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AGENCIA SUIZA PARA EL DESARROLLO Y LA COOPERACION COSUDE

Initiation of a Global Network for Poverty-Oriented Micro-Irrigation

Preparatory Workshop

Workshop Report

28 - 30 May 2001

Rüttihubelbad (Bern), Switzerland

Contents

PRESENTATION FILES!

The presentations made during the workshop are briefly summarised in this report. The full presentations are available electronically and can be ordered at LBL (Elisabeth Katz, Swiss Centre for Agricultural Extension and Rural Development, Eschikon 28, 8315 Lindau, Switzerland or eza@lbl.ch).

- Workshop-Introduction-HRL.ppt
- Micro-irrigation and the Poor.ppt
- Poverty alleviation as a business.ppt
- Kit1.ppt, kit2.ppt, kit3.ppt
- Family drip system.ppt
- EnterpriseWorks.pdf
- HTN.ppt
- VILTEC.ppt
- WOCAT presentation.ppt

Executive summary

The potential of low-cost micro-irrigation

Access to irrigation water is a limiting factor to the productivity and profitability of many small farms in developing countries, in particular in the many areas where water is becoming increasingly scarce. Most water saving irrigation systems are not affordable for poor smallholders, because the equipment is capital-intensive. Common drip irrigation systems are designed to serve larger areas, and cannot be broken down to fit the small plots which the large majority of poor farmers cultivate. Thus, low cost small-scale micro-irrigation systems have a huge potential to contribute to improving the livelihood of poor farming families by enabling them to earn additional cash income or to grow more food for themselves.

In recent years, various low-cost micro-irrigation systems have been adapted to the conditions of poor farmers and for household kitchen-gardens. Drip irrigation kits of varying capacity for plot sizes from 40 m^2 up to 2 ha have been developed, tested, and are now used by over 20'000 families in India, Nepal and some other countries. These kits reduce the cost to irrigate an acre of land to 250 US$ on average compared to 1000 US$ in conventional drip irrigation systems. They require only little initial investment (with a bucket kit of 8 US$ a plot of 40 m^2 area can be irrigated), and they can be easily increased in reach later on. With a 200 litre drum kit for 25 US$, a poor family can irrigate 500 plants and may earn 100 US$ and more additional cash income in a year, a substantial improvement of their livelihood. On the ecological side the technology leads to significant savings in water (up to 60%) compared to flood irrigation.

The need for a market creation approach

At first sight it appears to be relatively simple for a development organisation to disseminate the technology by distributing the equipment to poor farming families and training them in how to use it. However, to ensure widespread and sustainable availability of the equipment, a market creation approach ought to be employed. This means to set up an independently functioning, economically profitable supply chain from raw materials over manufacturing and assembly to distributors and spare part dealers in rural areas which sell the equipment to the users.

In practice market creation for low-cost micro-irrigation equipment requires activities like

- assessing the feasibility of the technology in an area
- adapting the technology to the local circumstances
- social marketing of the technology (raising awareness, showing how it works, demonstrating the economic benefits etc.)
- analysing the requirements for the supply chain and building a locally adapted supply chain.
- analysing the requirements for agricultural support and establishing the required links or building the necessary structures.

Market creation approaches have been successfully employed for the dissemination of e.g. treadle pumps in Bangladesh, India and in a number of African countries, metal sheet grain storage bins in Central America, and nursery plants for farm forestry in Bangladesh.

Making low cost micro-irrigation technology widely available

Low-cost micro-irrigation has proven a substantial potential for poverty reduction in many rural areas around the world. However, the capacities to disseminate the low-cost micro-irrigation are limited. There are a number of organisations with relevant experience, on the technological side as well as with the market creation approach, in a number of countries all over the world. But the technology has potential in many more places. World-wide dissemination of low cost micro-irrigation by market creation requires a strategy which involves organisations which are working in the many areas where micro-irrigation has potential.

Organisations which want to disseminate low cost micro-irrigation need to be capable to facilitate the building up of independent supply chains for the equipment, if necessary complemented by other services, as explained above. This requires skills and knowledge which may not be available with many of the interested organisations. To develop the capacity and to ensure certain quality standards, they will need access to technical and methodological know-how and support.

The challenge thus is to establish a structure which allows organisations such as NGOs, development programmes, farmer organisations, private dealer networks of agro-input companies, and other organisations which are interested in micro-irrigation, to link up with those people and organisations who have the relevant know-how and experience.

An initiative to create a global network for low-cost micro-irrigation

A group of persons and organisations interested in low-cost micro-irrigation met for this workshop in Switzerland to prepare and initiate the establishment of a global network for the dissemination of this promising technology. Public development agencies from a number of European countries, international agencies like the World Bank, FAO and IWMI (International Water Management Institute), NGOs implementing micro-irrigation programmes or interested in doing this, private sector companies (drip equipment manufacture) and an applied research institution were represented.

The purpose of the workshop was on the one hand to provide an opportunity to share experiences with low cost micro-irrigation, market creation approaches and different forms of networking, and on the other hand to muster support for the network initiative, and discuss options for the functions that such a network should take on, and the shape it could take.

Presentations at the workshop

- Micro-irrigation and the poor – study results from India and Nepal
- Poverty alleviation as a business (Urs Heierli)
- Development of a horticulture income kit in Nepal (Bob Nanes)
- The family drip system (Yossi Lavi)
- Opportunities for micro-irrigation in Yemen (Joep Blom)
- Irrigated horticulture – experiences of EnterpriseWorks (Jon Naugle)
- Network for cost-effective technologies in water supply and sanitation / HTN (Erich Baumann)
- VILTEC – a franchising system to disseminate useful technologies (Ueli Scheuermeier)
- WOCAT – an example of a network
- The connection between the global small holder irrigation initiative and a micro-irrigation network (Paul Polak)
- The Netherlands' policy for supporting such initiatives (Jan Vlaar)

Emerging visions of a micro-irrigation network

In the course of the workshop the visions for a micro-irrigation network emerged in more concrete shapes. The following immediate goals of the network were proposed:

- The network helps actors to implement low-cost micro-irrigation activities effectively and build sustainable supply chains.
- The network helps donors to make the micro-irrigation activities they fund more effective.

For the end user level the following objectives were suggested:

- Enabling smallholders to generate income.

- Promoting more efficient water use.

Network functions – knowledge/information management as well as skills development

The interest of the workshop participants in such a network turned out to be high; however, the views on its functions and shape varied widely. Regarding the basic functions there were two poles of opinion:

(a) A network whose chief task is knowledge and information management (i.e. establishment of an information collection, storage and retrieval system)

(b) A network which offers support services for agencies implementing micro-irrigation programmes (e.g. training, technical consulting, process coaching)

In the course of the workshop views tended to converge towards a combination of both these poles, based on the insight that for large-scale dissemination of a technology skills development and knowledge/information management are equally important.

Ideas on network financing

A key question for any such initiative is how to finance it. The view emerged that a combination of core funding on the supply side[1] (for the knowledge management part, and possibly for coordination functions) and demand-based funding (for the skill development part) is the most realistic funding pattern. Task-based contributions by the involved organisations in cash and in the form of staff working time need to complement the funding base.

The next steps

The present group of players has informally mandated a task force comprising the most motivated and interested persons to work out a more detailed network proposal, possibly with different options to choose from. This proposal will be discussed among a wider range of possible stakeholders. Until mid 2002 the global micro-irrigation network should then be ready to be launched.

[1] Supply side funding means that the funder directly gives finance to the network or its institutions for defined tasks. Demand-based funding means that the organisation which requires services from the network pays for these services. If a funding agency wants to fund network services it must give the finance to the organisation which demands the services which then pays the network. This has the consequence that the network gets funds only for services which prove their usefulness by being demanded.

1 Background and context of the workshop (Urs Heierli)

Urs Heierli introduced a possible action plan towards knowledge sharing in, and dissemination of affordable micro-irrigation technology. There are 5 steps or phases:

1. Assessing and documenting existing micro-irrigation systems (e.g. study done in India and Nepal by Tushaar Shah and Jack Keller)
2. Search for and establish contacts with possible stakeholders (who is who?)
3. Compile training manuals and design suitable kits (so far under development: technical manual, marketing manual and training of trainers manual, horticulture income kit prototype under field testing)
4. Preparatory workshop to discuss a network (e.g. this workshop but also a national workshop in India
5. Workshop to found a gobal network with all key stakeholders

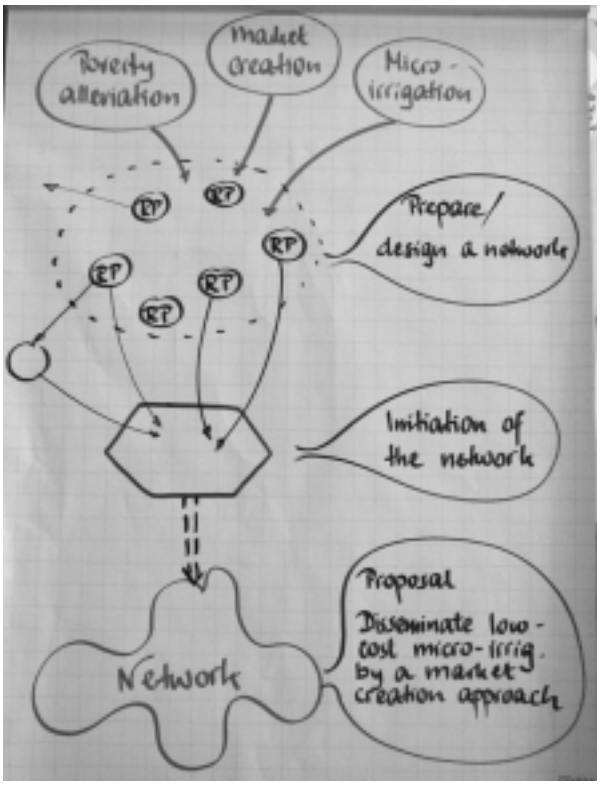
Two possible outputs of the process in a nutshell:

- A toolbox (tools produced or under production: documentation of experiences, training manuals, lessons learnt in India, horticulture income kit)
- A thematic network of practitioners with committed members, a clear focus and a solid funding base

Further details: Workshop-Introduction-HRL.ppt

2 Workshop objectives and programme

Network design process at a glance



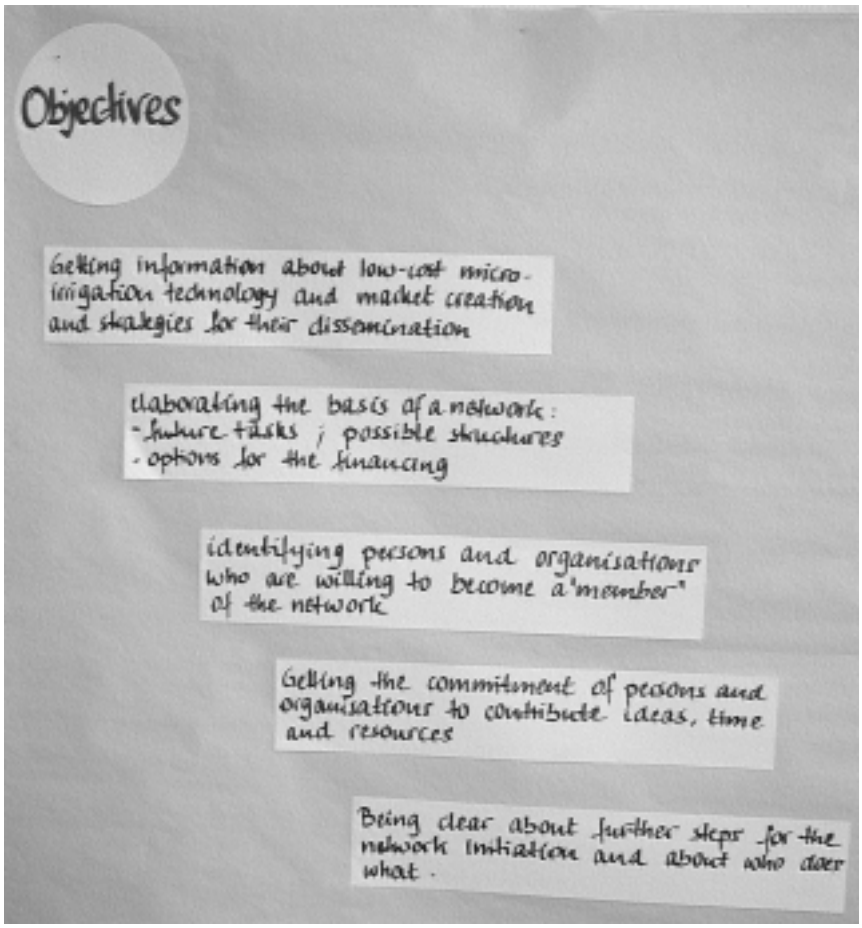
Experiences combining micro-irrigation, poverty alleviation and market creation have been made in different places and by different people

