed to embed Community IPM in sub-district and village level policies and practices. And last, much effort went into the development of new curricula in response to changing needs.

Once again, we stress that this approach is most enabling when rooted in a vision of empowerment that affirms the rights and knowledge of rural people and farmers. Farmers' self discovery learning, knowledge creation and actions must be seen as a whole, as a system in which agroecosystem analysis, PRA and other participatory methods are not used in isolation. Educating is about enabling, raising critical consciousness, liberating, transformation and empowerment. The key to good facilitation is to provide tools for guiding farmers to use the right methods and to introduce basic principles for enriching content and understanding. If used correctly, these tools and principles bring forward the potential skills, creativity and knowledge of the group of participating farmers.

Without critical education, farmer training and the use of 'participatory' methods become, at best, instrumental tools used for efficiency or for better and faster communication. Self discovery learning and participatory action for empowerment is concerned less with causality or meaning and much more with examining the structural issues of the world people live in. This is a fundamental driver for change and expansion in the Community IPM programme.

8.4 Enabling organisational dynamics

8.4.1 People centred organisational culture

Changes in organisational norms and culture have had a profound and beneficial influence on the spread of Community IPM. Prior to the existence of FFS and the Community IPM Programme, the facilitator used to go to the office first, and then,

perhaps, go to the field. After the introduction of country wide FFS, facilitators go to the field first, early in the morning. Whilst in the field, facilitators no longer wear government uniforms. Field extension officers also change work patterns to put farmers first. Facilitators often go beyond the call of duty, doing things and jobs outside their normal assignment. The relationship between facilitator and farmer is more like that of friends or family than government field worker versus tenant.

Office hours become irrelevant within an organisational culture that encourages the flexible use of time on the basis of opportunity and need. Organisational cultures and the attitude of facilitators are more egalitarian and inclusive of rural people. Facilitators encourage farmers to use government laboratories for analysis and meetings, something which was simply unheard of before the spread of FFS/IPM. Research centres have also become more open to farmers using their facilities. IPM farmer researchers are invited to national research meetings. NGOs are now more valued and respected and there is a mutual understanding between government and NGOs.

Commitment to emancipatory values and openess to change are fundamental to the culture of enabling organisations and professionals. Experience shows that the quality and depth of scaling up processes depend on organisations' willingness and ability to trust people, their knowledge, local institutions, capacity to innovate and rights. A solid commitment to 'people-centeredness' and a philosophy of reversals from the normal are key features of enabling organisations and an indicator of their relevance for effective and sustained institutionalisation of participation in NRM.

8.4.2 An emphasis on organisational learning

The notion of learning is central to Community IPM. The programme values self discovery and experiential learning by farmers and FFS trainers. And it also emphasises the development of organisational skills needed to create and transfer knowledge and modify organisational behaviour in ways that reflect the new knowledge and insights gained. Effective IPM must be responsive to environmental variations as well as the spatial and temporal dynamics of pest populations and their natural enemy complexes in rice agroecosystems. Such local adaptive management differs from the conventional practice of natural resource management and agricultural R&D by emphasising the importance of feedback from the environment in shaping management interventions, followed by systematic experimentation to design subsequent practice. The adaptive management process is thus iterative, feedback and learning based.

Establishing Community IPM means continuously trying out new ideas to be able to respond to the dynamics of highly diverse social and ecological contexts. The need to stay relevant and 'deliver' in the face of dynamic diversity has favoured an organisational style that enhances system-wide learning. Senior management in the FAO-led Indonesia IPM programme has tended to encourage risk taking and has pushed this boundary as far as it could within the otherwise risk averse FAO bureaucracy. Whilst participatory monitoring and evaluation systems were introduced relatively late in the Community IPM Programme, training and group learning as well as engagement with a range of external actors have facilitated learning from staff and the surrounding environment. Staff have been given opportunities to develop skills needed to make and evaluate experiments, record and disseminate lessons and 'benchmark' good practice in other organisations. There has been a relatively permissive culture and adequate funds to allow people to cross normal institutional boundaries within the organisation to learn from one another, giving them the skills to effectively work in groups. Short term rewards for innovation and experimentation have become a part of the organisation's internal norms. The learners' sense of vulnerability has usually been acknowledged by peer groups that often include a relatively high proportion of individuals familiar with adult education and critical theory. This culture of learning has also been encouraged further down the line, as the programme has shifted more of the locus of decision making closer to the farmer and his/her more direct support organisations.

8.4.3 Flexible organisational structures and procedures

Organisations that support Community IPM operate in an environment that is both dynamic and complex, demanding innovation of a fairly sophisticated nature. Organisations must be designed so as to actively support local adaptive management in a diversity of site specific contexts and deal with wider external changes. This study found no evidence that government bureaucracies were re-engineering themselves with that challenge in mind. However, the FAO support programme did show a number of enabling organisational features typical of 'adhocracies' (Mintzberg and McHugh, 1985):

- The production of complex, unique outputs forces the organisation to engage highly trained experts and to combine their talents into multidisciplinary teams. The experts include both university-trained professionals as well as experienced field-based practitioners with varied experiences rather than one-dimensional disciplinary interests.

- These experts are housed in the FAO unit for administrative and housekeeping purposes, but are deployed in temporary teams to work on their projects throughout Indonesia, in or close to farming communities.
- The organisation relies primarily on mutual adjustment for co-ordination because of the complex and unpredictable nature of its work. Co-ordination by direct supervision and standardisation is discouraged, as are the more formalised aspects of structure such as strict hierarchy, performance controls and rules.
- The organisation is decentralised selectively with power over different decisions diffused in uneven ways. Authority and responsibility for control and co-ordination are located as close as possible to farmers engaged in Community IPM activities and front line staff.

Retaining flexibility and the capacity for fast responses means that layers in the system are collapsed and streamlined as much as possible. For example, no hierarchical training systems have been developed to train farmers or field workers. IPM field trainers are trained and they train farmers during their own capacity building and afterwards. When the training of field trainers is completed, the TOT trainers then move on to do what is needed to support farmers' efforts to institutionalise IPM at the village level.

Communication of new ideas and innovations is done less in the form of written reports and more by bringing people together in the place where the innovation originated. For example, decision makers and donors are encouraged and helped to visit an FFS and talk with farmers directly. This reflects an outward looking organisational practice built on the principle of *"let the farmers show them"*.

Management generally seeks to exercise influence without relying on formal controls. A key role for management is to ensure that the organisation is staffed with the best possible people, and that structures are designed largely to leave these people free to work as they know how.

8.5 Funding farmers and their organisations

FFS trainers, farmers and their organisations need both policy and financial support for IPM and farmer led activities. The recent history of engagement and negotiation between farmer groups and local government suggests that both provincial and district level governments can enable farmer activities through appropriate funding. Observations at the district level suggest that the following are key in creating contexts in which farmers have some control over funding decisions and allocations:

- Funding mechanisms must respond to proposals made by farmer groups.
- Funding has to focus more on capacity building and strengthening farmers' organisations, including networking and training for policy advocacy at national and international levels.
- Over time, more Community IPM activities naturally move from external to internal funding as farmers generate their own funds and local authorities start to contribute.
- Local government also plays a positive role by encouraging low interest loan policies. Low interest loans are needed because micro credit schemes are now done through banks that charge high interest rates, thus penalising farmers.

Whilst local funding is important, external sources of funds are still vital. Nothing at the local level can be resolved without referring to the larger context of policies and resource allocations. External funding has been enabling when donors have:

- Funded world class scientific research to enhance the knowledge and technical basis appropriate for farmer-led agroecological approaches and for rebuilding local assets (human, social, physical, natural, financial…).
- Strived to meet their poverty alleviation targets by supporting Community IPM with appropriate funds and oversight by farmer groups.

However, there was a dearth of examples of external funding agencies complementing funding with appropriate policy reforms at national and international level (e.g. policy incoherence between support for pesticide reduction IPM programmes on the one hand and direct/indirect promotion of chemical intensive forms of agriculture on the other).

Interviews with a wide range of actors in Indonesia do, moreover, point to the need for most external donors to reform core financial management procedures. Log frame based donations in particular are widely perceived as *"a headache and totally inappropriate"* for the dynamics of social movements and learning by doing. An overriding perception is that most local groups spend more time managing the log frame than doing the work for which they are funded. Funding agencies are also perceived to favour proposals that are in line with their pre-defined agendas and 'their' language of interest (in other words, the right 'language' gets the money). This lack of pluralistic practice and the narrow form of accounting by major donors usually contradict and undermine programmes that are structurally designed to help people solve their problems and regain control over their lives, on their own terms. This conclusion is not surprising. Logical Framework Analysis (LFA) and its variants have

their origins in management practices for infrastructure projects and reinforce relationships of power and control. The implication for donors seeking to institutionalise people-centred processes is to break out of the limiting confines of log frames and dare to experiment with procedures that make them more responsive and supportive of decentralised and farmer-led dynamics such as Community IPM. Where and when this has happened in the 20 year history of the Indonesian IPM programme, donors have been more enabling and effective in furthering the scaling up of good practice.

8.6 Communicative action and a vision of power from below

8.6.1 Creating safe spaces for social learning and action

In the context of a repressive and authoritarian social order, the farmer centred-approach of FFS made a big difference. The FFS was a new, luxury space for the farmers. This is primarily because it was a safe space for social learning and action.

Agroecosystem analysis combined with PRA and group dynamics generated a high degree of social learning for ecological literacy and participatory action. Farmers learnt to demystify expert based academic knowledge and use more of their own experiential knowledge. Farmers gained confidence and became proud of themselves in the process. Personal enrichment and self-esteem were enhanced through engagement with FFS, farmer science and the use of scientific concepts and instruments. Group dynamics fostered the more articulate expressions of needs and desires. This empowering process was a highly motivating personal and collective transformation, with farmers increasingly sharing their experiences and establishing communication networks.

The diversification into Community IPM allowed suppressed farmer organisations and local institutions that existed before the New Order Regime to re-emerge at the local level. A spirit of solidarity and mutual cooperation arose again, encouraging farmers to start questioning various policies that were inappropriate to their needs. The experience of coming together in the safe spaces offered by FFS galvanised farmers to dare set up organisations, speak out more openly, carry out planned advocacy, and to rebuild the solidarity networks among farmer communities. Fear among farmers decreased as central political control weakened and the opening up of new safe spaces for communication and action meant that ‘participation’ often expressed itself in various forms, including unorganised anarchism. However, farmer-centred advocacy in several districts led to small policy victories. In turn, this stimulated further farmer engagement and the emergence of more organised social networks.

However, our findings on the gender impacts of Community IPM suggest that access to the safe spaces offered by FFS networks was uneven, with women often under-represented or in subordinate roles. The recent drive to mainstream gender in Community IPM seeks to redress this inequity and, interestingly, uses the FFS as a safe space to raise awareness among men and women of the need for gender justice and inclusion.

The existence of safe spaces for communicative action is a key enabling condition for the scaling up and institutionalisation of participation and people-centred processes. Institutionalising popular participation in natural resource management hinges on an approach in which people are regarded as competent human beings capable of shaping, changing and recreating their world. Safe communicative spaces for dialogue and concerted action based on shared understanding and negotiation are at the heart of this process of transformation.

8.6.2 The formation of networks and horizontal linkages

The goal of the CIPM programme has been to build farmer capabilities and confidence in establishing their own IPM programmes, run and controlled by and for farmers and their communities. In this sense, the dynamics of institutionalising CIPM have been marked by a shift from 'project' type activities to a broad social movement.

The organisational architecture that supports this dynamic is a series of IPM nodes (the sub-district) linked into a network that extends across a wide geographical area. Each node supports the work of farmers in the immediate areas and is also linked to the wider network of IPM nodes. According to FAO staff (Pontius et al, 2002), the sub-district level became the focus for nodes because:

- It is the highest level in the Indonesian government where some homogeneity exists in terms of ecosystem, culture and availability of resources.
- A farmer can easily travel to a meeting and return home before nightfall within the borders of most sub-districts in the main rice growing areas of Indonesia.
- Most of the institutions that affect villagers exist at the sub-district level.
- The sub-district can offer more immediate support to community organised IPM programmes than any higher level of government. Farmers have easier access to governmental resources at the sub-district level than at the district or provincial levels.
- The sub-district head can implement policies that affect the village easier than officials at higher levels.

Effective nodes and well organised networks are created and sustained through fora and other safe spaces that allow farmers to communicate, plan activities, confront ideas and act. Plans put forward by these networks are now increasingly used to lobby officials for reforms in policies and institutions that help shift the balance of social forces, enhance people's livelihoods and encourage a style of development concerned with equity, social justice and ecological regeneration.

Linking local actors into broad federations based on trust, reciprocity and common norms is thus seen as a way of capturing power back from centralised, top down agencies. Institutionalising Community IPM is thus framed in ways that could potentially transform governance structures through political participation, face to face discussion and empowered federations that include more people and places. This vision of the possibility of a more direct democracy through power from below has become an important enabling factor for the institutionalisation of Community IPM at this point in time.

The Indonesian IPM experience, which started off as a state project with technical support from the FAO, is transforming and renewing itself into a farmers' movement, working with wider civil society for change in policies and institutions.

References

Abbot, J. and Guijt, I. (1998) *Changing Views on Change: Participatory Approaches to Monitoring the Environment, SARL Discussion Paper 2.* IIED, London.

Chomsky, N. (1999) *Profit over people, Neoliberalism and Global Order*, Seven Stories Press, New York.

Dilts R. (1999) *Facilitating the emergence of local institutions. Reflections from the experience of the Community IPM programme in Indonesia.* Available at www.communityipm.org/downloads.html.

Dilts R. (2001) *Scaling up the IPM Movement.* LEISA Magazine 17-3, pp.18-21.

Dubois, Olivier (1998) *Forest Participation Series: Capacity to manage role. Changes in Forestry (Introduction the '4Rs' framework)*, IIED, London.

Fakih, M. (1996) *Masyarakat Sipil Untuk Transformasi Sosial; Pergolakan Ideologi ORNOP Indonesia*. Yogyakarta: Pustaka Pelajar.

Fakih, M. (2001) *Sesat Pikir Teori Pembangunan dan Globalisasi*. Insist Press.