The participants have come together in this workshop to prepare and design a network

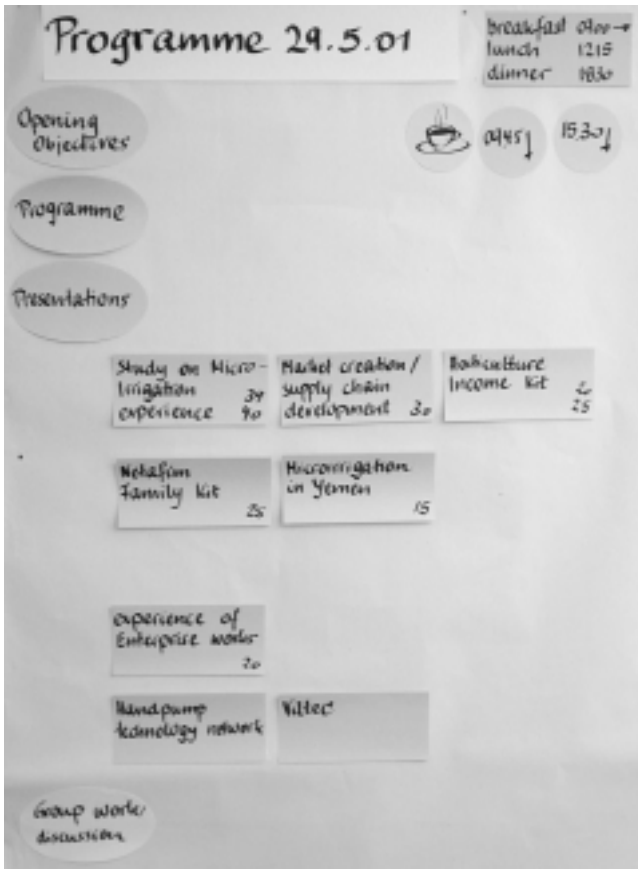
Later (same time next year, as was decided at the end of the workshop) the same people/organisations and others who are interested will meet again to initiate the network

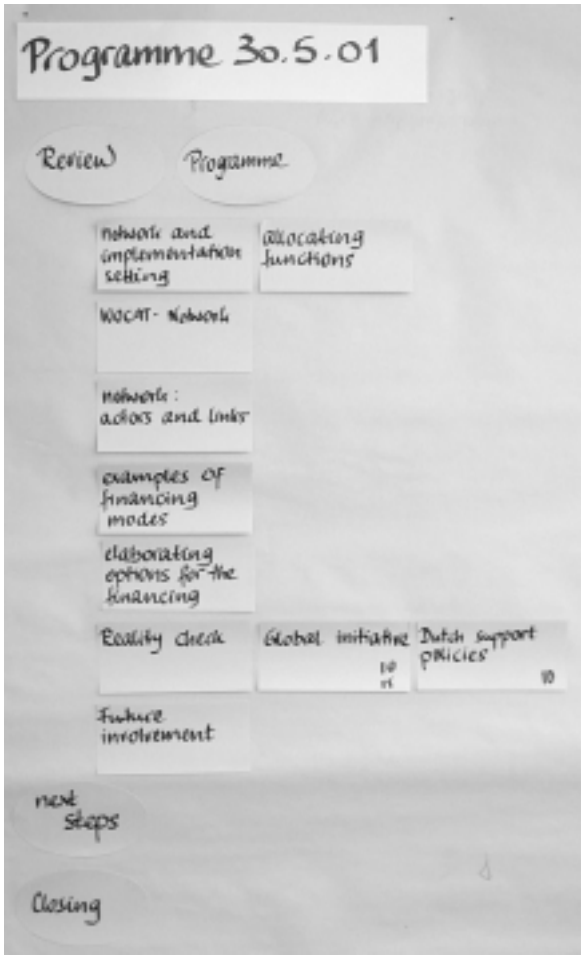
Still later this network will start functioning. The shape of the network is not yet set, although there is a first proposal for a shape, and after this workshop the shape may have become more clear.

Objectives of the workshop



Workshop programme





3 Presentations on experiences with micro-irrigation, market creation and networks

Micro-irrigation and the poor - study results from India and Nepal (Jack Keller and Tushaar Shah)

Jack Keller gives an overview on small-scale, low cost micro-irrigation in a technical sense.

Tushaar Shah presents the findings of the study on experiences with IDE's micro-irrigation systems in different places of India and Nepal.

Discussion

There was one key question:

Does commercialisation of micro-irrigation equipment result in a shift of the clients from poor people to mostly middle level farmers?

Further details: Micro-irrigation and the Poor.ppt

Poverty alleviation as a business (Urs Heierli)

Urs Heierli presents a concept on how poverty alleviation and business are linked. Following are the key components of the presentation

- Examples of how business contributes to poverty alleviation (nursery entrepreneurs in Bangladesh; treadle pumps in Bangladesh and India)
- Explanations on the market creation approach to development
- The potential of low-cost drip irrigation for poverty alleviation
- Creation of vibrant markets (supply chains) for low-cost micro-irrigation
- 6 steps in creating markets: Feasibility phase, technology adaptation phase, supply chain development, rural mass marketing, agricultural integration phase, impact analysis and feedback.

Further details: Poverty alleviation as a business.ppt

Development of a horticulture income kit in Nepal (Bob Nanes)

IDE Nepal has developed a horticulture income kit, consisting of an irrigation kit with all necessary components of drip irrigation equipment for small plots and an agri kit with fertiliser and other useful inputs, inlcuding pictorial instruction on how to use the drip system and start to grow vegetables. The kit is designed to facilitate the start of gardening activities around homesteads.

PORPOSED BOX FOR HORTICULTURAL KIT

Further details: Kit1.ppt, kit2.ppt, kit3.ppt

The family drip system (Yossi Lavi, Netafim)

Yossi Lavi presents the Netafim family drip system for small holders. Its key strong points are: efficient water use, makes work easier, can be used on plots from 10 – 1000 m^2 . It has a dripper inside (this is a main difference to the IDE systems). It is currently used mainly in China and India. In India it requires an investment of 100 $ for 500 m^2.

Discussion

- The activities in India and China are based on public finance by the respective governments (regional uplift programmes)
- Netafim engages itself with the family drip system, because they think there is a market for it.
- Production is currently in Israel, because of the dripper which can be produced only there. In future it should be produced also in the Netafim companies in South Africa, Brasil, China and India.

Further details: Family Drip System.ppt

Opportunities for micro-irrigation in Yemen (Joep Blom)

The environmental setting

Rainfall	coastal area	0-200 mm
	mountain plains	300 mm
	eastern desert	200-0 mm
Availability	130 m^3 **per capita per year**	
Overpumping	on a national scale	40%
	locally much more (Sana'a inflow 50 million m^3, extraction 200 million m^3)	
Qat	takes 26% of all water consumption	

The institutional setting

- National Water Resources Authority
- Capacity building versus water crisis
- Agricultural Reform / Aden Agenda
  - reducing number of government employees
  - orientation towards core business: big farmers / private sector
    small farmers / extension service
  - orientation towards research/extension/farmer needs

Actual situation on micro-irrigation in Yemen

Research

- FAO
- Netherlands supported regional project
- World Bank supported experiments

Privat sector

- Local production of equipment
- Consultancy
- Application: fruit growers / garden centres

Social approach

Potentials

Income generation: Products: Fruit trees / Qat / Grapes / Coffee / Vegables

Feasibility: financial and economic / drip equipment / dams / deepwells

Watershed management

- Example Taiz
- Example grape growing valley

Risks

- Salt
- Extension of irrigation

Local organisations

- Farmer union
- Agricultural Credit Bank
- Agricultural Research and Extension Authority and Dutch supported Extension project (community approach)
- Research Centre for Water and Environment of the University of Sana'a
- IFAD
- German supported regional project / Dutch supported regional project
- World Bank / Social Fund
- Agricultural and Fisheries Fund

Scale of interventions / target groups

- Cash crop farmers
- Small farmers

Discussion

- There is a conflict about the use of water between men and women (men wanting to irrigate cash crops and women needing water for household and cattle) ⇨ drip irrigation can alleviate this conflict.
- For Yemen one has to keep in mind that the issue is not just cheap or expensive drip irrigation, but about water waste vs. efficient water use.
- There is a major difference between the cases of India/Nepal and Yemen: In India/Nepal micro-irrigation generates income and is thus very much a private good, whereas in Yemen water saving is in the foreground, and micro-irrigation has ecological and social goals and thus is very much in the public interest.
- Also in India and Nepal water is relatively scarce in certain seasons; this means that there is also in these countries a public interest in water saving.
- If drip irrigation activities are started with the better off Qat farmers, demand for drip equipment will rise and prices will go down. Then the equipment should become affordable for poorer farmers as well.

Irrigated horticulture – experiences of EnterpriseWorks (Jon Naugle)

Jon Naugle introduced the activities and approaches employed by Enterprise Works for irrigation in horticulture in Niger and other countries in West Africa. EnterpriseWorks has developed and adapted several effective low-cost irrigation devices, among them treadle pumps. These are produced and sold to farmers at full cost by local producers who are trained by EnterpriseWorks. EnterpriseWorks undertakes larger scale promotion efforts, whereas local marketing is done by the producers themselves.

EnterpriseWorks does also R&D on new technological options. They have developed a drip system which costs 13 US$ for two 15m drip lines.

Further details: Enterpriseworks.pdf

Discussion

- What happens when the intervention of EnterpriseWorks in a place comes to an end?

  In Senegal the project has come to an end. The sustainability of the employed approach is underlined by the fact that manufacturers still sell 400 pumps a year, although there are no major promotional activities and thus there is much less publicity.

- Regarding promotion cost, one needs to distinguish between generic product establishment cost and branded promotion by the manufacturers. The former often cannot be recovered by the supply chain, and thus require outside funding. Since product establishment activities should not be necessary anymore once a product is widely known, it does not undermine the sustainability of the supply chain, if these initial costs are covered with outside funds.
- In Niger for poor farmers it is difficult to invest in irrigation equipment. Credit is not widespread available and often misused. Manufacturers sometimes provide equipment to clients on a hire-purchase basis.
- Access to credit is in the opinion of a number of participants a pre-condition for wider dissemination of these technologies. The question remained to what extent the many micro-finance organisations already handle this, and to what extent technology dissemination efforts need to be accompanied by credit activities.
- Treadle pumps are suitable for cheap water, whereas drip systems are particularly suitable for expensive water.