FAO (2000) *Mid Term Review of the FAO Community IPM programme in Asia.*

Fauzi, Noer (1999) *Petani dan Penguasa: Dinamika Perjalanan Politik Agraria Indonesia, INSIST-KPA- Pustaka Pelajar*, Yogyakarta, Indonesia.

Freire, P. (1993) *Education for critical consciousness*, Continuum Books, New York.

Gunderson, L.H., C.S. Holling and S.S. Light (1995) *Barriers and bridges to the renewal of ecosystems and institutions*, Columbia University Press, New York.

Habermas, J. (1971) *Knowledge and Human Interests*, Beacon Press, Boston.

Ingram, D. (1987) *Habermas and the Dialectic of Reason*, Yale University Press, New Haven.

Kenmore, P.E. (1991) *Indonesia's Integrated Pest Management. A model for Asia*. FAO Intercountry Programme for Integrated Pest Control in Rice in South and South East Asia.

Korten, D. (1988) "From Bureaucratic to Strategic Organization" in Korten, F.F and R.Y. Siy, Jr. (Eds), *Transforming a Bureaucracy: the experience of the Philippine National Irrigation Administration*, Kumarian Press, West Hartford, CT.

Madeley, J. (2000) *Trade and hunger: an overview of case studies on the impact of trade liberalisation on food security. A report of the Church of Sweden, Diakonia, Forum Syd, the Swedish Society for Nature Conservation and the Programme of Global Studies.* Available at www.forumsyd.se/globala.shtml.

Mintzberg, H. and McHugh, A. (1985) *Strategy formation in an adhocracy*. Administrative Science Quarterly 30:160-197.

Murphy, H.H., Sanusi, A., Dilts, R., Djajadisastra, M., Hirschhorn, N. and Yuliatingsih, S. (1999) "Health Effects of Pesticide Use Among Indonesian Women Farmers: Part 1: Exposure and Acute Health Effects", Journal of Agromedicine Vol.6, Issue 3, pp.61-85.

Ooi, P. A. C. (1998) *Beyond the farmer field school: IPM and empowerment in Indonesia*, IIED, London

Pimbert, M.P. (1991) *Designing Integrated Pest Management for Sustainable and Productive Futures (Gatekeeper Series 29)*, IIED, London

Pimbert, M.P. (1999) *Institutionalising Participatory, Farmer Centred Integrated Pest Management in South and South East Asian rice fields*, IDS Seminar Paper, UK.

Pimbert, M.P. (1999) *Sustaining the multiple functions of agricultural biodiversity*. FAO Background Paper Series presented at the Conference on the Multifunctional Character of Agriculture and Land. The Netherlands, September 1999.

Pimbert, M.P. (2003) *Social learning for ecological literacy and democracy: emerging issues and challenges*. Proceedings of the International Learning Workshop on Farmer Field Schools (FFS): Emerging Issues and Challenges, 21-25 October 2002, Yogyakarta, Indonesia. CIP, UPWARD, The Rockefeller Foundation and FIELD.

Pimbert, M.P. (in press). *Institutionalising Participation and People Centred Approaches in Natural Resources Management. Emerging Conclusions from the IIED/IDS study.* IIED, London.

Pontius, J., Dilts, R. and Bartlett, A. (2002) *From Farmer Field School to Community IPM. Ten years of IPM training in Asia*. FAO Community IPM Programme. FAO, Bangkok.

Settle, W. H. et al. (1996) Managing tropical rice pests through conservation of generalist natural enemies and alternative prey. *Ecology* 77(7): 1975-1988.

Smith, S. D.,Willms, G. and Johnson, N.A. (1997) *Nurtured by Knowledge. Learning to do participatory action research*. IDRC, Canada

Watts, M. (1990) "Peasants under contract: agro-food complexes in the third world", in Bernstein H. et al. (eds) *The Food Question*, Earthscan, London.

Further reading

The following publications helped the National Learning Group members develop methodologies and deepen their conceptual understanding and analysis.

Amin, S. (1990) *Capitalism in the age of Globalisation: The management of contemporary Society*. Zed Book, London.

Bell, S. (1997) *Globalisation, Neoliberalism and The Transformation of the Australian state*. Australian Journal of Political Science 32 (3).

Buchori, Damayanti, Dr. Ir (1999) *Good Governance Dalam Pengelolaan Pertanian*. Mimeo Report, Yogyakarta.

Cahyono, Bambang Tri Drs. (1993) *Agriculture policies*, Andi Offset, Yogyakarta.

Chambers, R., Johnson, V., Ivan-Smith, E., Gordon, Gill P., Pridmore, and Scott, P. (1998) *Rural Appraisal: Rapid, Relaxed and Participatory*, Institute of Development Studies: Discussion Paper 311, IDS, Brighton, UK.

Dos Santos, T. (1976) "The Crisis of Development Theory and the Problem of Dependency in Latin America", in Henry Bernstein (ed.) *Underdevelopment and Development: The Third World Today*. Harmondsworth, England: Penguin.

Escobar, A. (1985) *Discourse and Power in Development: Michael Foucault and the Relevance in his Work to the Third World.* Alternatives, No.

FAO (1996) *Inter-country Programme for IPM in Asia*, 1996., Indonesia, and National IPM Programme: A Country Brief (PAC Meeting in India. FAO Jakarta

FAO-Technical Assistance Indonesia National IPM Programme (1998), *Community IPM: Six Cases from Indonesia Team Regional Meeting*, Yogyakarta. FAO Jakarta

Foucault, M. (1980) *The Archaeology of Knowledge and the Discourse of Language*, Pantheon, New York.

Frank, A.G. (1973) "The Development of Underdevelopment", in C.K. Wilber (ed.) *The Political Economy of Development and Underdevelopment*, Random House, New York.

Furtado, C. (1973) "The Concept of External Dependence." in Wilber (ed.). *The Political Economy of Development and Underdevelopment*, Random House, New York.

Garret, James L. and Islam, Yassir (1998) *Policy research and the policy process: Do the Twain ever meet?*, in Gatekeeper Series no.74, IIED, London

Gaventa, J. (1998) "The Scaling Up and Institutionalisation of P.R.A: Lessons and Challenges" in Blackburn, J. with Holland, J. (eds) *Who Changes? Institutionalising Participation in Development*, IT Publications, London.

Gaventa, J. and Valderrama, C. (1999) *Participation, Citizenship, and Local governance*, background note prepared for workshop on Strengthening Participation in Local Governance, IDS, June 21-24, 1999.

Gendzier, I. (1985) *Managing Political Change: Social Scientists and the Third World*. Westview Press, Boulder, CO.

Gill, S. (1995) *Globalization, Market Civilization and Disciplinary Neoliberalis*. Millennium 24: 3 399V 423.

Grimble, Robin, Chan, Man Kwan, Aglinby, Julia and Quan, Julian (1995) *Trees and Tradeoffs: A Stakeholder Approach to Natural Resource Management*, in Gatekeeper series no. 52, IIED, London

Guijt, Irene and Hinchcliffe, Fiona (1998) *Participatory evaluation of wild resources: an over view of the Hidden Harvest Methodology The Sustainable Agriculture and Rural Livelihoods Programme of the International Institute for Environment and Development*, IIED, London.

Guijt, Irene and Meera Kamal Shah (1998) *The Myth of Community: Gender Issues in Participatory Development*, Intermediate Technology Publications ltd., London

Hammig, Michael D. (1998) *USAID and Integrated Pest Management In Indonesia: The Investment and The Payoff*, Department of Agricultural And Applied Economics Clemson University

Hayter, T. (1971) *Aid as Imperialism*, Penguin Books Ltd., Baltimore.

Husken, Frans (1998) *Masyarakat Desa dalam Perubahan Zaman*, Grasindo, Jakarta

Institute of Development Studies (1998) *Participatory Approaches and Agriculture*, IDS-University of Sussex Brighton, England

IIED and IDS (2001) *Transforming Bureaucracies. Institutionalising Participation and People Centred Approaches in Natural Resource Management; An Annotated Bibliography*, IIED, London.

Institute of Development Studies (1998) *Participatory Poverty Assessment (PPA)*, IDS University of Sussex Brighton, England

IPM-FAO (1996) *Farmers As Experts: The Indonesia National IPM Program*, Jakarta

Laclau, E. & Mouffe, C. (1985) *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics*, Verso Editions, London.

Leach, Melissa, Means, Robin and Scoones, Ian (1997) *Community Based Sustainable Development: Consensus or conflict?*, IDS bulletin-University of Sussex Brighton, England

Institute of Development Studies (1998) *Participatory Monitoring and Evaluation: Learning from Change*. IDS Policy Briefing Issue 12. Brighton: IDS.

Korten, D., (1988) "From Bureaucratic to Strategic Organization" in Korten, F.F andR.Y. Siy, Jr. (eds) *Transforming a Bureaucracy: the experience of the Philippine National Irrigation Administration*, Kumarian Press, West Hartford, CT.

Madley, John (1999) *Big Busines, Poor Peoples; The impact of Transactional Corporations on the World's Poor*, Zed Book, London.

McMichael, Philip, (1996) *Development and social change; a global perspective*, Pine Forge Press, California.

Mortimer, R. (Ed.) (1973) *Showcase State: The Illusion of Indonesia's 'Accelerated Modernization'*, Angus and Robertson, Sydney.

Rolling N. and Elske van de Fliert (1991) *Beyond the green revolution: Capturing efficiencies from integrated Pest Management*, IIED, London

Payer, C. (1974) *The Debt Trap. The IMF and the Third World*, Monthly Review Press, New York.

Ramirez, Ricardo (1997) *Understanding farmers, Communication Networks: Combining PRA with Agricultural knowledge system analysis*, in Gatekeeper Series no. 66, IIED, London

Soenanto, F. Nangsir (1999) *The Institutionalisation and Socialization of IPM in Banjarharjo Village, Kalibawang Sub District, Kulon Progo District, D.I. Yogyakarta Province*, The FAO Programme for Community IPM in Asia

Ter Weel, P. and van der Wulp, H. (1999) *Policy and Best Practice Document 3: Participatory Integrated Pest Management*, The Netherlands Ministry of Foreign Affairs

Thomas, B. R. Polestico, A. Lee Eccec, O. Taylor, and E. Mutua (1995) *A Manuals for socio-Economic and gender analysis: Responding to the Development Challenge*.

Thompson, J. (1998) "Participatory Approaches in Government Bureaucracies: Facilitating Institutional Change" in Blackburn, J with Holland, J (eds) *Who Changes? Institutionalizing Participation in Development*, IT Publications, London.

Tjahyadi.v. Riza (1995) *Resiko-Resiko Kimia dan Janin*, PAN Indonesia

van Veldhuizen, L., Water Bayer, A., and De Zeeuw, H. (1997) *Development technology with farmers: A trainers guide for Participatory Learning,*

Witoro, Drs, (1998) *Report on Policies Study: Kajian Kebijakan dan Hak-Hak Petani.*

Sachs, W. (Ed.). (1992) *The Development Dictionary, A Guide to Knowledge as Power*, Zed Books, London.

Annexes

Annex 1. Research Core Team and Brief Profiles of NLG Participants

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Mansour Fakih

Research Coordinator
Toto Rahardjo

Research Assistants
Danari Wulandari
Amir Sutoko
Triyas Prasetyo

Data Base
Era Fiyantiningrum

Administration and Financial Manager
Parjono

Brief profiles of a few NLG participants

Pak Nangsir

Pak Nangsir has worked for Dinas Pertanian since 1977 and recently worked as an IPM extension workers in Jogjakarta. His hope is that although the IPM programme finished in May 1999, his work with farmers will continue. He enjoys sharing with other people, and is trying not to let millions of farmers down. He and his friends, the alumni of the Farmer Field Schools, act as farmers' best friends. These days they join many seminars and are invited to join discussions at universities. The farmers are also happy because they are all working together tilling the soil.

Dewi Ratnawulan

A staff member of LSPPA, the Lembaga Studi Pengembangan Perempuan dan Anak – Institute of Woman and Child Empowerment, Dewi was very interested in being involved in this research. She wants to learn more about PR and how to implement it. Dewi once conducted a PRA exercise with Simon Hate with gender issues as its emphasis. In her interview with John Pontius on IPM in Jakarta she learned that so far IPM has not been fully promoting gender perspectives in its programmes, and she hopes this situation changes.

Amir Sutoko

Amir has been with Mitra Tani-Yogyakarta for 10 years. He comes from a district with a strong feudal culture – Mataram Kingdom – and where there is a strong state-governed planting system. He believes that there is a link between participation problems and the farmers themselves, as they are not aware of their rights. The outsiders are the subjects, and the farmers remain the object. For this reason farmers need to be educated about their rights, and then he expects that there will be a clear definition of what farmers actually want, which all policies should be based on.

Heru, FAO

Heru works for the FAO and his current activities include a participatory study on farmer issues in relation to ecology and social matters such as a Farmers Credit Scheme in North Lampung. The study was used as a way of promoting communications among farmers. Information was collected from the study, including both local history and knowledge from the local farmers. Heru wants to develop and strengthen farmers' organisation, with participation of the farmers, and to encourage advocacy developed by farmers themselves, for example on pesticide rejection by the farmers and restructuring of KUD management. He joined this group to learn about participatory methodologies. He is a field officer so his participation will also help him in his activities with the farmers.

Wiwi

Wiwi is an organiser of PKBI (an organisation that deals with reproduction issues) and previously worked with Yasanti. She is mainly interested in women issues. She's an alumnus of the Forestry Department of the University of Gadjah Mada and also works for Pusat Studi Pengendalian Hayati (Center for the Study of Biodiversity Control). Her research is on how to use indigenous microoganisms for biodiversity-control. She hopes the results of her research will be useful to both farmers and pesticides producers. She also works with forest farmers and tries to increase their income by applying the results of her research on natural medicines.

Wawan (Hartjahjo Ariawan)

Wawan works with FAO ICP Indonesia and previously carried out action research in Boyolali. In the IPM work that he's currently involved with, he expects that farmers will be able to understand their own problems, make plans, and act on and reflect on their own problems. His interest is to see how far the farmers can analyse their local policy.

Triyanto

Triyanto has been with IPM for nine years and he wants to develop his drawing talents as a media for evaluation, planning, and decision-making. He has often visited farmer groups and studied with them to devise simple learning tools. For him, IPM is not only a farmer's programme, but also a way of developing a way of thinking and participatory decision-making.

Simon HT

Simon works with FAO and is interested in how to maximise the benefits of Participatory Research approach in IPM.

Didi

After eight years working with FAO Didi is concerned that many farmers neglect IPM principles and are becoming more interested in phyto-pesticides. With his organisation he works to empower farmers' networks and he plans, evaluates, and actively participates in policymaking on the farmers' behalf.

Nugie (Nugroho)

Nugie has worked with IPM for nine years in Jakarta and has strong relations with the bureaucracy. He sees that the farmers have many more interests than just pests, seeds and ecosystem management. His interest in IPM is that it is a strong coalition encouraging the emergence of new concepts for decision-making in farming policy.

Toto Raharjo (REaD)

Toto feels that NGOs are no longer effective in fighting for peasants' rights so he wants to get involved in that process more deeply, and he has also seen many bad practices in the field that he would like to change.

Helmy Ali

Helmy works with ICP-FAO, and is interested in learning and gaining new experience.

Roem Topatimasang (REaD)

Roem works for INSIST, Yogyakarta. Together with Russ Dilt and Mansour Fakih he has written a book called *Learning from Experience* and has developed some models on managing indigenous community resources, and with Mansour Fakih he develops advocacy models and composes advocacy training manual.

Annex 2. IPM Farmers Association's (IPPHTI) Activities

Training and field activities

a. Between May and July 2000 PIPMI conducted three kinds of training, in advocacy, organising farmer's science, and strengthening IPM Farmer trainers.

b. The training was conducted in 10 provinces: North Sumatra, South Sumatra, Lampung, West Java, Central Java, Yogyakarta, East Java, Bali, West Nusa Tenggara and South Sulawesi.

c. Each training course involved 30 IPM farmers and at the end of each course a pair of farmers made an action plan that will be followed up in their community.

Advocacy

a. The purpose of the activity is to try to create some change at farmer level by critiquing government policies and the actions of groups that oppress farmers, causing them to lose their rights and negatively affecting farmers' economic, social and politics.

b. IPPHTI has carried out advocacy activities at national, district, and local level. The advocacy activities at national level are:

   – National congress to promote farmers' rights and discuss farmers' problems.

   – Discuss with PKB (Nation Resurgence Party) in Representative Council (DPR) corporate farming's programme and funding.

   – Involved in the Workshop on Planning of Development of Agriculture 2010, organised by Nadlatul Ulama (NU).

   – Work with other NGO network s in Indonesia to claim farmers' rights.

c. The advocacy activities in the local and district levels are:

   – Karawang District, West Java: discuss with District Representative Council (DPRD) a credit and savings programme for agriculture, roles of extension workers, water resource management, land tax, and a project on an autonomy-generating fund.

– Ciamis District, West Java: discuss with the District Representative Council (DPRD) the implementation of IPM activities funded by the District Government and the roles of government officers for agriculture services.

– Pangalengan – Bandung District, West Java: Protest to Seed Center regarding labeling of potato seeds; to Provincial Plant Protection Center about implementation of field studies (which should be conducted at farmer level); and to Food and Beverage Company about seed falsification.

– Sukoharjo District, Central Java: Claim to Sritex (Textile Company) about pollution of environment (radius 10km). The farmers were successful and won compensation for about 200 Millionpeople or money, if money what currency?; Held discussions with District Representative Council (DPRD) about pollution from factories, rice price, and corruption by head of District Agriculture Services Office and district leader.okay?

– Brebes District, Central Java: Protest to District Representative Council (DPRD) about pesticide pollution; implement programme funded by District Government; and discuss roles of government officers for agriculture services.

– Boyolali, Central Java: Protest about use of 'Umbul sungsang' water resource for drinking water.

– Yogyakarta: Protest to Minister of Agriculture at seed company exhibition.

– Banyumas, Central Java: Reclaiming land owned by Diponegoro Foundation of Banyumas.

– Pekalongan, Central Java: Protest about pollution of rice field by textile company.

Farmers' Congress

a. The congress was conducted at provincial and district level.

b. The IPPHTI provincial congress is a forum for IPM farmers that is used to consolidate IPPHTI's vision at provincial level, to identify the IPPHTI provincial committee, share information among the farmers, and to solve the real problems in the field and create action plans to solve the problems.

c. The IPPHTI provincial congress was held in six provinces including: East Java, Central Java, Yogyakarta, West Java, Lampung and North Sumatra.

d. The IPPHTI District Congress aimed to discuss the farmers' real problems in the field and an action plan to solve those problems and to create a strategy for strengthening the IPPHTI network at district level.

e. The IPPHTI District Congress was held in various district in four provinces, including; West Java: Ciamis, Karawang, Sukabumi, Bandung, Subang and Purwakarta Districts.

f. Central Java: Rembang, batang, Brebes, Semarang, Sukoharjo Districts;

g. Yogyakarta; East Java: Tuban, Magetan, Probolinggo, Pacitan, Trenggalek, Ngawi, Jombang and Lumajang. [should the last three points be one ?]

Marketing of pesticide free products

a. Different ways to sell the product such as direct selling in the market, at specific events and exhibitions, and at various levels.

b. Some examples of the activities in some areas: Pangalengan – Bandung, West Java: set up campaign by creating an exhibition for selling potato seed, potato, cabbage, carrot and organic fertiliser (Porsip); Ciamis District, West Java: selling Rice IR-64 and local varieties (Godosari); Sukabumi District, West Java: selling local rice varieties (Kujang, Markoti, Sopi, Cerai Manis and Bogolo); Cilamaya – Karawang District, West Java: selling local rice varieties (pandanwangi, ketan heru and rice seed); Banyumas, Central Java: selling local rice variety (Mentik) and herb medicines; Brebes, Central Java: selling chilli and onion; Jepara, central Java: selling ground nut; Sukoharjo, Central Java: selling organic fertilizers, organic rive (IR 64 variety); Yogyakarta: selling organic fertilizers, IPM T-shirt and local rice variety (Mentik wangi); Rembang, central Java (Women Farmers' Group): traditional food and herb medicines; Garut, West Java: selling local rice varieties; Sumedang, West Java: selling local rice varieties and rice powder; Pati, Central Java: selling botanical pesticide.

Farmer's Media

a. The Farmer's Media is one of IPPHTI 's forums for sharing information, ideas and experience to keep farmers informed about the development s of farmer's networking. The Media will also involve other farmers in another community.

b. The Media was created because it is easier to prepare and can reach a lot of farmers in a short time in various locations – which is necessary because the members of IPPHTI are spread out in 10 provinces.

c. Another objective of the Media is to get inputs and suggestions from other institutions that are partners of IPPHTI and that have the same vision as IPPHTI.

d. The Media is in tabloid form with 16 pages. 10,000 copies were printed of the first issue in October 2000 and distributed to 10 provinces through IPPHTI's network.

Gender issues

a. The aim of gender issues is to improve women's role in agriculture activities and make others more aware of the work that they do.

b. Some examples of gender activities include a study on gender roles in Cilamaya – Karawang, West Java; involving women farmers on a field study in Cikoneng – Ciamis, West Java; regular observation by women farmers in Paseh – Bandung, West Java; and women FFS in Tulang Bawang Udik – Lampung.

c. Women farmers are also involved in some of IPPHTI's forums, such as IPPHTI's congresses and in technical meetings; and they play a role in IPPHTI's committees.

Sumber: FAO-IPM Mid Term Review, November 2000

Annex 3: Village level participatory impact assessments: three examples

The examples selected for presentation in this annex illustrate some of the methods used in the village level impact assessments (see section 5 of this report). This selection of case study material also highlights some of the more specific issues that emerged in the participatory dialogues with farmers and local communities.

Example 1. Klajuran hamlet, Tanjungharjo Village, Nanggulan sub-district, Kulonprogo district, Yogyakarta

Kulonprogoone in Java

The hamlet of Klajuran is surrounded by a spread of *sawah* lands and fields that reach far towards the foothills in the north and south. During the rainy season, these fields are filled with a uniform green expanse of rice plants, all of the same variety. Along the side of the road there is a channel that carries irrigation water to the fields throughout the year. Since this irrigation channel was built, farmers have started planting rice in accordance with the water irrigation timetable determined by the irrigation official. Irrigation has been accompanied by the introduction of new varieties such as PB5 and IR64 that only have a three-month growth period and hence are preferred to local varieties, which take longer to mature.

Klajuran is one of the sub-villages of Tanjungpuro village, about 15km west of Yogyakarta city centre. The 67 hectare village has 31 hectares of dry fields and 14 hectares of wet paddy fields. Of these wet fields, 70% are dry in the dry season. Most of the villagers are farmers (63%); those who are not full-time farmers often work in farming on a part time basis. In Klajuran, the average farmer has around 1000 square metres of productive land. Almost a third of the population is smallholders who work as peasants or as farm labourers for rich farmers. Some of these smallholders own no more than one hectare of land, and they may also cultivate fish for additional income.

Besides Klajuran, there are about seven other hamlets, four of which have farmer groups who claim to be followers of the PHT programme development (Pengendalian Hama Terpadu/Integrated Pest Management).

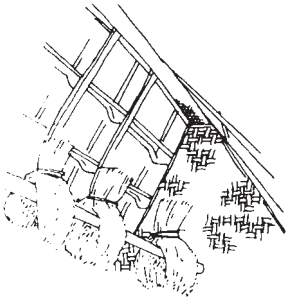
In 1987, the FAO held a Field School on IPM in Turus, a neighbouring hamlet of Tanjungharjo. Thirty farmers, including seven women, took part. By the end of the programme, the FFS-IPM had created two farmer facilitators, who, under their own initiative, developed the FFS-IPM in three other hamlets, involving 30 participants.

In Turus, a women's farmers' group was formed as a sub-group of the mixed gender *Mangorukun* group. This women's group progressed rapidly: *"the proof is the number of times we won the championship between groups on the provincial level"*, said Tuti, the founder of the group.

By 1999, the group in each hamlet had grown to between 50 to 60 people. However, not all graduates of FFS-IPM became group members and implemented the knowledge they gained, especially on observation and farming analysis. Of all the farmers practising IPM in their fields, the most successful were the women farmers.

Farming history of Klajuran hamlet

Agriculture in the traditional era



In the 1950s, Klajuran was a quiet and sleepy hamlet. In that era, farmers sowed rice seed on the wet ground in a nursery before transplanting the seedlings into the larger *sawah* field. The rainy season was the only window in the year during which farmers could plant their land with their staple rice crop.

Traditionally, farmers used high quality seeds such as Rojolele, *gundil, srikuning dan ketan ireng*, which were planted by their ancestors. These local varieties have a growth period of four to five months and have many tassles (*rumbaian*). Farmers carefully chose and stored the most uniform and best seeds for the next year's planting season. They tied the strings of rice (padi) up in equal sized bundles and hung them from the kitchen roof so the smoke from cooking would dry them and preserve them from fungi and disease attack; equal-sized padi strings were chosen so that plant heights would not differ. The farmers believed good seeds would result in good plants: firm, *bernas* (promising), and resistant to pests.

The most frequently encountered pests were mice, *menthek* and *walang sangit* (grasshoppers). Mice were the main rice pest because of their enormous numbers and their ferocity in attacking plants – sometimes a farmer could find his whole crop destroyed despite having been in good condition the previous afternoon. Mice were eliminated by a method of smoking called the '*omprong*'- this involved burning sulphur or making a *jamu* (traditional medicine) comprising of *gadung* and *brotowali* that were spread on cassava. Another method was to use the 'bone' or vascular part of a banana tree and push it into the mice runs in the hope that the mice would think a snake was attacking. The odour of goat dung spread over the fields was also useful for evicting mice. Women farmers used a *gadung* grinder spread over the land to deter mice. Farmers could forecast a mouse attack by the number of yellow-looking rice plants and the presence of broken rice stalks. These signs told the farmer it was time to amass mouse-eliminating substances and spread *jamu* on the land, because paddy that has been broken is irreparable and would die.

Other pests were *menthek* and *walangsangit* (grasshoppers). Farmers knew that *menthek* like damp places; to prevent their spread, farmers tried to dry out their

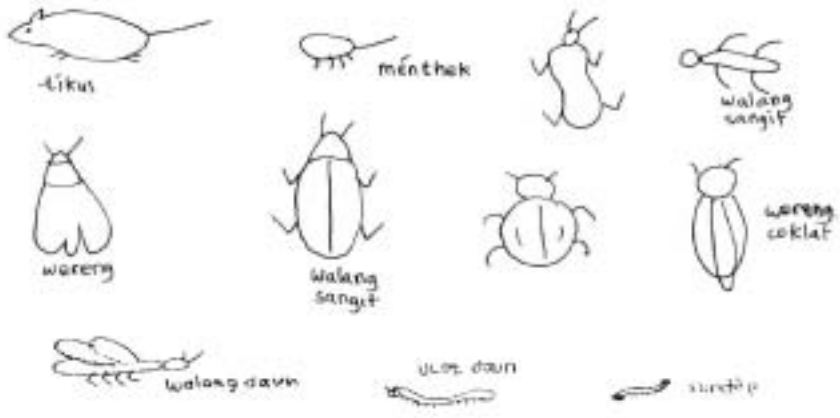
humid fields and then spread them with ash. Farmers noticed that if half of the paddy started yellowing then the *menthek* were starting to attack. To prevent and eliminate *walangsangit* (grasshoppers), farmers distributed bangles around the fields – usually it took five days to eradicate the *walangsangit* in this way. Another method was to impale the carcase of a *yuyu* (crab) and/or of a frog that emitted a putrid odour at the corners of the field because the *walangsangit* would then crowd onto the carcasse, and the farmers could then spray banana sap or sometimes burn them with *blarak* (dry coconut leaves).

To fertilise the land, farmers used composted residues and manure. They did not calculate the amount of fertiliser they used – it was just spread indiscriminately with faith that it would all rot and turn into soil. Nevertheless, for 1,000 square meters of soil, farmers usually spread about a ton of this fertiliser. Such fertiliser cost nothing as it was extracted from their own environment. In the 1950s, all farmers had animals and so they did not need to buy any external inputs. Even in desperate times, if there was not enough manure and residues, the soil still maintained fertility. The soil was considered already *loch* (fertile), aerated and always ready for planting; fertiliser made plants more firm, green and large. If some plants were yellow and dwarfed, it meant that the soil needed more fertiliser. However, one problem with an overly aerated soil was that it would act as a breeding place for *menthek*, which would attack the underside of the rice plant. Thus, there needed to be a period in the year when the fields were dried to prevent pest reproduction.