Network for cost-effective technologies in water supply and sanitation/ HTN (Erich Baumann)

Erich Baumann presented the Network for Cost Effective Technologies in Water Supply and Sanitation HTN (originally the Handpump Technology Network).

HTN wants to facilitate access to safe water and sanitation by promoting technologies that are affordable and adapted to the requirements of the users. HTN Network members are people and organisations who are involved in water supply and sanitation.

For drinking water (unlike irrigation water) very low-cost technologies are not appropriate, because this would mean compromising on water quality. Currently there are 1.5 billion US$ invested annu-

ally for the provision of safe drinking water. But to provide safe drinking water to all people, 3 times this investment rate would be required. 50% of the world's handpumps cost less than 500 US$ including the drilling of the well. Where affordable technological solutions are not available, those who have resources can demand sophisticated solutions, wherease the remaining population can't demand anything.

HTN deals with all relevant technologies. It provides demand-based services, does research and development, supports capacity building, deals with supply chain issues and local manufacture, takes care of standardisation to facilitate quality control, and documents and disseminates information and lessons learnt. So far HTN has focused mainly on Asia, now it wants to concentrate more on Africa. So far the main donor is SDC, but HTN is undertaking efforts to involve other donors.

Further details: HTN.ppt

VILTEC (Ueli Scheuermeier)

Ueli Scheuermeier introduced VILTEC. VILTEC is an innovative approach for the dissemination of useful technologies to and at local levels, based on the concept of franchising. The approach is currently still employed rather experimentally. First experiences have been made in Tchad and Nepal.

What is VILTEC?

VILTEC is a private profit-oriented company which trains and coaches village craftsmen/women in the commercial production and marketing of useful implements in their area. It checks the quality of the produce of registered producers and it networks among all concerned people. It it based on the following principles: Maximum operational independence of producers; generation of independent income; strict quality control; payments only directly from direct clients; profit; improvement of natural resource utilisation.

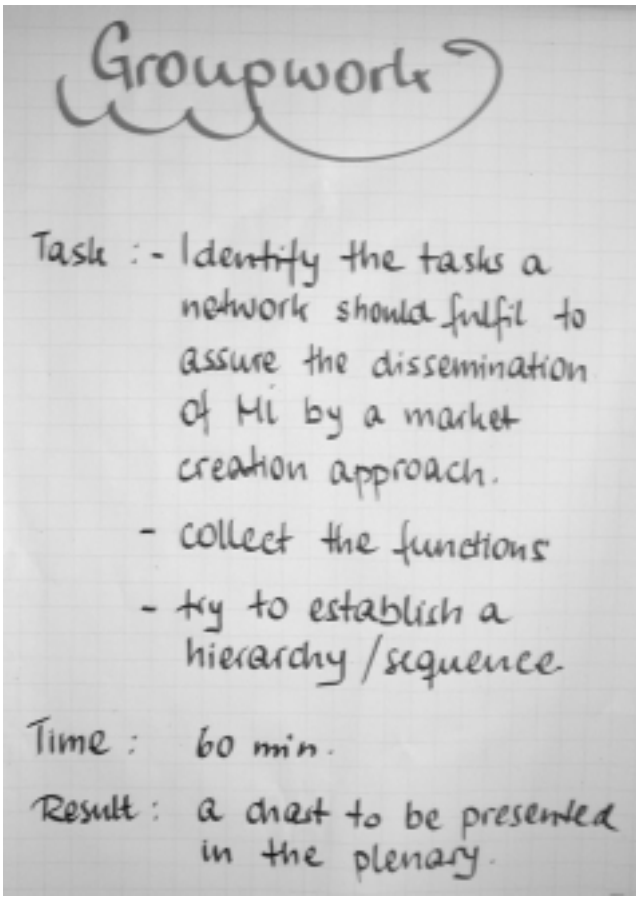
Has VILTEC been a success so far?

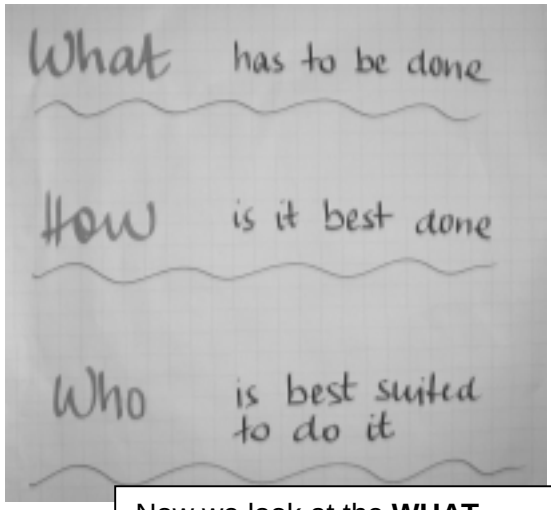
- Some money has been made at workshop level
- Predictions of failures derived from other efforts became true ⇨ explaining works!
- Highly interesting and revealing experiences have been made from the position outside the development cooperation scene
- Basic concept has not been proved wrong
- Possibilities for replication of efforts in neighbouring countries
- No profit so far at national/international level
- Very, very, very slow progress due to small start-up resources
- Systemic resistance from local NGOs and donor representatives (information black-out, poor payment discipline, destroyed market as a consequence of gift and subsidy mentality of development scene)

Further details: VILTEC.ppt

4 Group work 1 – network tasks and functions

Assignment



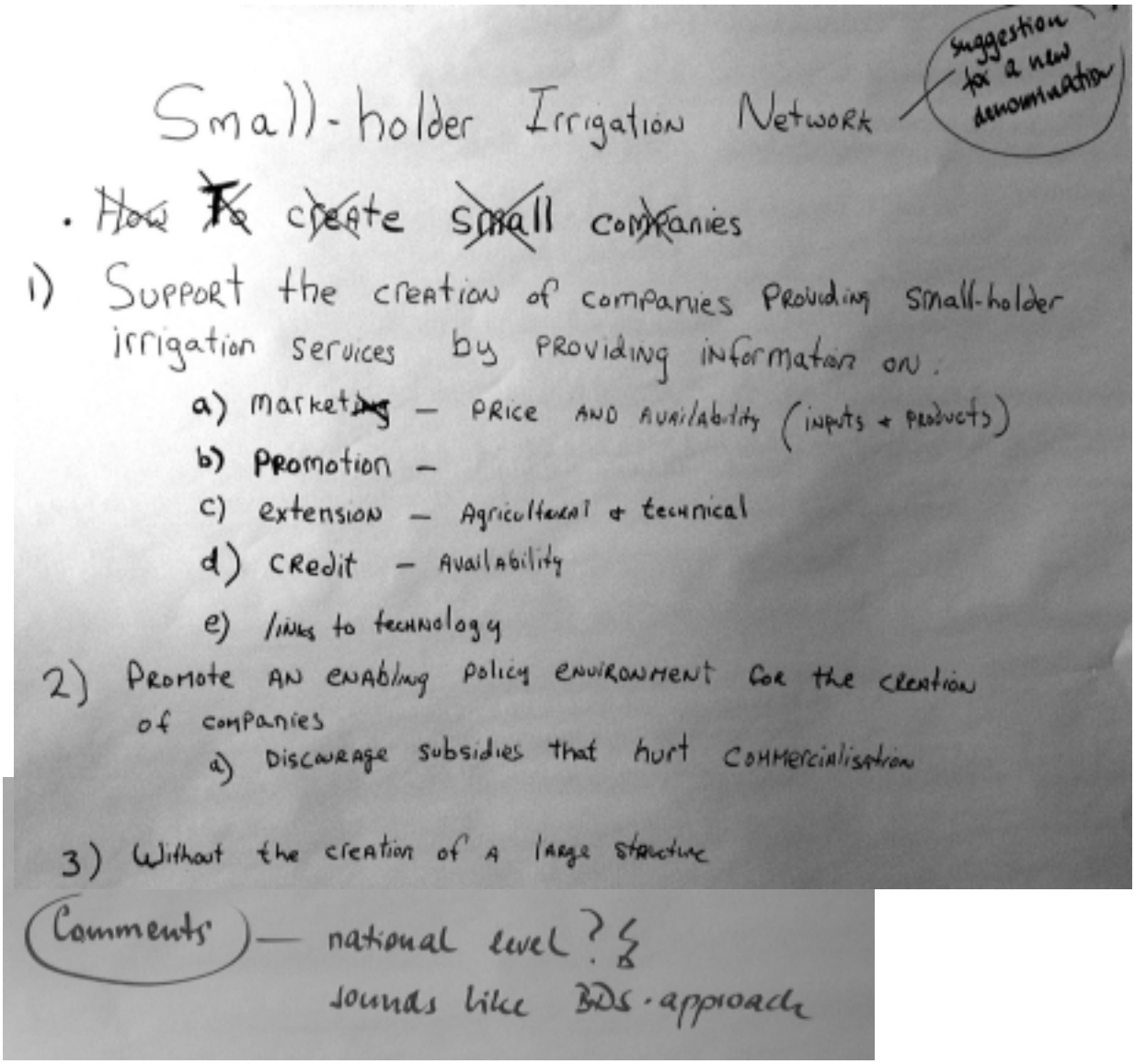


Now we look at the **WHAT**.