When compared with these traditional farming methods, modern yields are larger but the production costs are higher. Because of that, this group concluded that traditional farming methods were more profitable; not only in economic terms but also in terms of environmental conditions as the natural ecosystem balance was maintained.

Agriculture in the modern era

After the introduction of BIMAS/INMAS (Green Revolution) programme, farmers started using seeds bought in the village cooperative (KUD/BUUD). New types of rice emerged, such as Cipunegara, Pelita, IP 36 and IR 64. These rice varieties were very appealing to farmers because of their short growth season (90 days), their short stalk and because farmers did not need to save and reproduce their own seeds as seeds of these new varieties were available in the local shops and cooperatives. In fact, several farmers tried to regenerate seeds of their own but were disappointed when the second and third generations of seeds were not as good as the first. However, the emergence of new seeds was also accompanied by the emergence of new pests previously unknown to farmers, for example *wereng coklat* and *ulat penggerek batang* (stalk eating caterpillars).



The variety of pests

With the introduction of new varieties came new pest control substances such as DDT, *furadan*, *diasinon*, *basa*, *endrin* and *uracron* that were bought in shops and sprayed weekly. According to farmers, these 'medicines' were very effective because they killed pests instantly. However, as they became used more frequently, several species of pest evolved resistance to the 'poisons' and pest numbers increased in the following season. To counteract this, farmers needed higher doses or to change to new, more powerful chemicals.

To hasten and increase production, farmers used urea combined with animal manure in the following proportions:

Basic fertilisers	Seeding	15 days later	35-40 days later
Green leaves and Animal manure	TS: 1,5 quintal per ha	Mess/urea: 2 quintal per ha	Mess/urea

In the modern era, farmers still did not measure their fertiliser inputs; their only reference point was if the plant was healthy and green. If it were not healthy/fat the farmer would add more fertiliser. The results were wonderful, with plants becoming large and green and yields rising. However, according to some farmers, if examined in detail, farmers were actually losing out because the costs of buying chemical fertilisers skyrocketed, whilst the amount of fertiliser required also increased. Ironically, both these situations were not followed by a relative rise in price of farming produce. Indeed, the price of produce probably decreased in comparison with production costs.

Post IPM Farmers Field School era

After learning about IPM in the Farmer Field Schools, farmers are starting to return to more traditional methods, for example structuring the use of pesticides, or even eliminating their use altogether. However, farmers still have to buy their seeds – they buy seeds with a purple label to certify production by a certain seed company. Local seeds are still not popular, as farmers prefer IR64 seeds which have a shorter cultivation period and are considered resistant to wereng (a type of pest). Even though they are trying to go back to more environmentally friendly farming, farmers still use the same amount of chemical fertiliser in accordance with the advice of PPL (fertilisers with the composition of TSP, KCL, Urea and Za). The result is that it seems as if crops will not grow if fields are not fertilised. According to FS farmers, the land is 'almost dead', and this has caused economic losses.

Problem pests are now *kepinding tanah*, *wereng coklat*, *walang sangit* and mice. Farmers have tried to solve the problems by improving air circulation in the fields (*Legowo*). The *Legowo* system and routine checks can reduce pest problems, as does preserving natural enemies such as spiders, frogs, snakes and ducks. It is important there is equilibrium between pest and natural predators in the fields, for example frogs and ducks can be used to control *kepinding*.

Production analysis

Farmers feel tired of conducting production analyses for what seems like an unreal situation – when conducted in the fields, it is unlikely the results match those on paper, for example even though a clear profit maybe presented on paper, in practice the result maybe loss. This is due to several factors outside the farmer's influence such as pest attacks, the high cost of external inputs and the fall of grain (*gabah*) prices. However, a female farmer proclaimed 'DO NOT DESPAIR', for what has happened is also caused to some extent by the farmers themselves who do not change their methods, even though on paper, they obviously cause a loss.

BOX A

Profit or loss: From traditional farmers to FFS-IPM

Traditional farmers rely more on the use of *titen* science/knowledge, for example awareness of the seasons and recognition of the symptoms that indicate the coming of pests or diseases. To protect their fields, traditional farmers prepare *tedo* plants and animals (plants and animals that the pests are attracted to in preference to the crop). They never intentionally damage the field/*sawah* ecosystem. Traditional farmers have never done a farming analysis, for there is so little money used in production. When asked about production costs, they would recount the *gotong-royong* (communal work) with friends, talking about the forms of fee such as several sacks of rice and a tie of grain (*gabah*), they tell of animals kept in barns continually producing fertilisers, and the stock of seed are above the kitchen. *"We never buy seeds, never take credit and never have any relationship with institutions except for the village official* (mantri tani)*"*, admits as man who has been farming for 72 years.

A modern farmer's work is structured according to the timetable of irrigation water supply, or based on the agenda of the PPL that gives planting advice three times a year. A modern farmer would use any type of pesticide when pests attack his crop, sometimes spraying is carried out regularly, even though there are no signs of an incoming pest attack. Pesticides offered by other parties will be accepted immediately without any thoughts on the effectiveness and the impact it could have in the future (*grusa-grusu*/hurrying in a panic mode). The modern farmer never calculates labour costs as when the Green Revolution packet was launched for the first time, the production and the income of farmers rose so sharply, but now all of that is in the past. Eventually, farmers start to have problems and suffer due to lowering yields and high production costs. These losses continue, with the farmers unable to make a stance against them.

Farmers of post-FFS-IPM started thinking about reverting to traditional ways, by observing their plants intensively and by using chemical toxins only when necessary. Farmer groups decide the timetable of planting and harvesting, based on consensus. The post FFS-IPM farmers never undertake a production analysis as it is considered too confusing, a waste of time and often causes despair when the costs of doing one are greater than outputs.

Farming analysis of traditional farmer:

Expenditure	Cost	Notes	Harvest Result
Seed	40kg	Self-sustaining	Grain 3.600kg
Labour fee	40kg	Fee	Cost 753kg
Planting	40 x 1lt = 32kg	Fee	
Matun	40 x 1kg = 40kg	Fee	
Bawon	600kg	Fee/upah pungut	
Green fertilizer	2 ton	Self-sustaining	
Sulphur	1kg	Buy/search	
Total	**753kg**		**2.847kg**

High production costs, the dependence on outside factors and the increasing destruction of the land. The stop of chemical inputs means an understanding of its impact of lowering production. This is hard for the farmers as we realize that the land is sinking to death. But what can we do? We must live and eat…

Farming analysis of modern farmers

Income prediction of Paddy/Rice Plant IR.36

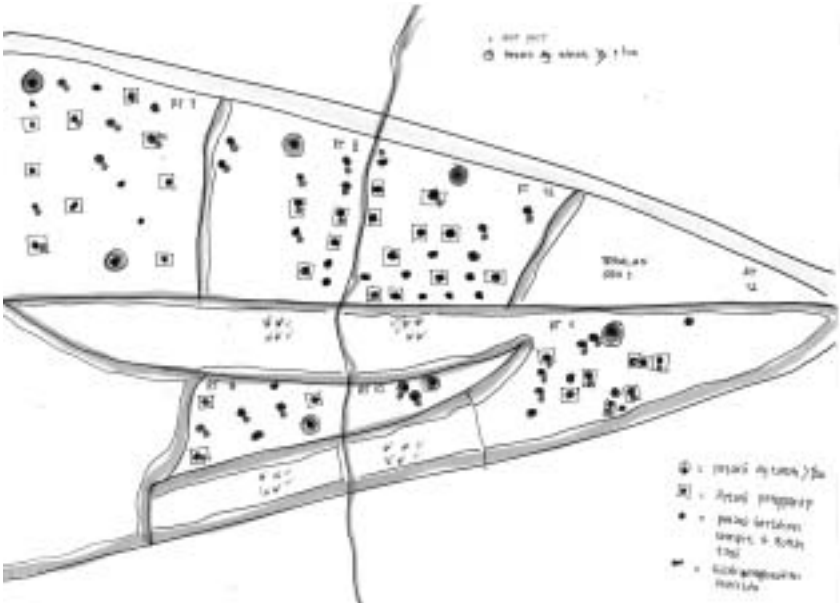
Width of area of 1 Ha:

Expenditure		Rp.627.000
Income	Rp.900.000	
		Rp.627.000
		Rp.273.000 equalling to 109,2 kg of rice (@ Rp 2.500)

With details as follows:

- Seed requirement 70 kg @ 250		Rp.17.500
- Cost of labour		
a. Ploughing		Rp. 45.000
b. Hoe (*Cangkul*)	Rp. 30.000	
c. Picking of seed (*Cabut benih*)		Rp. 72.000
- Cost of fertilizer + drugs	Rp. 52.500	
- Animal fertilizer 3000 kg @ Rp. 20	Rp. 60.000	
- Synthesized fertilizer		
TS 150 kg @ Rp. 100		Rp. 15.000
Urea 300 kg @ Rp. 150		Rp. 45.000
- Drugs + Reaping cost		Rp. 75.000
- Planting cost		Rp. 15.000
- Consumption of cultivation to harvest	Rp. 50.000	
- Harvest cost (*bawon*) 160 kg @ 150	Rp. 24.000	

Social mapping

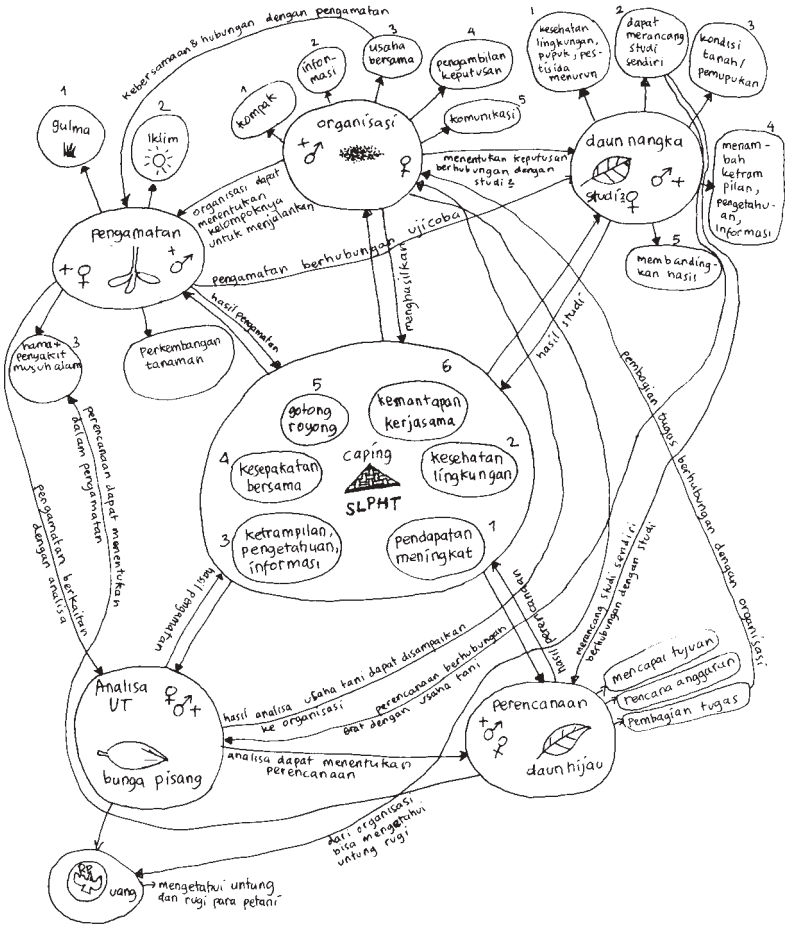


Social Map of Klajuran, Tanjungharjo Village

Reading the map together:

- Because of the scarcity of workers, labourers have leverage in bargaining their fee with the landowners.
- The relationship between the workers and the landowners has been in conflict. Landowners understand that if the land is cultivated organically by workers who have participated in PHT, the risk of a poor harvest is spread and the burden carried between the owner and the worker. The worker loses money and the landowners lose yield. All production costs, for example fertilisers, drugs, seeds and water bills for P3A (one hectare costs 15 thousand rupiah) are the burden of the worker, whilst the landowner need only pay taxes. It is not known where the P3A bill paid by the farmers to the water regulators go; it is suspected it goes straight into the regency coffers. The farmers claim *"They say it will be used to fix damaged ducts and build tertiary ducts"*.
- Why are the alumni of the Field School decreasing? Several members who lacked patience and understanding chose to drop out of FS. Apart from them, there are farmers who are interested and who have decided to join the FS group. There are 11 people who joined the group but did not join the FS (farmers show a pebble and name the family living there).

Impacts of FFS-IPM



The impact flow diagram

Reading the diagram together:

- *On farmers' knowledge*

  As a result of attending the Field School (FS), farmers have learnt to observe pests and natural predators, understand climate, *gulma* and plant development, learn about creating groups and creating a close relationship with other farmers, gathering information, creating a communal venture (*usaha bersama*/UB), making decisions, communicating, and studying farming, planning and farming analysis to understand farm profits and losses.

Before IPM, farmers operated more as individuals: they were likely to manage their land independently, with everyone planting according to their own preferences, using different varieties with low disease tolerance at differing harvest times. The uniformity of plants is also connected with the advice of agricultural officials. It could be said that post FS farmers do not differ much in respect to modern farmers who cannot even independently decide on the type of plant they are growing and who are always oriented to monoculture. The difference lies in the fact that FS farmers are easier to organize and can take coordinated group action to achieve optimal time of planting and other beneficial agronomic practices.

- *On information*

  Farmers feel that the information they receive is useful. Before the advent of FFS-IPM, the information that existed was minimal compared with the present. But most information is obtained from the cooperative unit (KUD), and the pest observer and extension workers look more on the technical side of farming without touching on the strategic needs of farmers.

- *On communal efforts*

  Alumni farmers of FFS-IPM can now work together, for instance in the creation of a savings and loan venture and a chemical fertiliser credit system. Before the presence of FFS-IPM, farmers tended to do things independently. Farmers still have to keep buying fertilisers and seeds but this is now done communally. The farming analysis done in FS has not been established into the farmers' routine, although several farmers who did it were disappointed when their production costs were higher than the returns they were receiving (see above).