With the **HOW** and the **WHO** we will deal the next day

Group 1

Output

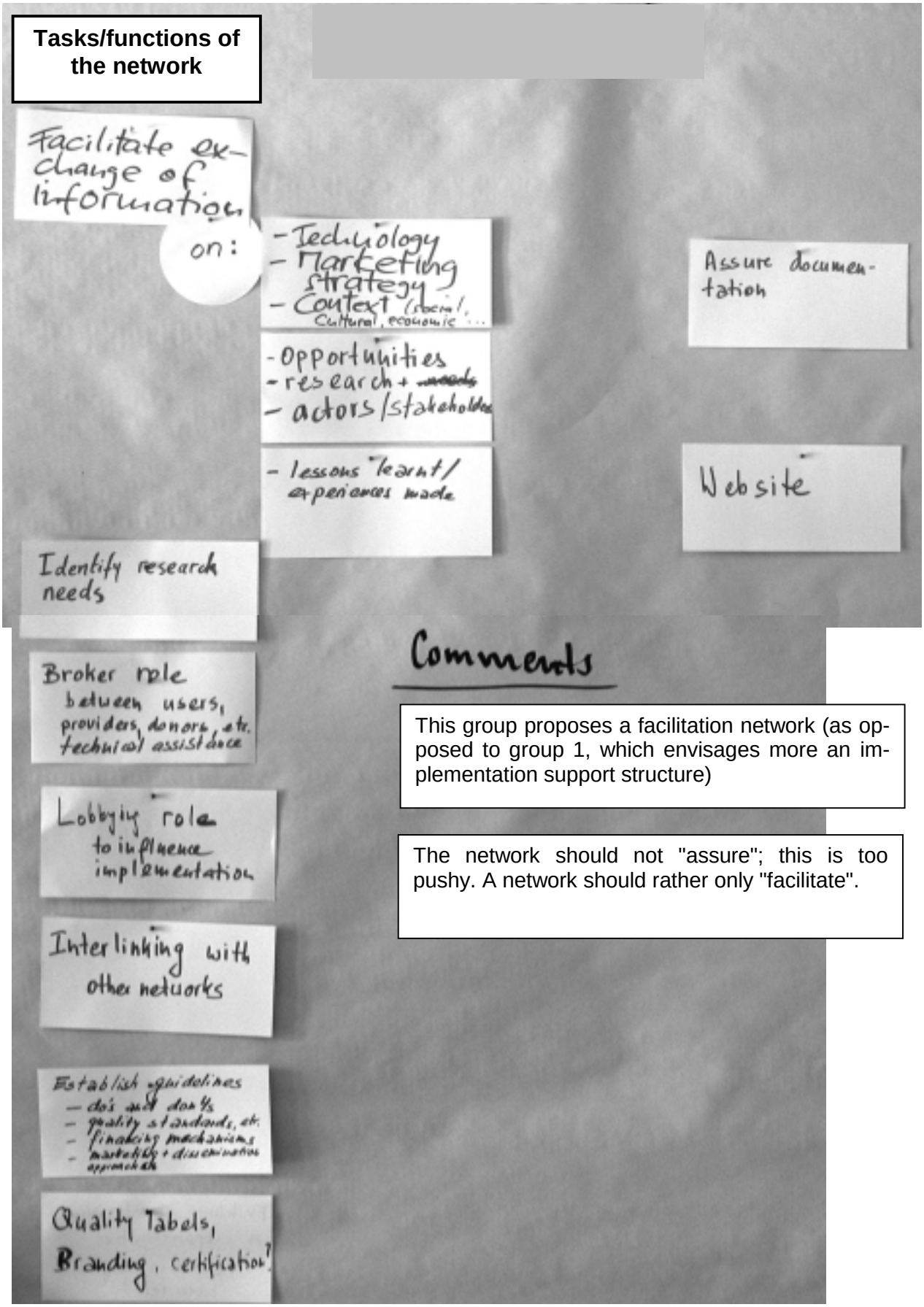


Discussion

- The group proposes to change the name/scope of the possible network to "smallholder irrigation". This would not limit it to drip irrigation, but leave space for other irrigation technologies appropriate for small farmers.
- This working group focuses on implementation at national and local level and not on the functions of an international level network.
- The proposed activities remind some participants of small enterprise promotion programmes.

GROUP 2

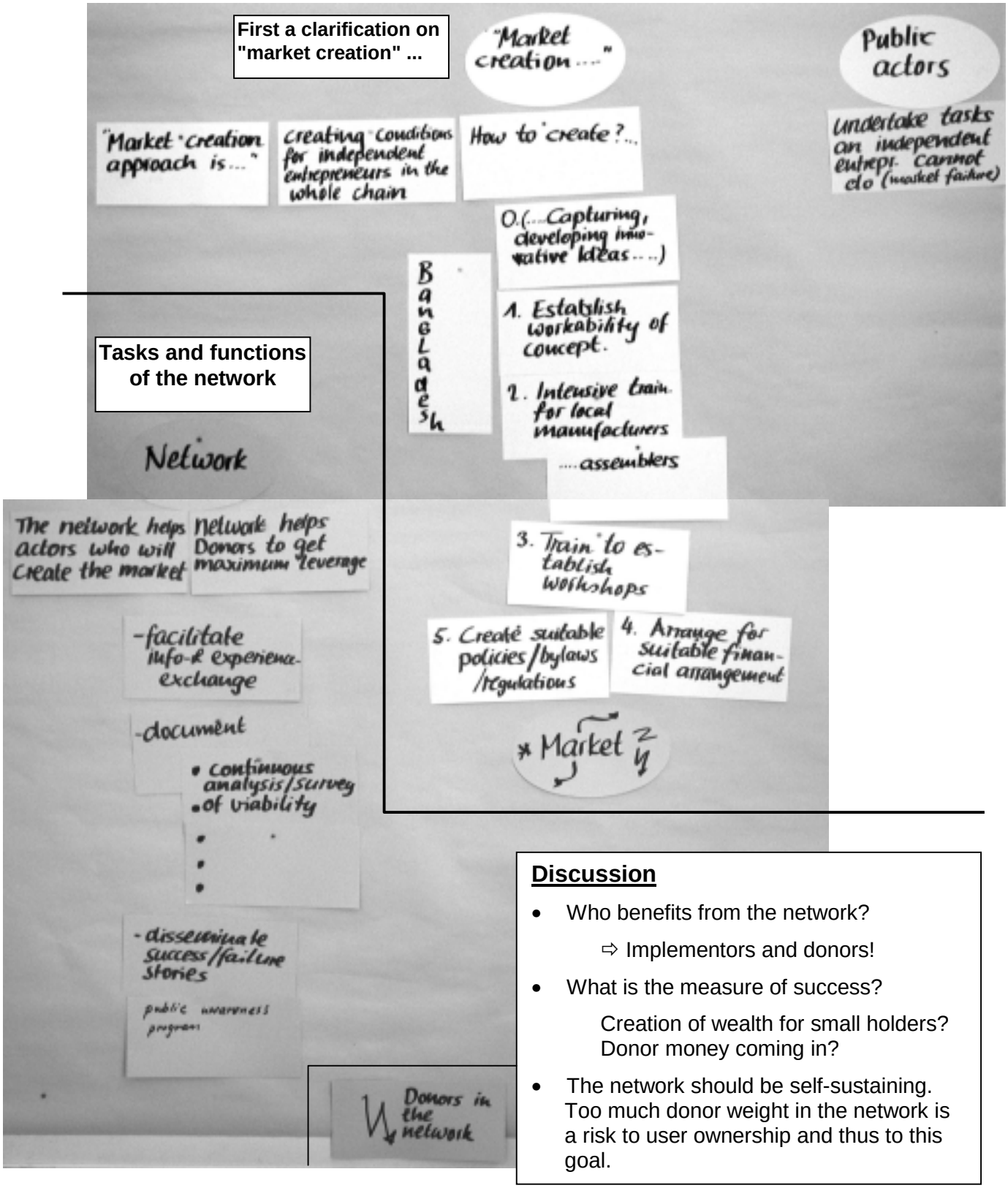
Output



Group 2 at work

GROUP 3

Output



Discussion

- Who benefits from the network?

  ⇨ Implementors and donors!

- What is the measure of success?

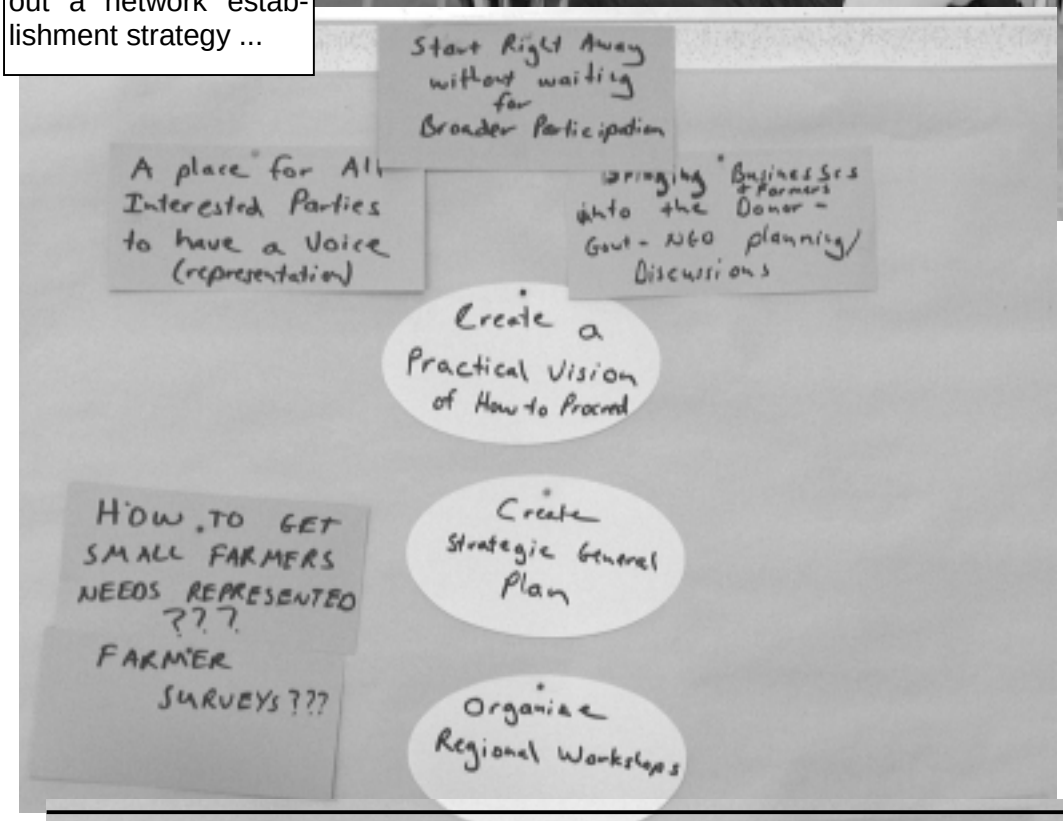
  Creation of wealth for small holders?
  Donor money coming in?

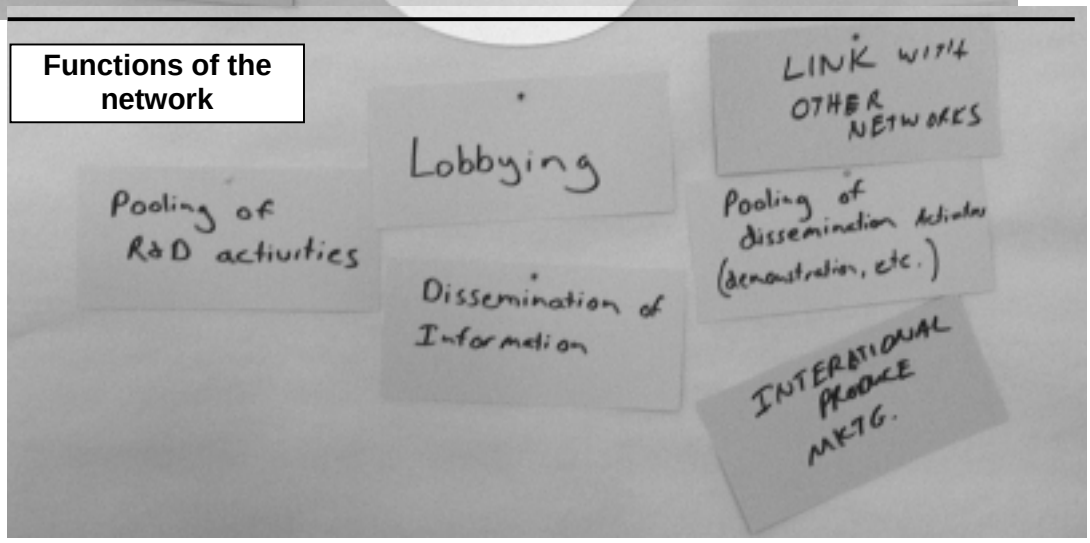
- The network should be self-sustaining. Too much donor weight in the network is a risk to user ownership and thus to this goal.

GROUP 4

Output

This group first worked out a network establishment strategy ...



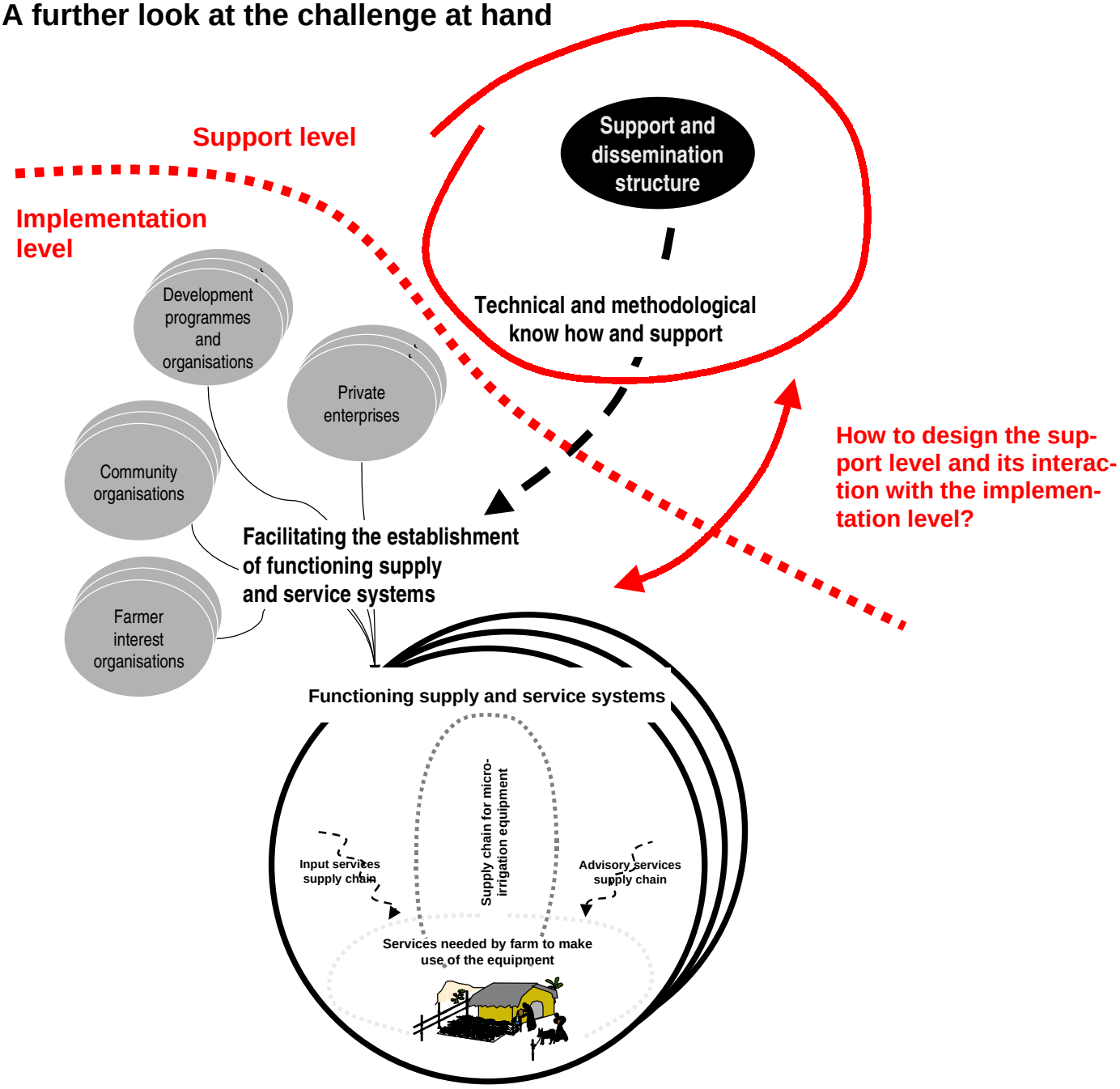


Discussion

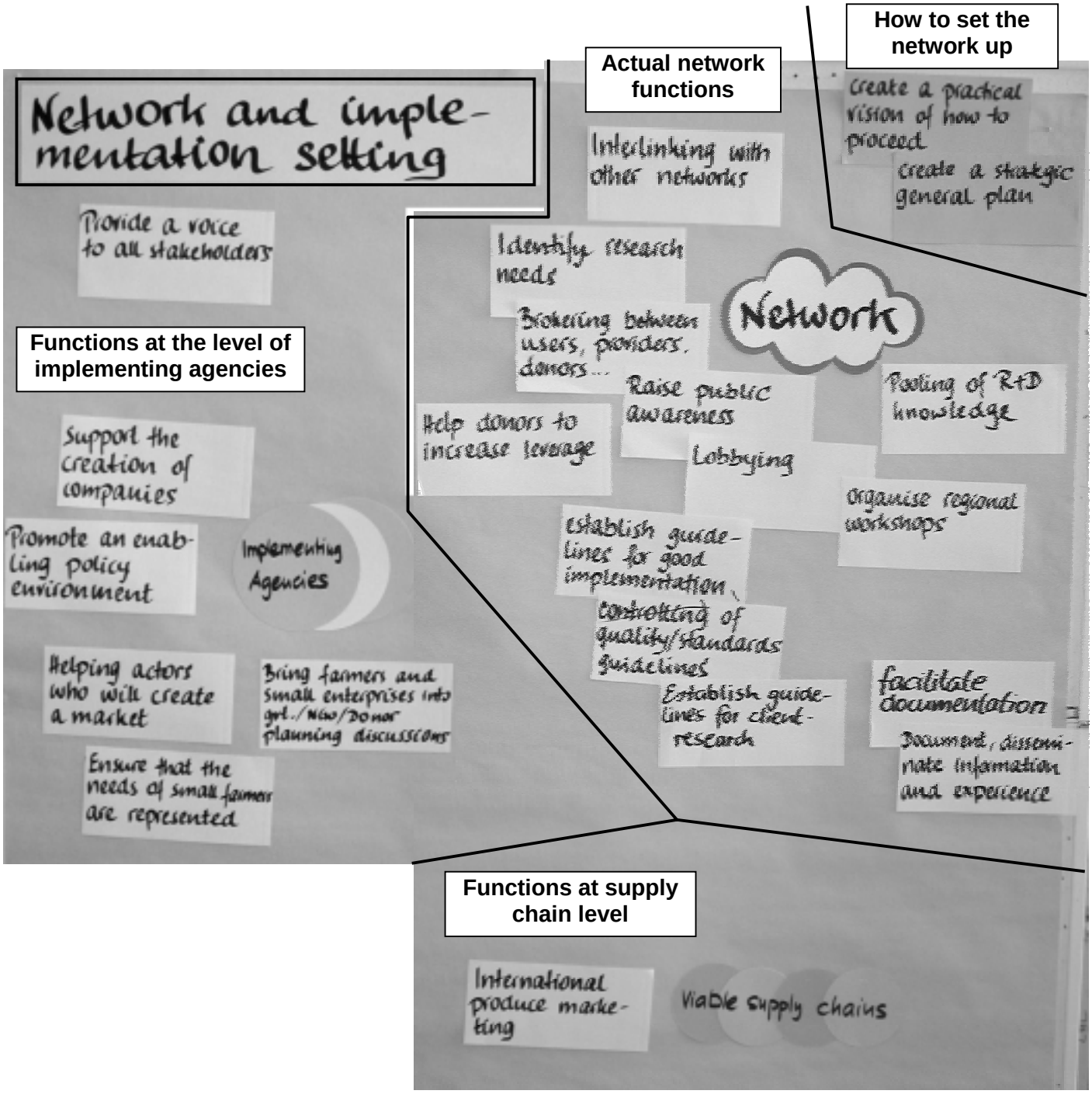
- This network navigates between facilitation and a more implementative role.
- Who owns the network? Those who put $$$ in.
- How can local actors get a voice in a global network? Does it make sense at all?

5 Review of the state of work after group work 1

A further look at the challenge at hand



Summarizing the ideas that emerged from group work 1



Discussion

- Scope of network

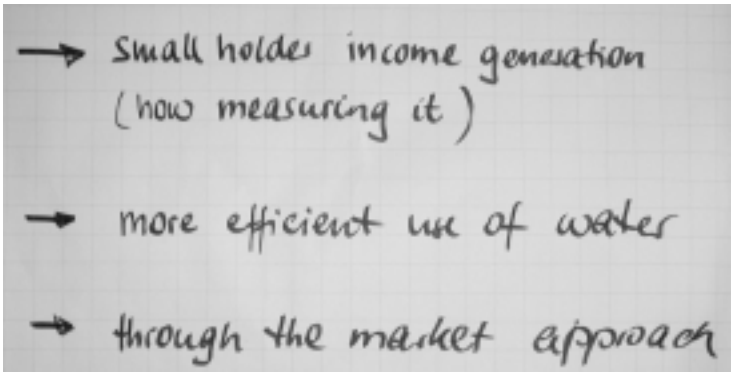
  Is it about micro-irrigation? Or smallholder irrigation?

  Or anything that improves small-holder irrigatition and lends itself for a market approach?

  Should we talk about "affordable" or "economically viable"?

- The network must be **doing** something. If it is only an information network there is the danger that it will not be effective. There must be something at the implementation level.

- Objectives of the network at the end user level



6 Presentation WOCAT – an example of a network (Gudrun Schwilch)

WOCAT (World Overview of Conservation Approaches and Technologies) serves as an example of how a network can look and function.

WOCAT is a network of people and institutions who have to do with soil and water conservation. WOCAT has been established because there exists a wealth of experience worldwide which could be useful in other places, but which is not documented, and thus not accessible. WOCAT deals with technologies, but also with approaches. It helps people in the field to document their experiences, and maintains a database of the documented experiences, and produces and disseminates outputs.

WOCAT is a global decentralised network with a management group and a secretariate. It has international core funding which is complemented by national/regional funding.

A micro-irrigation network could possibly have mutually beneficial links to WOCAT.

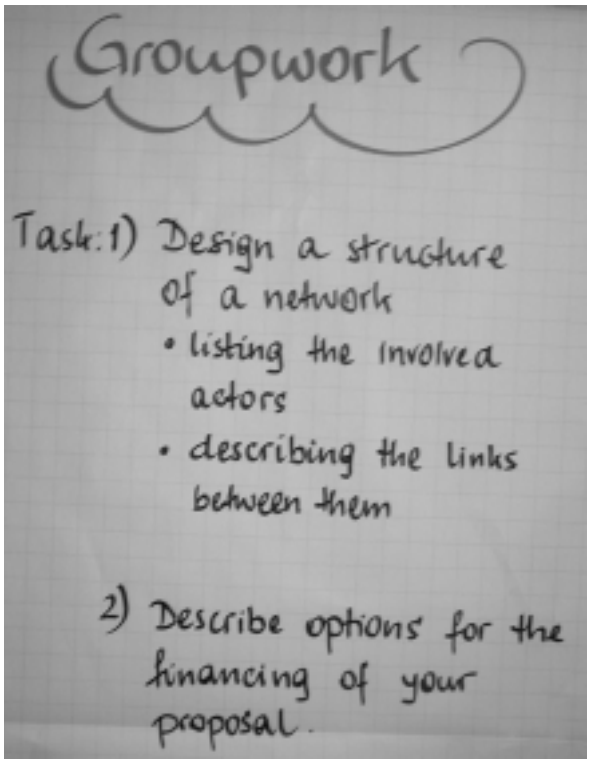
Further details: WOCAT presentation.ppt

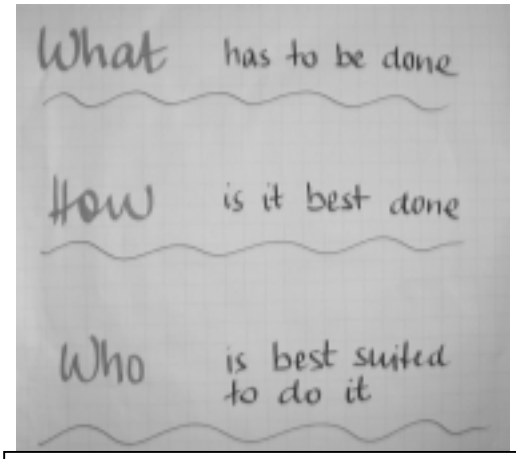
Discussion

- The network establishment process took eight years. ⇨ Building up a network is not a simple one off task.
- Committed individuals are a key success factor for a good network!