- *On decision making*

  After participating in FFS-IPM, farmers join farmer groups that collectively decide which plants to grow, which planting season to choose and whether or not to use chemical pesticides. It was hoped that by going through FS, farmers would feel confident enough to be independent, but unfortunately, farmer groups often lack self-confidence. The result of a study done by farmers recommended that the best seeds are those seeds grown by farmers themselves, but unfortunately, farmers still persist in buying them in accordance with the official advice that labelled seeds are much better suited to the farmers' fields. Even though a clear decision had been taken, its implementation was destroyed by the agricultural officials' advice.

- *On the environment*

  After initiating IPM, farmers feel there has been a gradual protection of the environment and its status has improved. Natural predators have started to appear, and pests are dealt with without the use of pesticides. There also appears to be an increase in yields. Chemical fertilisers are still used, however, because farmers depend on them for soil fertility.

- *On organisation*

  After adopting IPM, farmer groups have started to proliferate and gain strength. Members can make collective decisions, can work communally (gotong royong) and can strengthen each other. However, farmer groups have had difficulty in rejecting government policies like those of the KUD (village cooperatives), despite knowing that the KUD undermine the environmentally friendly concept of IPM. Farmers opposed to it are still taking an individual stance rather than acting as a group. Quantitatively, group members are increasing, even though several farmers have resigned. Many new groups are being formed and several alumni of FFS-IPM have formed two new women farmer groups.

- *On gender relations*

  Women farmers tend to the fields in addition to their household chores and thus spend longer working hours. After participating in FS, women spend more of their time observing and participating in meetings etc The men's wages in the field are higher than women's even though the time spent working is approximately the same. Women should insist on the same fee as men.

The real condition of farmers, according to farmers

When asked the questions *"What can farmers do independently? What can farmers decide independently?"*. farmers realise that they have little independence in their farming choices. They sketched the farmers' condition in each era using the symbols below:

Several young farmers expressed the desire for greater independence, but how? Several proposals were made:

- There should be a farmer representative in parliament/DPR
- Farmers everywhere feel they are in the same plight. Therefore, there needs to be an organisation to unite them.

- If all farmers decide not to sell, then farmers are not easily fooled and they would be considered respectfully.

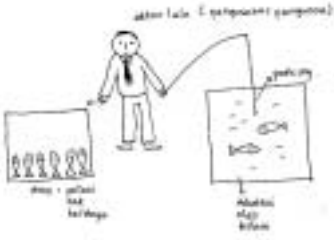
Traditional Era:

All parts of a coconut tree, the root, fruit, body, and flowers were considered useful. Farmers in the past were always able to supply all their own needs independently and to creatively look for alternatives (they were not dependent and obedient to outside parties).

Pre- FFS IPM Era

Farmers are like the wheel of a bicycle ridden by someone else (not farmers), along rocky, steep roads, and who are ordered/pushed faster to reach the target. In the beginning, the road they traverse is smooth and straight and is inclining (showing more results), but behind the inclined road there is a precipice, and one has not realised that the wheel can only spin, and keep spinning, according to the wishes of the rider.

Post- IPM FFS Era

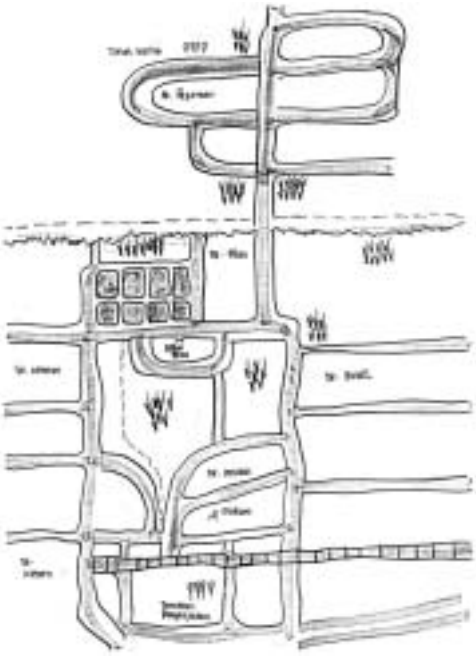


Farmers are treated like fish in the pond whilst someone out there, who is not a farmer, is continuously catching them and putting them in the small basket. The vulnerable fish can do nothing, although they know what is happening to them.

Example 2. Toroh Village, Gendingan sub-district, Grobogan District

Grobogan Regency, the Central Java rice bowl

Toroh village is in Gendingan sub-district, about 12 km south of Grobogan district, Central Java Province. Since the 1980s, the village has consisted of six sub-villages that use irrigation water from the Kedungombo dam. Since then, on average, Toroh has a rice harvest three times a year and hence Toroh is considered the rice bowl of Grobogan District.



Toroh village social map

Land ownership

Around 40% of farmers in Toroh are peasant workers and tenant farmers. According to the old farmers, in the past, many farmers had to sell their farmland because they had high debts. The price of land was cheap and this encouraged many city buyers and other outsiders to purchase land. Even though those lands have now been returned to the village, they are not in the hands of their former owners but of a limited number of people and large landowners. Even now, the purchase of land by city people continues with several outsiders owning pieces of land. Several areas that were previously productive land have become residential. Farmers used to have an average land holding of 0.25 hectares, but this is decreasing as the land is further partitioned through inheritance, sale or conversion to residential areas.

Almost half of the land in Toroh is *bengkok* land, or land owned communally by the village (*norowito*). When the irrigation scheme was built, a 45 metre wide clearing to the right and left of the irrigation channel was created. The clearing had a compensation price of Rp 600, decided by the government without prior consultation with the farmers. Several farmers protested but they had to back off when the government started accusing them of being supporters of the PKI (Indonesia's banned communist party).

Old and young talk about land control in their village

The majority of PHT participants in this village are landowners, including village officials and their relatives. Several peasant workers and farm labourers say there has never been conflict with the landowners over how land was managed. Indeed, many labourers have convinced landowners that pest control without chemical substances

is beneficial. As a result, several landowners are willing to bear income losses due to yield reduction.

The loss of farmers' traditional wisdom

Are farmers losing their traditional skills? To answer this question, old people are needed who can accurately relate the needs of farmers in the past, how they traditionally worked during the seasons, and what was involved in the production process. In the hamlet of Ploso which was part of the study village, one old farmer said:

> *"Farmers of the past worked with simple tools and thoughts. No technology whatsoever was used and everything was based on the teachings of our ancestors. Harvest was carried out twice a year; the yields were not as high as we get now. In those days there were no PPL, we were old people farming with just an instinct…"*

Old people told stories about cultivating lands using *garu*, *luku* and buffaloes. Farmers fertilised using manure, carried out pest control with natural substances and land was cultivated communally with other farmers. Hence, all the materials for farming were obtained from the surrounding environment and nature. During the harvest, some of the produce was kept for next year's seed, some went to market and the rest was kept for family consumption during the rest of the season. Men and women worked together, but women's energy was considered less than men farmers, even though they did the same work in the fields. The women had the important role of passing on their vital farming knowledge to their children. The women were the ones doing the sowing, selecting and keeping seeds, planting, harvesting and *nutu* or husking the rice.

> *In the past we were truly poor, we couldn't even fulfil our own needs…*

The older generation farmers understand most about the loss of tradition when they tell stories of their lives as farmers. When discussions happened, old memories arise and as the discussion rolled on, many bitter laughs and the occasional embarrassment rose to the surface regarding the feeling of how poor, stupid and old fashioned they were. But they were still eager to keep on relating stories and symbolising them with leaves and pebbles.

They cleverly calculated production times in accordance with the *pranata mangsa* and the planting of crops in rotation according to the season. There were also times when the land needed a rest; they called this a *bero* season.

Many old farmers equate modern farming with cultivation technology such as tractors, chemicals, machines and engineered irrigation. Old farmers feel that in the past they only used their instincts when cultivating. But there are other farmers who consider that if analysed further, the old ways of farming were more sophisticated than was previously thought and frequently used science, for example in pest control by using natural predators, creating compost, and seeding. Young farmers participating in PHT feel that this knowledge is very valuable. Farmers also used calculations rather than just plain instinct in the past, for example in the calculation of seasons, calculations about pest control, "*bawon*" and fee calculation, food and seed calculation and many more subjects like the *titen* and the *petung* knowledge. The young farmers feel that these 'old farmers had a school which was not in a university or inside a building, but the wide expanse of Mother Earth – those muddy grounds that are the source of knowledge, wisdom and technology'. In addition, everything that was created by the farmers was used and fully controlled by the farmers themselves.

The Green Revolution and farmers' decisions

Middle-aged farmers have known a time when they could choose which plant they would use, cultivate their own seed and provide their production inputs independently. The first time urea and TS was introduced by the government, farmers were still using farmyard manure. Then several types of fertilisers and pesticides were introduced aggressively to the farmers: farm officials (*Mantri Tani*) intensively promoted the tools of the Green Revolution; newspapers and radios constantly promoted the use of these tools in their farmer contact rubric (*rubrik kontak tani*); and village officials became actors in promoting them. For example, it is still fresh in the mind of a farmer from Toroh that the village head angrily tore down farmers'

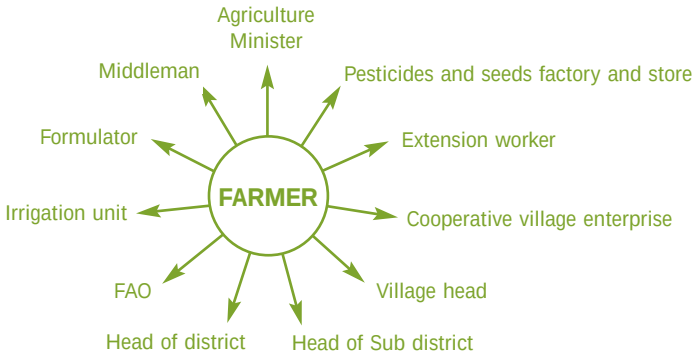
plants that were grown from their own seed and without bought-in fertilisers. The KUD (village cooperatives) packet, through Bimas, was forced onto farmer's lives.

An old farmer explained:

> *"In those days, aeroplanes brought in fertilisers, seeds and pesticides and they were piled up at the airport and KUD warehouses. The farmers were coerced into purchasing the faltering stock and were forced to pay even if the goods were not taken. We had been doing PHT for a very long time, but it was all gone with the coming of chemical pesticides and engineered seeds. Local rice plants gradually disappeared and we were not sure of our ability to cultivate seed in competition with the purple-labelled seeds, which they proclaimed as superior. There was a saying "rubuhing dami nekak'ke rejeki" (the fall of a rice stalk- a harvest – is a farmers benefit). However, the harvests are not so trusted anymore because pest and health risks are high, and even if we make it to harvest, the price fluctuations mean any return on capital invested would be considered lucky."*

Farmers' networks

If the nature of farmers' contacts could be identified, the farmers of Toroh would depict them as follows:



Farmers' analysis shows that each person involved has different roles and influence

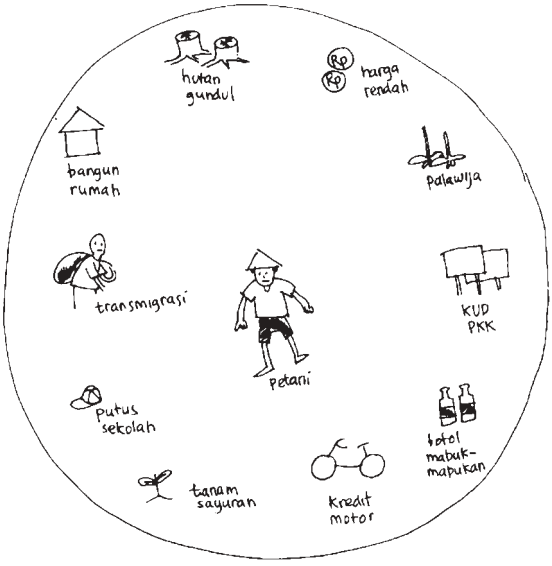
No	Who or what	Beneficial	Detrimental
1	Middleman (broker)	• Easing the sale of farmers' produce • Comparing the prices with market price or other middlemen	• At harvest time, middleman usually buys at a low price • Could obtain any price when competitors are non-existent
2	Extension worker	• Giving new knowledge to farmers (information source) • Providing leadership	• Often becomes a formulator (a seller of new drugs) • Undisciplined • Rarely meet farmers on their fields
3	Agricultural minister	• Issuing order papers to aid farmers	• Many policies, such as those on fertilisers and grain prices, are detrimental to farmers
4	Fertiliser and pesticide factory	• In conducting spraying (*saprotan*)	• Does not inform farmers of the long-term negative impacts of its products
5	Store	• Simplifies the purchase of fertilisers, drugs and seeds	• Too expensive • No loan policy • Refuse to buy the farmers' own produce • Often determine price unilaterally
6	Village head	• Has land to sell to farmers • Gives moral support to the farmers	• The land prices are too expensive and cannot be bought with credit • Prioritises the sale of lands to friends/family
7	Head of *Kecamatan* (sub district)	• Moral support • Information to farmers by PPL	• When the village has a land auction, the camat insist on cash payment
8	KUD (cooperative village enterprise)	• Reasonable interest rates • Simplifies the purchase of fertilisers • Gives *saprotan* loan	• Often refuses to buy farmers' produce
9	Pesticide and chemical fertiliser formulator	• Spray price cheaper than at the store (promotion price)	• Influence farmers to buy pesticides without telling them about the effects
10	Bupati (Head of district)	• Gives moral support to farmers	• Does not want to meet the farmers personally
11	FAO	• Enhances the farmers knowledge to become scientist farmers • Source of funding	• None
12	Darma Tirta (irrigation unit)	• Water supply is uninterrupted thus aiding a good harvest	• Broken irrigation line is not mended • Water often never reaches its destination • Ask for payments and determine fees unilaterally

The real condition of farmers, according to farmers

Each generation (Old Order farmers, New Order farmers and post FFS-IPM farmers) had his/her own experiences.

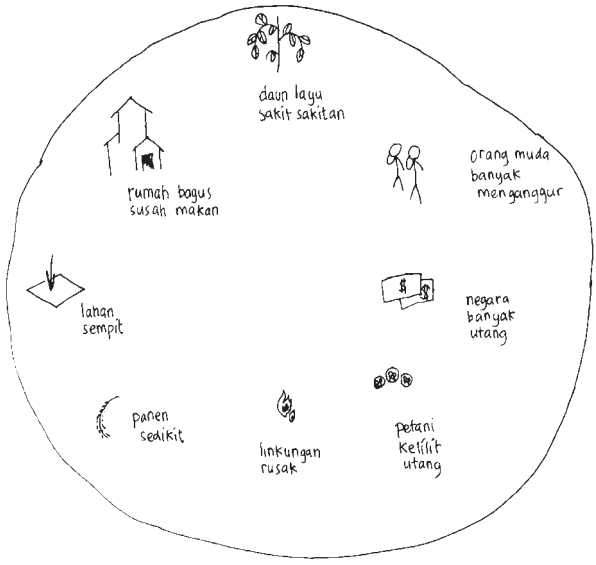
Older generation

According to old farmers, the castor oil plant leaf and the circle symbolise the old farmers' effort in fighting the injustices that befell them. This is because the castor oil plant has many thorns, but when the thorns are eliminated it has a soft body, symbolising how frail the farmers were. During the Japanese occupation, farmers were forced to plant certain commodities, especially the castor oil plant; they were allowed to plant rice but the harvest had to go to the occupiers to provide Japanese soldiers with food. Farmers could not refuse to do this and could only plant tubers in the side gardens to fulfil the family's food source. In 1968, farmers were again ordered to plant rice and give their harvest to the government for a cheap price.



Middle-aged generation

The symbol above signifies the tremendous problems farmers are facing. The farmers are part of Indonesia's most downtrodden citizens, the lowest in the scale in their position. On the other hand, Indonesia is constantly being referred to as an agrarian country, but the farmers, the majority of the population, never felt prosperous. The difficulty the farmers are facing start from the economics of each household and the rising price of inputs, with the complexity of the situation resulting in poverty. Many farmers' children have had to drop out of school and become unemployed because they are ashamed of becoming farmers like their parents. This situation has gone on long enough and it appears that the strength of farmers to deal with it day to day has made farmers confused and they are losing hope!



Young Generation

Young farmers are also experiencing confusion and complexity, for the problems are getting worse and no clear picture has emerged as to how to solve them. They complained of unfair land ownership and of the number of landless young farmers. Besides that, they fear that the country's burgeoning debt will directly affect farmers. In addition, the condition of the land is deteriorating through the abuse of chemical substances. Farmers cannot fight this tortuous situation as they have been marginalised and weakened over these years.

The experiences of farmers from these three eras indicate that the history of Indonesia has been one of farmer oppression – non-farmers have not shed a drop of sweat but have enjoyed the results of the farmers' efforts.

Era/Period	The Fate of Farmers
Kingdoms	Land belongs to the king, farmers are only labourers and must give a proportion of each harvest
Dutch/Japanese colonialism/occupation	Forced planting system, no freedom in planting and determining price, farmers become labourers on their own land
Old Order	Farmers felt relief in the transition between the Old Order and the New Order, but that condition was transient
New Order	Farmers became the object of rulers and businessman (with or without force). The culture and wisdom of farmers was lost; everything was valued in monetary terms and modernity and there was no concern for the dignity of farmers.
Reformation era	Still no change in the condition of farmers, even in the face of farmers' efforts to eliminate the use of pesticides, the creation of organisations and independent manufacture of drugs. Until now only a few have successfully done it and also there are still a lot of problems more urgent to the farmers that have to be overcome

What should be done?

In light of the situation described above, according to the farmers, something has to change. Some key steps include:

- The village must resolve its own problems alone. If the village can solve these problems, there would be no need for district intervention. Moreover, if the districts could solve their own problems, then provincial intervention would be unnecessary.
- Farmers must increase their exchange of experiences with one another and conduct dialogues on the fate and rights of farmers (i.e. not only talk about pests and fertilisers). For this to happen, the real enemies of the farmers need to be identified – who has been controlling them and which farmers' rights have been violated.
- Making contact with farmers in other areas who are also suffering from oppression.

- Regenerating an environment that has been wrecked by the use of chemicals by reverting to traditionally-used natural products.
- Reviving local knowledge (*ilmu titen*).
- To not have too high hopes that the PDI-struggle (that on in the election in that village) will resolve the appalling condition of Indonesia's state and agricultural systems. Farmers must struggle with their own fate, in cooperation with those who care about their affairs, to try to bring about change at the highest level. Voices that have been given to a particular party must be accounted for and be used to enhance farmers' lives. Farmers have a right to do that because the elections mean putting their fate and future in the hands of a particular party.

Farmers must realise they are not stupid and must struggle against those who consider them to be so.

Old generation discuss agriculture system at traditional era

Example 3. Sawangan village, Magelang District

Sawangan village consists of 13 sub-villages spread over the foothills of Mounts Merapi and Merbabu. This village is considered fertile with an abundant supply of water all year long from several water sources in the village. Farmers cultivate rice, vegetables and tobacco, which are planted in a rotation or in polyculture. Sawangan village is an important rice-producing region in the district of Magelang, Central Java.

A hamlet of the village, Mangunsari, was where the Green Revolution was first introduced by the government, with the planting of engineered varieties and the introduction of DDT. Sawangan has been one of those villages most used in government field-testing. This includes the Agricultural Ministry's most recent project 'Corporate Farming' which is a large scale project worth millions of dollars, carried out with the aid of the World Bank, to create Indonesia's second state of self sufficiency.

Natural resources mapping

A Farming History

The age of instinct (the age of tradition)

Farmers say the age of instinct is an age marked by several important points: the Japanese occupation, and then class conflict prior to the 1965 coup d'etat. Several farmers also described this era as the age of tradition or the age of ancestor.

Seeds and plant varieties

In the age of instinct, Sawangan village contained several types of plant that have now almost totally disappeared. These included:

BOX B

Seeds: A farmer's most precious possession

A woman farmer explained while sitting and writing on the ground: *"My hands must reach about a metre from the field's border (pematang). There is a stock of big, straight and promising plants. The seeds must be the best of the stock and they will be handled carefully. After reaching the house, the stalks of seeds are hung in the pawon (kitchen) to avoid being attacked by disease. In time of spreading (before planting), the hung seeds are taken and stripped off from the stalk (diplirit). Afterwards, the seeds are put on a board to be baked in the sun and then immersed in water. After three growth of buds in approximately three days, the seeds are ready for spreading."*

A male farmer was present and interrupted, saying that before being sown the land must be prepared. Clear water in the seeding box must be thrown away to avoid pests and diseases. After the seeds are sown, the land is then covered in hay. The seeds are ready to be sown when the hay is removed after about 70 days.

- Local varieties of rice like: *wantean, kretek, april, grundil/welut, papah aren, ketan, kutuk, ketan wulu, genjah beton, melik jawa, melik ketan, tumbaran, grupak, ajar antub, antub kinanti, sampang ampel, ketan gajeh, ketan rase, lumbu,* and *dan nangka*
- Local corn, white corn, and yellow corn with a long life and a short stalk
- Local vegetables, like cabbage, *loncang*, sugar peas, beans, *waluh*, *jipang*, celery, potatoes, and carrots

Land cultivation and planting

Before the rice plants were planted, farmers usually hosted a *slametan* (party) by creating *sego megono*. This was called a field operation (*bedah sawah*); the land was ploughed and then scratched (*digaru*) by using buffaloes or cows. Afterwards, the land was sprayed with cow dung and was "*ler*". Rice was planted in a cross pattern so that no plants overlap. When the rice plants started to grow, farmers killed weeds between the plants by drowning them, thus converting weeds into fertilisers. If pests invaded, the women usually killed them with *jambu* leaves or by removing caterpillars with an *irig* (a piece of wood used to thresh/pound).

Planting pattern

The land was evenly divided up, with some land planted with rice and the rest with palawija vegetables or tobacco.

Pest Control Methods

Crop	Pest	Control Method
Hay	Caterpillar	Combed by using an irig in the early morning when the caterpillars are still outside the plant.
Green leaves	Grasshopper (*walang sangit*)	Carcasses of a crab impaled and left on the ground in the corners of the field. The grasshopper converge on the carcasses, which are then burned using gasoline (*blarak*).
Soya beans	Sundep (*menthek*)	Desiccation of fields
Desiccated leaves	Birds (*emprit*)	Scarecrows are put up or a noise is made to scare them away
Peanuts	Mice	Sulphur with crab carcasses, put in front of a mouse hole – the mice eat the crab and are poisoned. Alternatively, sulphur and sepet are burned to smoke the whole field. Another method is to hunt the mice. According to farmers, the mice of olden days were not as ravenous as modern mice so they caused less damage.

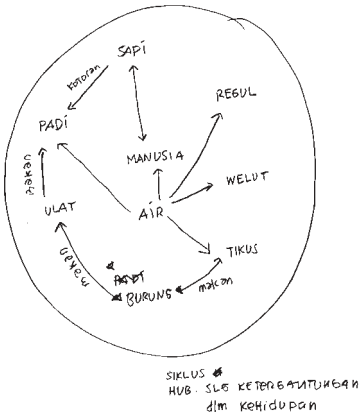
Division of labour between men and women

Labour	Labourer
Seeding (*Membenih*)	Women
Planting	Women
Ndaut	Men
Tandur	Women
Matun	Women
Pest Control	Both
Cutting of plants (*Ani-ani*)	Women
Bawon	Women

Post-harvest labour

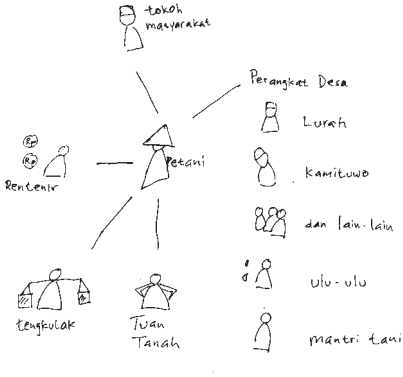
Nearing harvest, farmers conducted the wiwitan ceremony. The women harvest using sickles (*ani ani*). Seeds were selected and collected and then some of the harvest was kept in the barn, *grobog* or barrels and the rest was sold. In 1955, legislation was passed determining the amount of produce that peasant labourers and lenders were able to have.

The relationship between farmers and the environment



All the inhabitants of the circle cooperated. Men raised and used animals and plants for their own needs; for example, a cow provided useful manure for the plants and the soil. There were plenty of natural predators such as snakes, frogs, spiders, and birds to eat caterpillars and grasshoppers; humans would not kill or eat these natural predators except in desperate circumstances. Ducks and fish in the fields did not need to be fed. Water flowed clearly from the mountains and springs and farmers made small dams and ducts to regulate it.

Farmers' relationships with others



- *Ili-ili*: His duty was to regulate water, a position that is closer to the government than to the farmers.
- *Pengijon* was a rich man from outside the village. He gave farmers credit and bought the farmers' harvest. He also bought land from farmers who were in financial difficulties.
- *Sesepuh*/forefather: old people of the village, someone whom farmers consulted on the *slametan* (a ceremony before harvest)
- Hamlet head and officials: coordinated and gave orders to farmers in conducting communal work to fix the channels, eliminate pests. They also collected taxes and head *selapanan* groups

The table below shows who had decisions over each of the main aspects of farming:

	Seeds	Land Cultivation	Harvest
Deciding	Male Farmer	Male Farmer	Male Farmer
Using	Male and Female Farmer	Male and Female Farmer	Male and Female Farmer
Managing	Male Farmer	Male and Female Farmer	Male and Female Farmer
Controlling	Male Farmer	Male Farmer	Male Farmer

Age of *Nalari* (age of logic)

This period was called the age of logic because, according to farmers, they lived in an age that used logic to enhance their livelihood. This era is divided into two phases:

1. The modern phase: started with the introduction of Endrin, DDT and PB rice varieties to the villages.
2. Field school (FS) phase: initiated when farmers started to revert to environmentally friendly principles of farming.

Comparison between the modern and FS eras

	Modern age (Green Revolution)	FS age
Type of seeds/plants	• Type of rice: IR 11, IR 36, IR 64, *mamberamo*, *cipunegara*, *asahan*, *ciputih*, *cisadane*. The seeds were introduced by Pak Yagus from UGM • Bimas/Inmas was introduced; the seeds were given free in trial test for villages. The government then sent the seeds that performed the best again.	• High grass type of rice (considered vulnerable to *wereng*) • Type of crop: *ketan melik*, tobacco, cassava, and high grass rice
Pests	• *Wereng*, *tungro*, *grayak* caterpillar, *pathek*, fungi, virus, *menthek*, *penggerek batang*, *sundep*, mice, grasshopper, pipit bird	• Sundep, mice, caterpillar, grasshopper, pipit bird.
Harvest	Four times	Twice
Result and profit comparison	Fertilisers: 4 parts Pesticide: 2 part Work force: same Seed: 3 kg/bag	Fertilisers: 2 parts Pesticide: 1 part Work force: same Seed: 5 kg/bag
Relationship with institutions	Main contact with the village official (*mantri tani*), KUT, PPL, fertilisers and drug factory	Main contactwith the village officials, fertilisers and drug factory. Even though the programme is still planned by the village official, farmers are still able to do things freely.
Work force	All waged labour	There is some communal work (*gotong royong*)

Lost assets

Looking back over these three ages, farmers realised that several important things have disappeared over the years:

- Women's knowledge of sowing and controlling pests
- Wisdom about nature
- Tradition and culture
- Parental role as a teacher in the science of farming
- Natural predators
- Soil fertility
- Young work force
- Production apparatus
- Women's roles and access to common property resources (e.g. wild foods)

The real condition of farmers, according to farmers

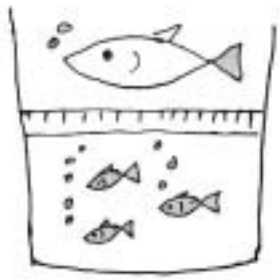
Age of nature (Naluri)

Title of symbol: DITIPU (BEING FRAUD)

In this age, farmers were considered stupid and 'fooled like a buffalo'. At that time farmers never realised that they were being manipulated, oppressed and turned into an object, from the Japanese age to the New Order age. *"Above the buffalo, there lies a naughty and smart deer and even though small, the deer can maliciously manipulate the big buffalo"*. The deer is a symbol of the rulers and the capitalist owners, who though not shedding *"a drop of sweat obtained much fortune from their slyness, whilst the buffalo obtained only a small portion of the rewards despite doing all the backbreaking work"*.