7 Group work 2 – network structure and financing

The assignment





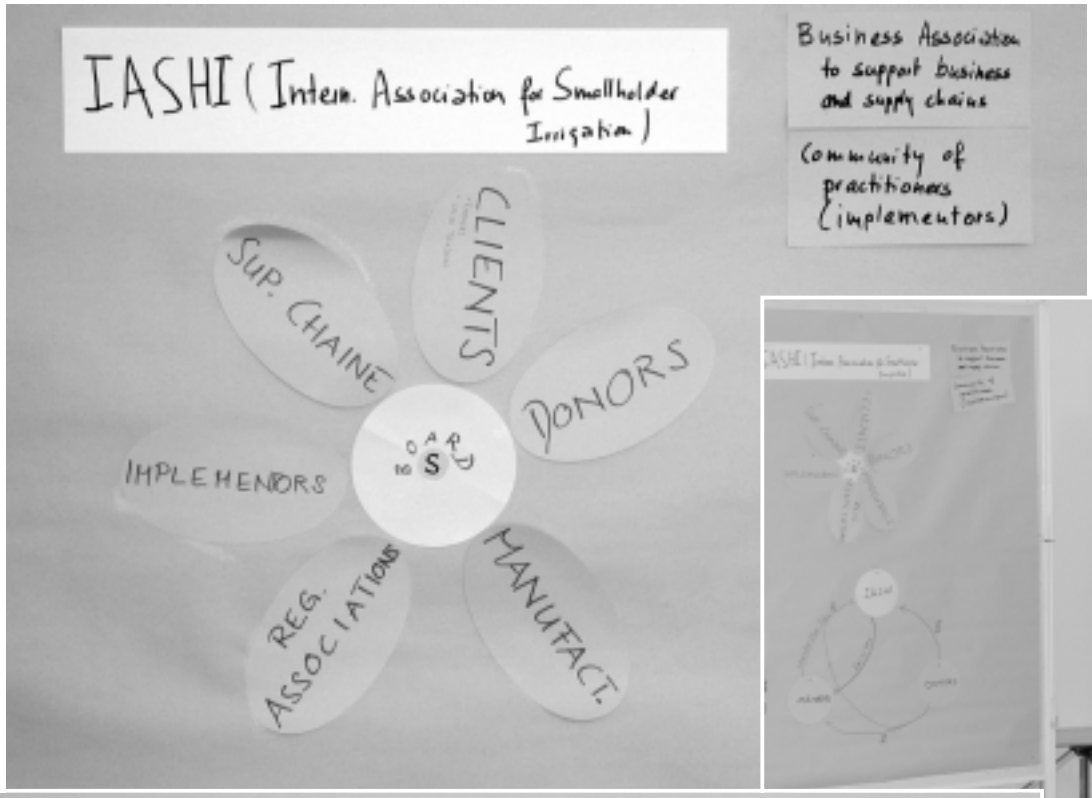
The **WHAT** was looked at on day 1.

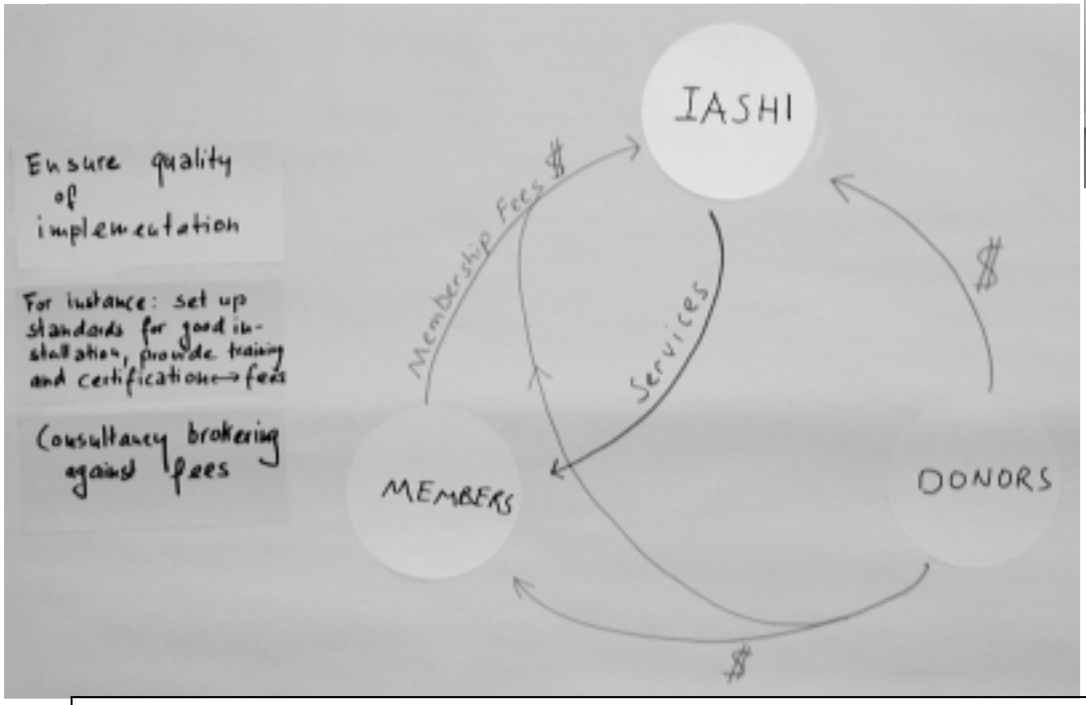
Now we deal with the **HOW** and the **WHO.**

Formation of groups

The discussions of day 1 revealed that the participants' visions of the future network are somewhere on a continuum between a network mainly facilitating flow of knowledge and information and a structure focusing on service provision. Therefore for group formation the participants were asked to position themselves on an imaginary line between the two poles. Groups were formed comprising persons standing close to each other.

GROUP 1





Explanations

This is the business approach to development in irrigation.

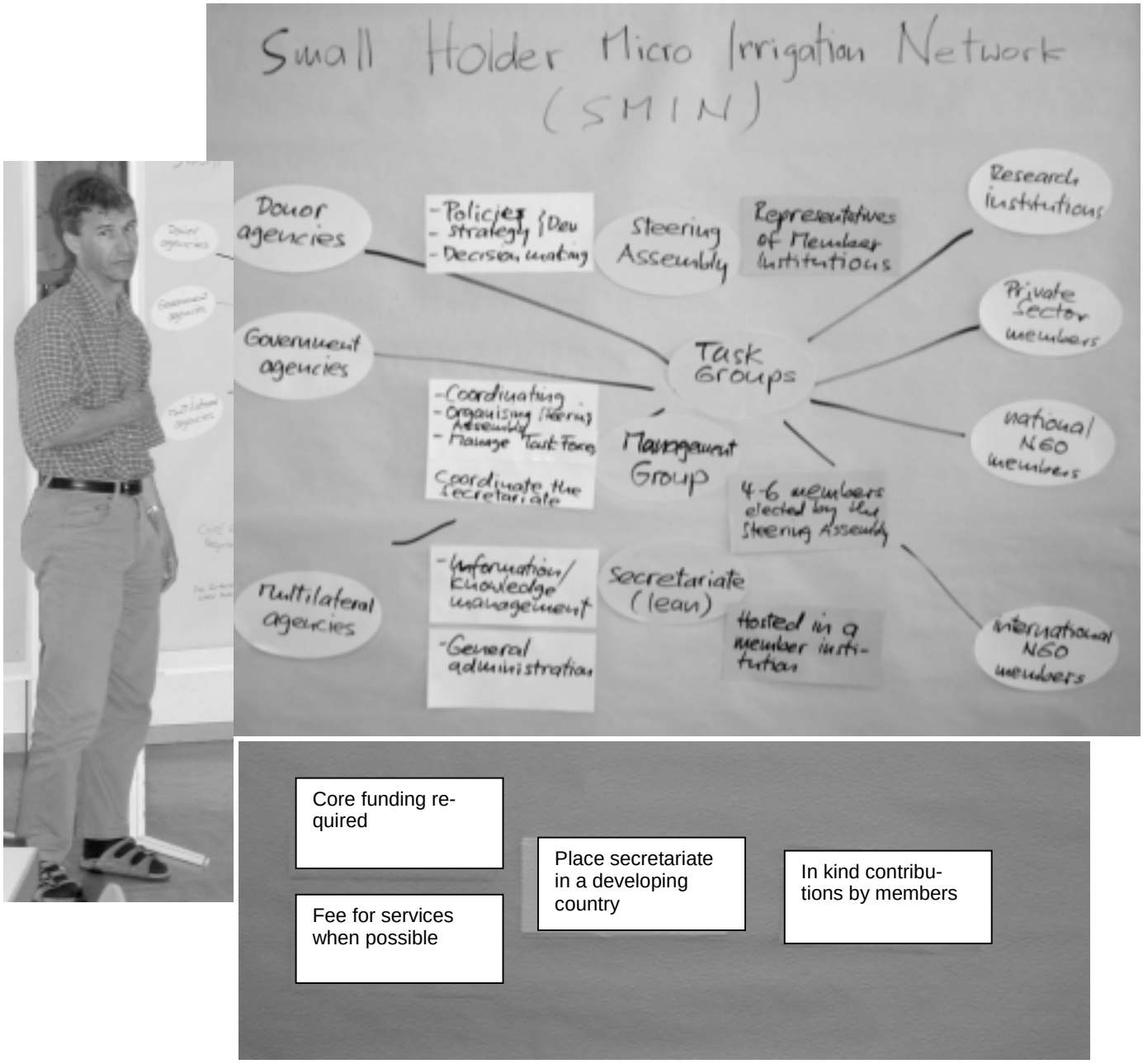
The core of the network are the existing initiators and associated donors.

An open question is whether it is possible to sell services also to the supply chain.

Discussion

Is this a network or an association or an enterprise?

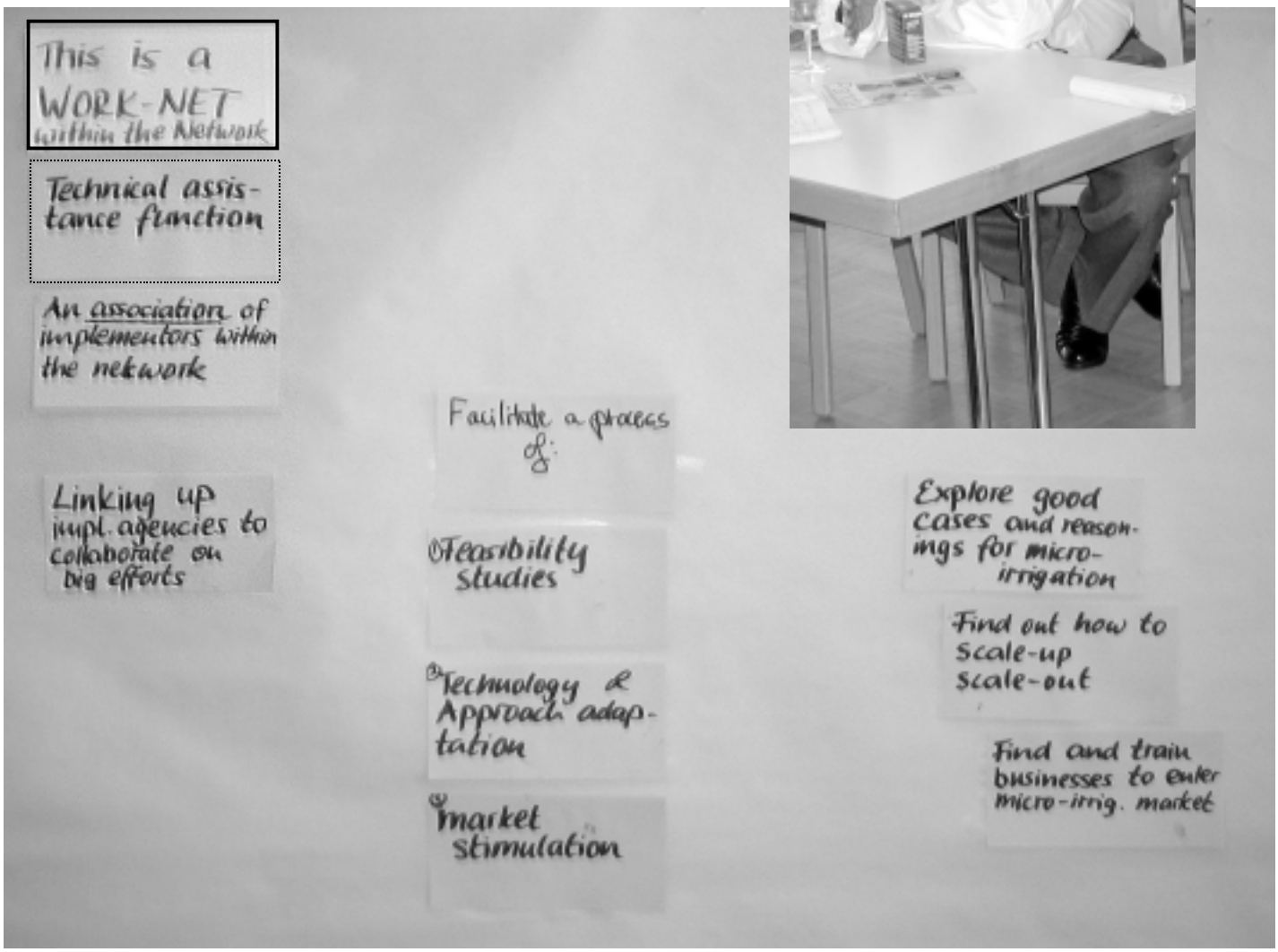
GROUP 2



Discussion

What services should the network sell to whom?

GROUP 3



Discussion

- This group's vision is an implementation and support services body within an information net-work.
- Could it be a private enterprise? Or an association of implementors?

GROUP 4

Network structure

end users

not in the network but benefit and feedback goes through implementing agencies

network users

- free services (informative)
- paid services

private companies

International institutes

NGO's

Governments and national institutes

network member

flexible / open membership

member is user and contributor

idem

network ~~owner~~ steering body ~~committee~~

rules for composition of steering body:

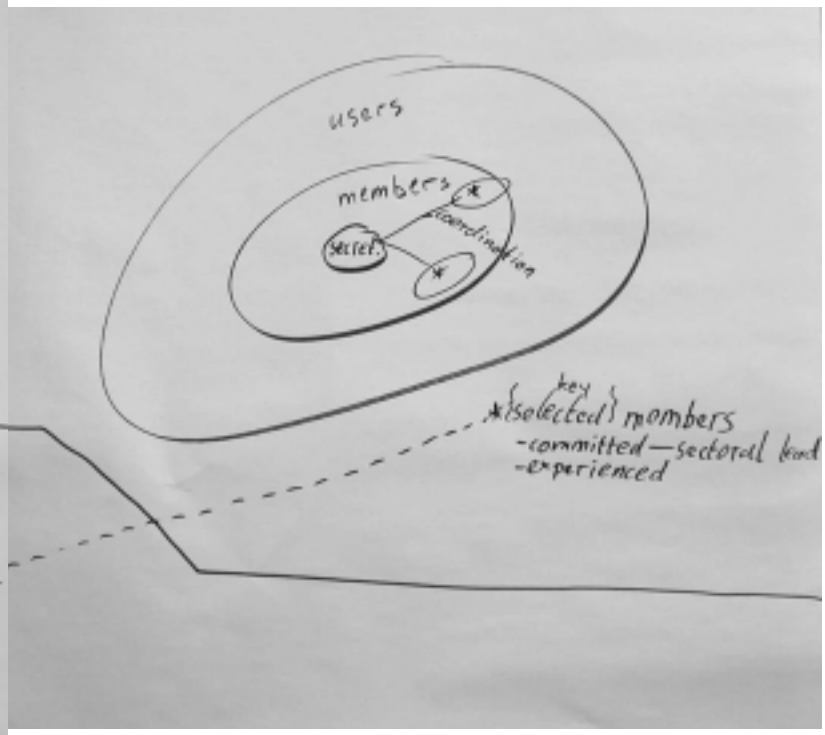
different groups of members represented

financing:

core funding for a small secretariat (more donors) + hardware database

activity funding through executing/members (kind) (contributing)

exceptional special tasks financed through secretariat

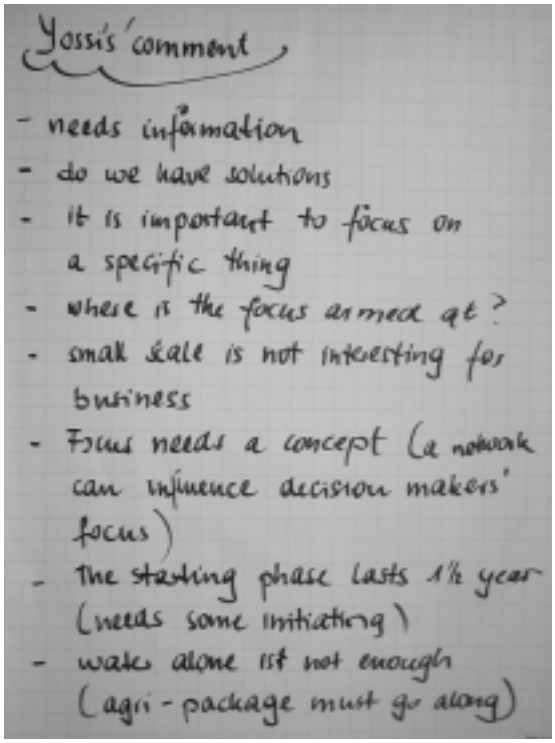


8 Reality check – do the proposed networks satisfy implementors and donors?

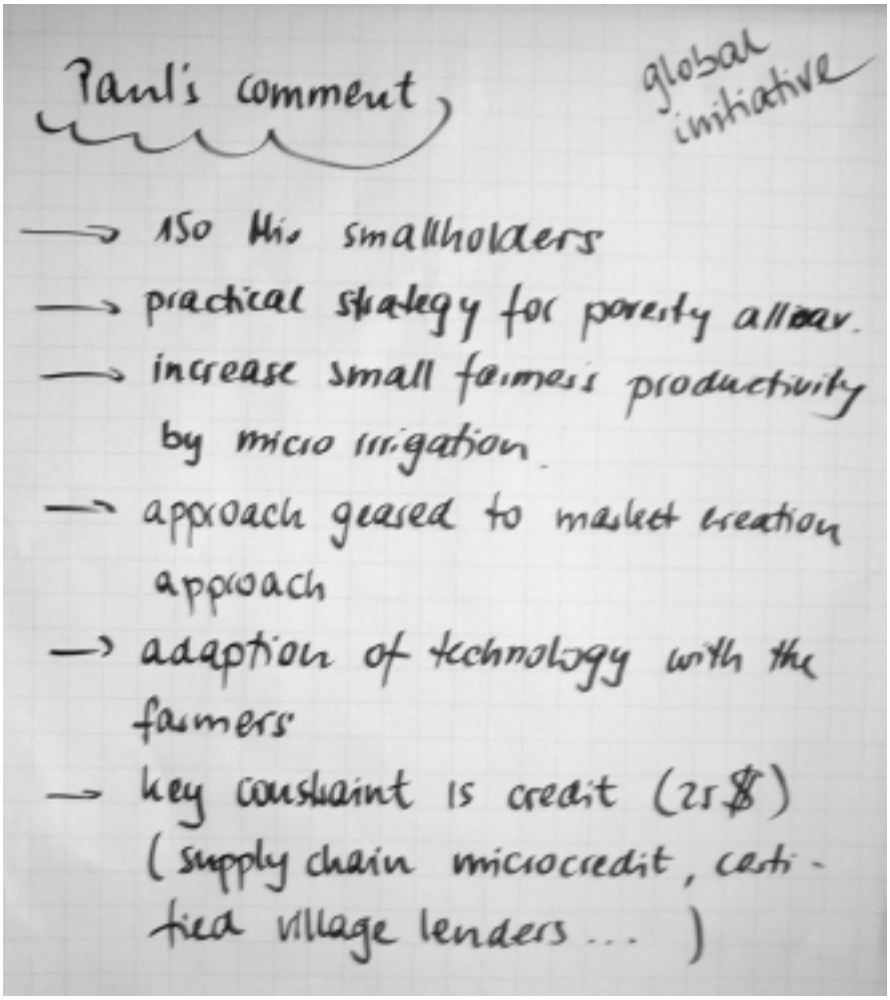
Drip manufacturing enterprise (Yossi Lavi)

Which is the right mix of the proposed network forms for Netafim? The following are conditions and factors which would motivate private companies to buy in:

1. They need information before they start working in a new area. Such information may be a service of the network.
2. The network does not need to develop solutions. This is a task of the private sector. Companies find solutions and invest in these.
3. What is the focus of the network? Geographically? Who will advise companies on suitable areas for investment?
4. The smaller the individual clients, the more clients in one project are necessary for a company like Netafim. They cannot work for scattered small farmers.
5. The starting phase of a project takes upto 1½ years. Private companies may not be able to afford this. Thus there is often a need for public funds for starting off drip irrigation in an area.
6. A network can influence decision makers' focus. Thus the network needs a good concept on where the focus will be.
7. Irrigation alone is not enough. Advice on irrigated cropping needs to go along. If a private company provides swuch advice, the cost of it will be added to the price of the product.
8. For sustainability there is a need to building local advisory capacity. Private companies can assist in this.



Implementors - the Global Smallholder Irrigation Initiative (Paul Polak)



Discussion

Does the network need to tackle the credit issue? No, but it may be useful to link up with micro-credit people.

Donors - the Netherland's policy for supporting such initiatives (Jan Vlaar)

General

Poverty alleviation

- with environmental protection
- gender
- institutional reinforcement
- good governance → ownership

21 countries, 2 to 4 sectors each

+ 8 countries with only an environmental program

Focus on water recources development

- traditionally focus on irrigation and drainage
- recent focus on Integrated Water Recources Management (IWRM)

Role of second World Water Forum and Ministerial Conference (Netherlands, March 2000)

Pledges:

Meeting basic needs (human water consumption)
Securing the food supply
Protecting ecosystems
Sharing water resources
Managing risks
Valuing water
Governing water wisely
and
Dfl 100.000.000 more

Netherlands support to national water programs

Egypt	Yemen	Palestine Authorities
Bangladesh	India	Indonesia
Vietnam	Mozambique	Pakistan
Tanzania	South Africa	Sri Lanka
Mali	Senegal	Cape Verde

International programs (co-funding)

- GWP (second phase of FFA)
- Dialogue on Water, Food and Environment (hosted by IWMI)
- BNWPP
- UNDP-CAPNET
- UNEP (follow up world commission on dams)
- IUCN (water for nature initiative)
- Nile Basin Initiative
- IPTRID
- INPIM
- IDE – Winrock (business plan phase 2)

International programs will lead to strengthening or expanding national programs.

Innovative programmes at international level can be co-funded!