Modern age

Title of symbol: Perjuangan (struggle)



Farmers are portrayed as small fish, lying on the base of an aquarium and only obtaining the leftover meals from the big fish above. Even though the small fish can see what is happening they can not do anything because there is a partition that does not allow them to move. This can be interpreted as meaning that even though farmers were aware of the situation, they did not have enough strength to change the prevailing conditions. The big fish symbolises the rulers and the powerful – the big fish always obtains a large amount of food and its body is continuously growing bigger, covering the surface of the aquarium.

Farmer Field School Age

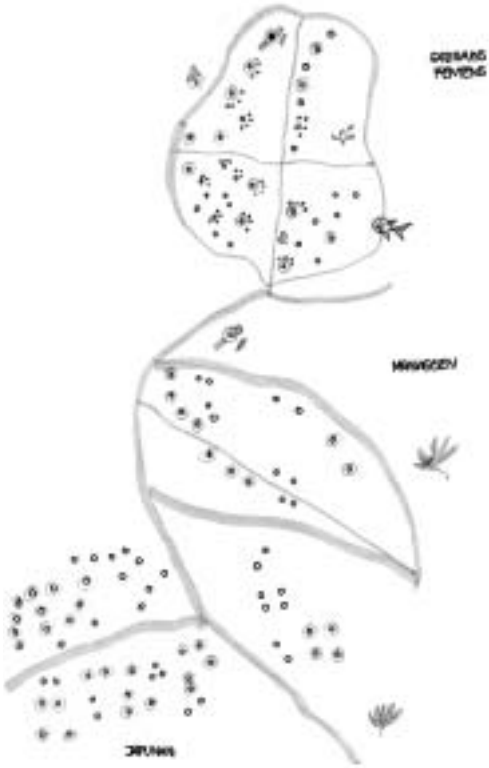
Title of symbol: Harapan (hope)

The younger farmers are full of hope even though conditions are still hard; the teardrops flow but the mouth keeps on smiling. The hopes of young farmers are rising as many friends are starting to find their way into farming again and they have lost the feeling of humiliation of working in a muddy field. The hope of young farmers is that the farming world will become a multicultural, multi-income source and independent world.

Social mapping

Reading the map together (see Box):

114 household heads live in the hamlet of Mangunsari, two of which own land bigger than three hectares. Fifty-one head families farm on less than one hectare, and the remaining 60 families are landless farmers. Of the three sub-hamlets Sabrang Kenteng, Mranggen and Japunan, only Sabrang Kenteng has conducted an intensive PHT (seven peasant workers and six smallholding farmers have succeeded in applying sustainable farming), and this pattern has spread to neighbouring Mranggen, while Japunan has not been touched by PHT at all. According to farmers in Japunan, it would probably be the hardest sub-hamlet in which to apply IPM because of the inequitable land tenure.



The peasant labourers have found it hard to persuade large landowners to adopt sustainable farming as they are only interested in high yields. Several farmers with land of less than a hectare appear to find it easier to share the burden and profits communally when practising sustainable farming on their land.

After participating in SLPHT, farmers felt their conditions changed noticeably. It is proven that the participants of PHT have a larger income from their management of land than non-participants. Such farmers are more eager to go to the fields and are more conscientious. The regeneration of farming is smoother as many young farmers are enthusiastic about farming, have a more diverse relationship with outside parties as PHT participant farmers are better informed.

On the other hand, farmers not participating in PHT see women not carrying out any farming activities and young people becoming rebellious and unemployed. Non-PHT farmers are unable to practise *mina* paddy (raising rice along with fish in the same field) and many dead fish float on the water. Farmers using natural fertilisers, integrated pest control and local seeds will obtain Rp 1,750,000, whilst non-PHT farmers will obtain Rp 900,000 for their harvest. In addition to having lower input costs, PHT farmers are healthier.

After more than a year of applying PHT, ecological impacts included the presence of earthworms, and dragonfly, spiders and frogs were being seen more frequently after years of decline. From the health perspective, farmers have noticed a reduction in the incidence of heavy breathing and headaches from inhaling pesticides.

In addition, PHT farming groups have started to reject KUT packets by refusing to accept the formulations that have come to their villages, and by demanding their rights to the water source that has been taken over by a mineral water company.

BOX C

Making a social map

- Farmers are divided into three groups representing every sub-hamlet. They are asked to draw the hamlet (*Mangunsari*) with red chalk, with each group drawing the area of their sub-hamlet in one sequence.
- Each participant collects pebbles and arranges them on the map to show the position of each family's house.
- To determine land ownership, participants mark those family's who own more than one hectare of land. Farmers gather leaves from around the yard and put them on the bottom of the pebble that has been agreed as the family that owns the land. Then farmers use a piece of a banana leaf for those families with land of more than one hectare.
- Farmers indicate use a red bean to indicate families participating in PHT field school.
- Farmers use yellow chalk to symbolise families using chemical pesticides and a black soyabean to show families using compost (rather than chemical fertilisers).
- Those areas controlled or getting their information from PPL are marked with the thorny castor oil plant.
- Families or hamlets that have felt the impact of pesticide use are marked by a picture of a fish using white chalk
- Hamlets which have been selective to the government programmes are marked by a cassava leaf
- Families or part of the hamlet that had the courage to refuse government programmes that are detrimental to farmers are marked with a jackfruit leaf.
- Farmers were asked to show which families are considered prosperous or which have a comfortable life. But the farmers could not identify these families and they questioned the meaning of prosperity. The facilitator tried to bring about the question by stating: 'how does a farmer know that a family is leading a comfortable life?'. According to the understanding of traditional farmers, families that have a good life are those that are toto tentrem kerto rahajo, with the following signs: children going to school, enough to eat, enough clothing, a sturdy house and not in debt. Farmers were reluctant to tell which family is prosperous according to these indicators, explaining that they do not know family secrets, especially those who are and are not in debt.

Time usage and farmers' revenue analysis

Daily routine of male farmers

Time	Activity
06.00 – 07.00	Waking up, drinking coffee
07.00 – 11.30	To the field
11.30 – 12.30	Cutting grass (*ngarit*)
12.30 – 13.30	Rest
13.30 – 16.30	To the field
16.30 – night	Sit around, sleep

Female farmers' seasonal activities

Type of activity	Time	Fee	Score
To the field - Tandur - Matun - Derep - panen sayuran	 Morning 07.00 – 09.00 07.00 – 09.00 Noon 09.00 till afternoon Afternoon 2 days each	 Rp 1.000 Rp 1.000 Rp 7.500 Not fixed	10 7
Making tape	Morning 2 days each		
Sending the tape to the market	Morning	Rp 9.500	6
To the field	Noon		7
Animal - eggs - kemingkung chicken	 Sold per month	 Rp 2.000 Rp 21.000	 7
Making yangko cake	2 weeks 3 times	Rp 15.000	6

Note: Farmers have never really done a costing of his/her activity using the rupiah. Those numbers are just approximation because farmers never know precisely how much they earn. Almost all male farmers find time to search for additional revenue, but this extra income cannot be counted detail and its amount is not fixed.

For the farmers of Mangunsari, fishery is an important part of farming; farmers usually keep fish in the field/*sawah* (*mina padi*). Thus fishery and farming both have the highest score (9 + 9).

Daily routine of female farmers

No.	Type of activity	Time
1	Cook and clean	05.00 – 07.00
2	Feeding the chicken	07.00 – 07.30
3	To the field	07.30 – 11.00
4	Washing the dishes and clothes	11.00 – 12.00
5	Resting	13.00 – 14.00
6	Preparing lunch	12.00 – 13.00
7	To the field	14.00 – 17.00
8	Feeding the animals	17.00 – 17.30
9	Cooking, preparing dinner, cleaning	17.30 – 18.00
10	Bathing Dinner Washing the dishes Resting	18.00 – 18.15 18.15 – 19.00 19.00 till morning

Note: – going to the market is done once a week – Selling the results straight from the field to the market

Analysis

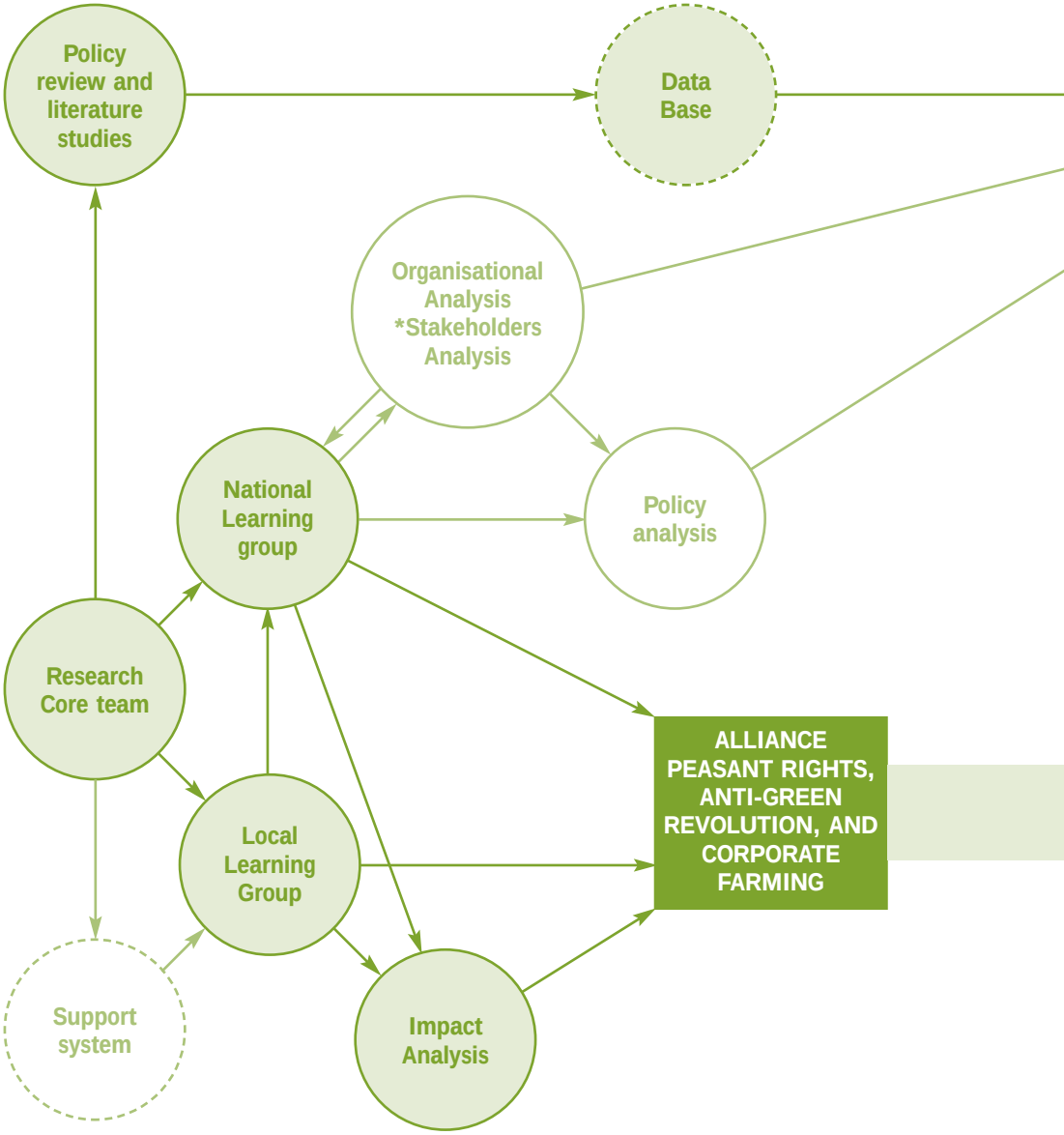
The activity table of female farmers shows they have very little time for themselves. Routine activities are usually vital (providing food, going to the field, taking care of the babies etc). To participate in PHT, therefore, women must be clever at managing themselves and must often delay any work that can be done another time. But this delayed work must still be finished when the PHT activity is over. There are a lot of female farmers unable or wanting to join PHT, because of this uncompromising problem of personal work and time needed for each activity.

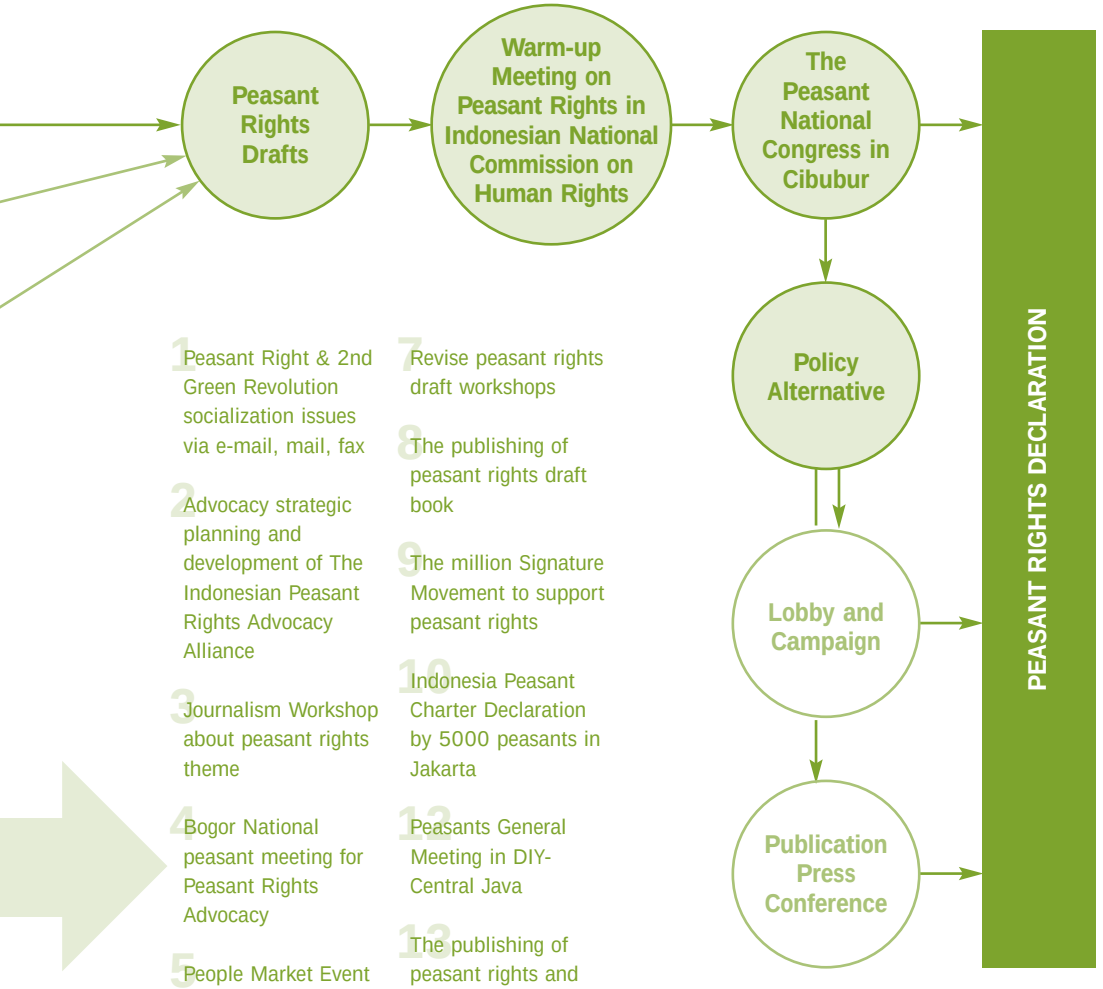
BOX D

Farmers' comments after 3 days conducting participatory impact analysis together

- we are glad because we know new stuff
- happy because we can think about something that was never considered before, even though those things have always been in existence in the everyday live of farmers. In this forum every day life that is random and chaotic can be systemised and can look meaningful, so that the farmer is conscious of himself.
- realising what has actually been happening to the farmers and the farming world
- impressed by the symbols and the use of media taken from the surrounding environment. The process taken differs from the way PPL is taught.
- Happy, because we can talk without fear and awkwardness for three days. Farmers can communicate about their personal problems and try to find solutions together

Annex 4: Policy advocacy on peasants' rights




Peasant Rights Drafts
Warm-up Meeting on Peasant Rights in Indonesian National Commission on Human Rights
The Peasant National Congress in Cibubur
PEASANT RIGHTS DECLARATION
Policy Alternative
Lobby and Campaign
Publication Press Conference
1 Peasant Right & 2nd Green Revolution socialization issues via e-mail, mail, fax
2 Advocacy strategic planning and development of The Indonesian Peasant Rights Advocacy Alliance
3 Journalism Workshop about peasant rights theme
4 Bogor National peasant meeting for Peasant Rights Advocacy
5 People Market Event in order to socialize Peasant Rights in Kulonprogo, Banyumas, and Sragen
6 Development of facilitator forums for socializing peasant rights
7 Revise peasant rights draft workshops
8 The publishing of peasant rights draft book
9 The million Signature Movement to support peasant rights
10 Indonesia Peasant Charter Declaration by 5000 peasants in Jakarta
12 Peasants General Meeting in DIY-Central Java
13 The publishing of peasant rights and GMO book (life industry)
11 Talk show in TV, radios and distributed poster, leaflet, etc
14 Advocacy plan for local policy
2000
2001

Annex 5. The Peasants' Rights Charter (Draft)

Peasants' Rights Charter (Draft)

This charter sets out the rights of peasants (defined as those farmers who own medium-land, wide land , or who are landless farm labourers). Peasants are all those people whose lives are partly or wholly dependent on farming, including animal husbandry and freshwater fishery. A peasant's family is defined as a husband, wife, children and biological relatives,- but may also include other specific social ties as long as this is accepted by the community and that they are all dependent on the same food source.

Peasants' rights can be classified into at least eight areas, as follows:

A. Livelihood rights (rights to sufficient and healthy food, and a reasonably good job)

B. Resource control rights (rights to fertile land, rights to biological diversity)

C. Production rights (including technology choices)

D. Consumption rights (including the right to choose what to produce)

E. Marketing rights (including market access rights), quality protection and property rights

F. Political and social rights (including the right to organise themselves/build their own organisations)

G. Reproductive rights (as they relate to both human reproduction and maintaining biological diversity)

H. Rights to free expression (including the rights of language, culture, religion, and arts)

Of the following peasants' rights, some can be achieved by themselves; others must be implemented by the state (government) and/or national/international organisations through laws.

A. Livelihood rights

A.1. Like all other people, peasants and their families have the righs to a living as stated in and guaranteed by the United Nations declaration of Human Rights

A.2. Peasants have the right to build up their family properly, and/ or to determine proper life, to take care and develop their family as they expect in accordance with a view of humanity that is just and civilized.

A.3. Peasants and their families have the right to sufficient and healthy food.

A.4. Peasants have the right to sufficient income to support the basic needs of their family.

A.5. Peasants and their families have the right to adequate, permanent jobs and an income sufficient to support family life.

A.6. Peasants and their families have the right to proper clothing for work and social life.

A.7. Peasants and their families have the right to enough land to support them and living place/housing suitable to maintain health, culture, occupation, and society.

A.8. Peasants and their families have the right to medical care, clean water, basic energy and adequate lighting.

A.9. Peasants and their families have the right to education and the opportunity to improve their skills in order to earn sufficient income for an adequate livelihood.

A.10. Peasants and their families have the right to material and social needs appropriate to their specific ethnic group.

A.11. Peasants and their families have the right to the space and opportunity to study and express their beliefs and religion.

A.12. Peasants and their families have the right to good quality child and aged care.

A.13. Peasants and their families have the right to freely express themselves

A.14. Peasants' rights to these basic needs should be guaranteed by a law, not discriminated against according to sex, seniority or age, except where such discrimination is determined by religion or culture.

A.15. In implementing and striving for these rights to basic needs, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

B. Resource control rights

B.16. Peasants and their families have the right to own, individually or collectively, farmland of adequate quality and extent to support the basic needs described above.

B.17. Peasants and their families have the right to adequate irrigation/water resources to support subsistence farming activities. Such access should be either free of charge or at a cost appropriate to their means.

B.18. Peasants and their families have the right to access all sectors needed to support subsistence farming activities. Such access should be either free of charge or at a cost appropriate to their means.

B.19. Peasants and their families, individually or as a group, have the rights to control non-renewable natural resources, and to fertile land, soil, clean air, weather and rain, and biological diversity.

B.20. Peasants and their families have the right to legal protection of their farmland, dwellings, natural resources and biological diversity from theft or other society or institutional claims, as well as protection from contamination or pollution by other industrial activities.

B.21. Peasants and their families have the right to decide how best to use their skills, intelligence and power, so as to contribute to their family, society, and all mankind.

B.22. Peasants and their families have the right to protection from extortion, theft, manipulation or pressure from other more powerful people or institutions.

B.23. Peasants and their families have the right to the items listed above and such rights should not be biased by gender, religion, ethnicity and/or culture.

B.24. The rights of peasants and their families to the items listed above may be differentiated according to age, or seniority, when such bias is grounded in traditional law and practice and valid customs, as long as fairness and truthfulness preside.

B.25. In implementing and striving for these rights to ownership of or access to natural resources and their individual skills, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

C. Production rights

C.26. Peasants and their families have the right to choose how to farm, produce plants and seeds, in whatever quantity and quality or by whatever means they or society sanctions.

C.27. Peasants and their families have the right to prioritise their harvest for their families' use and to sell or distribute any surplus at a fair price.

C.28. Peasants and their families have the right to store as much of their harvest (crops) as needed to meet their families' basic needs. They also have the right to store seeds against crop failure and other risks.

C.29. Peasants and their families have the right to freely choose how to sow and maintain their crops as long as such techniques do not threaten human and environmental health.

C.30. Peasants and their families have the right to freely choose how to process and store their produce as long as such techniques do not threaten human and environmental health.

C.31. Peasants and their families have the right to preserve and produce local goods and services or other hereditary things emanating from their society.

C.32. Peasants and their families have the above rights to production regardless of gender, religion, ethnicity and culture, but with consideration for differences in ability, tradition and custom, age, level of experience, and seniority, as long as such differences do not contravene social justice.

C.33. In implementing and striving to achieve these production rights, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

D. Consumption rights

D.34. Peasants and their families have the right to consume their products to meet their families' basic needs.

D.35. Peasants and their families have the right to complete and accurate information about the goods and services they consume and not to be pressured or manipulated over their choice of such products.

D.36. Peasants and their families have the right to consume whatever goods and services are needed by their family as long as such consumption does not undermine health, fairness and human dignity.

D.37. Peasants and their families have the right to be protected by government or other reputable bodies from goods and services which could threaten their health and/or the environment.

D.38. Peasants and their families have the legislative right to fair compensation from consuming goods and services that cause death or injury to them or their families.

D.39. Peasants and their families have the rights of priority to enjoy/consume goods, hereditary legacy and services produced by the local community.

D.40. Peasants and their family have rights of consumption regardless of gender, religion, ethnic (group), and culture, taking into account needs, ability, tradition and custom and ensuring that they are in no contradiction with social justice.

D.41. In implementing and striving to achieve these consumption rights, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

E. Marketing, quality guarantee and property rights

E.42. Peasants and their families have the right, under national or international law, to market their products and to obtain the material needed for the production process.

E.43. Peasants and their families have the right, under national or international law, to gain a quality guarantee for the goods and services to be marketed.

E.44. Peasants and their families, or as a community, have the right, under national or international law, to hold copyright of the goods and services they have developed, invented or produced.

E.45. In implementing and striving to achieve these rights to marketing, supply, quality guarantee and copyright, peasants and their families (or as a

community), have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

F. Political and social rights

F.46. Peasants and their families have the right to build and run any organisation, such as an economic cooperative, freely and without intervention, as long as it does not contravene valid laws.

F.47. Peasants and their families have the right to freely determine the rules and budget of such an organisation, provided they do not contravene social and legal convention.

F.48. Peasants and their families have the right to freely elect the leader of such an organisation according to democratic norms applied commonly and internationally.

F.49. In establishing such an organisation, peasants and their families have the right to build branches including at the village level.

F.50. In establishing and running such an organisation, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

F.51. Peasants and their families have the right to obtain national or international legal protection in running their organisation and in striving for their rights in national or international fora.

F.52. Peasants and their families have the right to express their opinions freely through mass media, debates, demonstrations, strikes, etc.

F.53. Peasants and their families have the right to a fair and just legal process if they are involved in either a civil or criminal lawsuit.

F.54. Peasants' rights and their family in organizing practices do not discriminate against gender, religion, ethnic (group) and culture,

G. Reproductive Rights

G.56. Peasants and their families have the right to be protected by national and/or international law in choosing family size and the use of birth control.

G.57. Peasants and their families and/or organisations have the right to be protected by national and/or international law to maintain biological diversity and local environmental richness .

G.58. Peasants and their families have the right to adequate information at national or international level, personally and institutionally, in the form of fair cooperation and compensation for their role in conserving biodiversity and associated knowledge.

G.59. In implementing and striving to achieve these reproductive rights, peasants and their families have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

H. Rights to free expression

H.60. Peasants and their families, personally or as a group, have the right under national and international laws to express themselves in their local language, culture, religion and through local literature and arts.

H.61. Peasants and their families, personally or as a group, in implementing such rights have the right to choose freely a person or an institution to provide intellectual, technical or managerial help and advocacy, nationally or internationally.

Amendments to the draft Peasants' Charter

The above draft was discussed by peasants (from 24 provinces), universities, and NGO activists in August 1999. Important suggested additions were as follows :

Productive resource rights

1. The right to preserve natural resources.
2. The right for farming laborers to gain ownership of adequate farming land.
3. The right to legally guaranteed land use and ownership.
4. The right to control and use forest resources.
5. The right to a clean, healthy and pollution-free environment.
6. The right to a legal process which protects and respects traditional rules.
7. The right to control and use scarce natural resources such as water and air
8. The right to compensation for the destruction of productive natural resources.

Cultivation rights

1. The right to develop and produce local seeds.
2. The right to re-obtain foreign or local varieties.
3. The right to determine commodities and varieties.
4. The right to obtain farming inputs fairly, for instance water.
5. The right to control land in accordance with peasants' ability.
6. The right to determine when to cultivate land.
7. The right to determine agricultural technology.
8. The right to know what substances are in the soil.
9. The right to determine how, when, what type and what quantities of fertiliser to use.
10. The right to produce natural fertiliser.
11. The right to choose a pest control method.
12. The right to compensation for pollution and/or poisoning.
13. The right to make and use their own pesticides.

Production and marketing rights

1. The right for peasants' organisations to control surplus production.
2. The right to be involved in pricing policies to achieve a fair price (both selling and buying).
3. The right to obtain accurate market information.
4. The right to seek added value.
5. The right to insure against the risk of harvest failure.
6. The right to choose technologies, including the right to refuse inappropriate technology.
7. The right to market access and protection from imported products.
8. The right to marketing freedom.
9. The right to organise a marketing network.

10. The right to the fair and bilaterally agreed division of surplus between cultivator and owner.
11. The right to label agricultural product-quality admission concerning price, local and producer identity.
12. The right to determine the legality of agricultural products
13. The right to label organic products as healthy.

Education, information and technology rights

1. The right to obtain capital and control its uses
2. The right to develop and distribute knowledge and science.
3. The right to obtain accurate information.
4. The right to an audience for peasants' findings and local understandings.
5. The right to control knowledge and science from abroad.
6. The right to be involved in the process and to take advantage of agricultural research findings.

Participatory and political rights

1. The right to determine policy.
2. The right to control policy and its implementation.
3. The right to refuse policies which would disadvantage peasants.
4. The right to strike and boycott.
5. The right to political representation.
6. The right to involvement in economic, social, political, and cultural organisations.
7. The right to choose how to farm.

Environmental rights

1. The right to a clean environment, including water, soil, air, and agricultural products.

2. The right to compensation for either local or global pollution which affects human or environmental health.

3. The right to compensation for environmental destruction caused by government policy. An example would be water pollution caused by the protection policy of crop, agriculture, and industrial effluents.

4. The right to protect and maintain an ecological balance.

Government support rights

1. The right to government assistance to develop agriculture.

2. The right to refuse government training.