9 How to go on from here?

Checking achievement of objectives

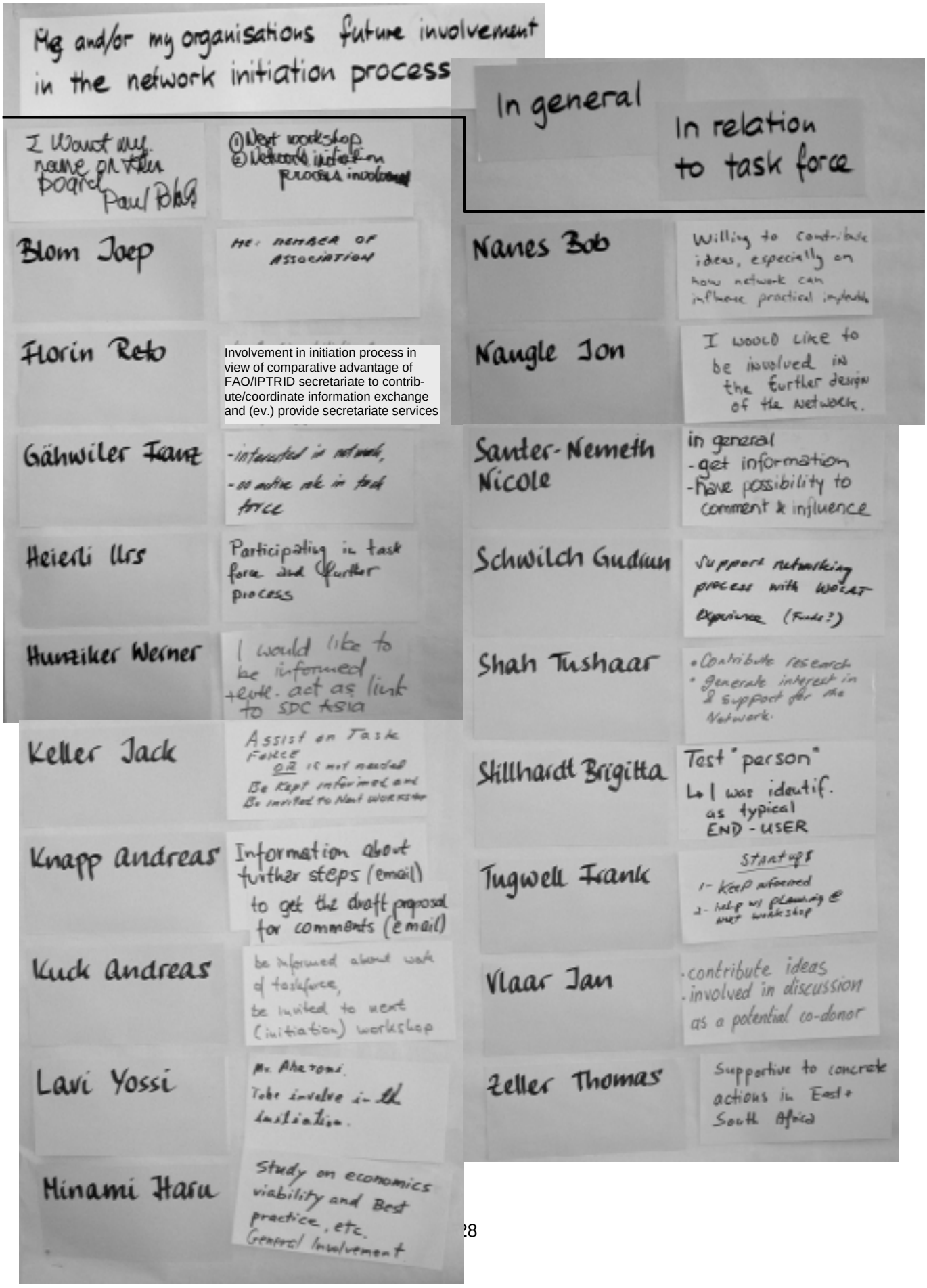
Towards the end of the workshop we checked the extent to which the objectives set for the workshop have actually been achieved.

Conclusions were that we have come quite far towards the achievement of the objectives, but that not all decisions have yet been taken.

A convergence of ideas between the two poles of knowledge/information network and imlementation/support services body somewhere in the middle appears to have taken place. For example the structure SMIN designed by one group on a pattern similar to WOCAT, complemented with some of the support services aspects was appreciated a lot. The idea to have an implementors' association within the network also received positive comments.

Finally it was decided that a group of people would work on combining the ideas which the four options contained into one or two design options, and put the issues of disagreement up for discussion.

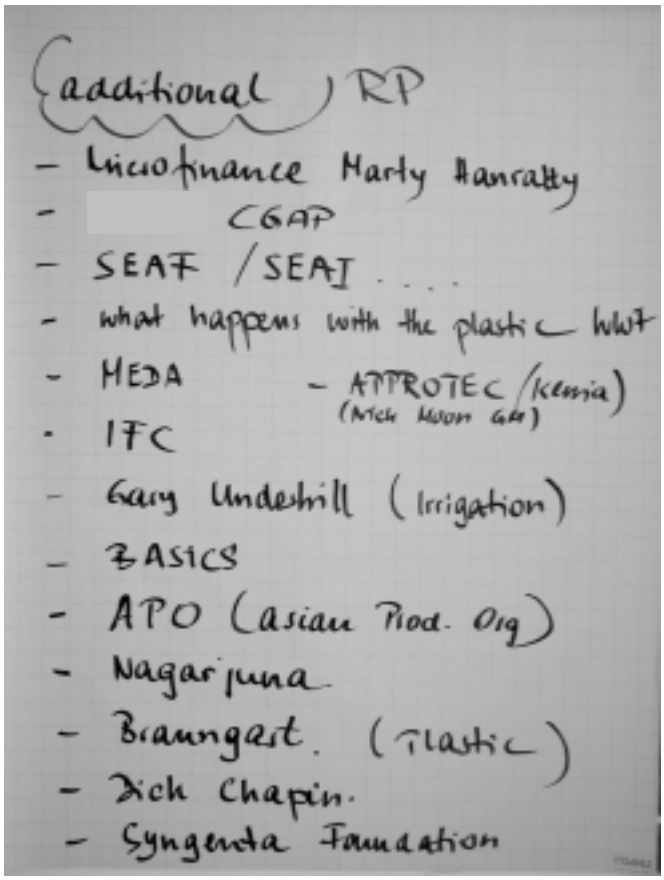
Involvements in the future network process



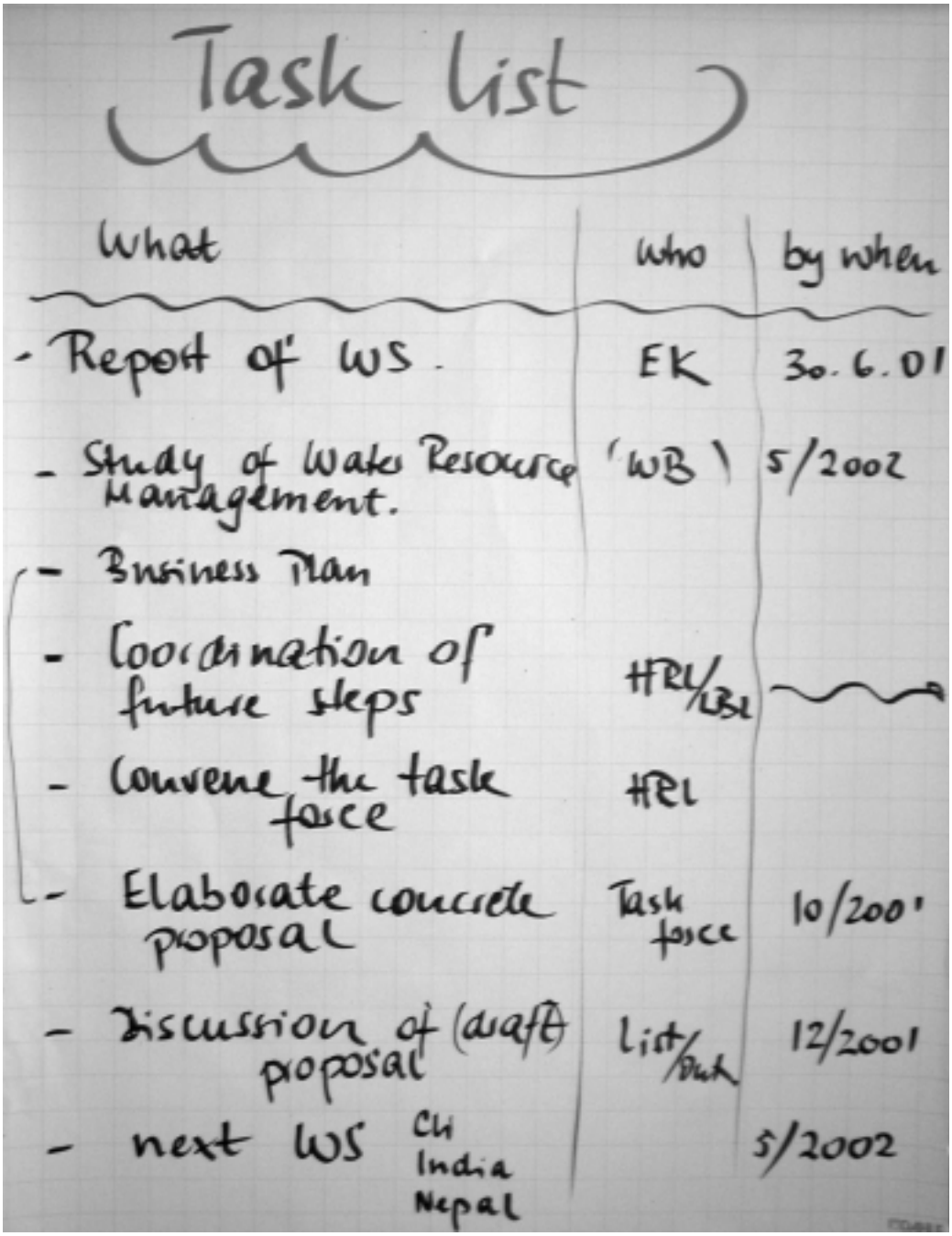
Involvement in initiation process in view of comparative advantage of FAO/IPTRID secretariate to contribute/coordinate information exchange and (ev.) provide secretariate services

Additional stakeholders/resource persons

The persons and institutions on the list below should be contacted, informed about, and possibly involved in, the network design and initiation process.



Task list for the next steps



Task list

What	Who	by when
- Report of WS.	EK	30.6.01
- Study of Water Resource Management.	(WB)	5/2002
- Business Plan		
- Coordination of future steps	HRL/LBL	
- Convene the task force	HRL	
- Elaborate concrete proposal	Task force	10/2001
- Discussion of (draft) proposal	List/Dutch	12/2001
- next WS CH India Nepal		5/2002

ANNEX I – Excerpts from the information event of May 31, 2001

On the 31st of May an information event was arranged with the purpose of sharing the experiences with low cost micro-irrigation technology and its dissemination through a market creation approach, and making them available to development organisations, which are interested in introducing poverty-oriented micro-irrigation in their programmes. This annex provides an overview of the ideas and experiences presented in this event which took place in the premises of the Swiss College of Agriculture in Zollikofen.

Dissemination of micro-irrigation systems through a market creation approach[2]

The market creation approach to development

Treadle pumps are a good business ...

... for marginal farmers ...

... and for micro-enterprises which manufacture them ...

... and for dealers who market them ...

... and for craftsmen who install them ...

[2] These concepts were presented by Dr. Urs Heierli, Section Employment and Income, SDC Berne, Switzerland.

The market creation approach to development is based on the exploitation of a market gap by designing an affordable product which increases the income of poor people substantially. To make the product available on a large scale, a profitable supply chain in the private sector must be established.

Conventional pumps for irrigation were much too expensive for poor people. The treadle pump made dry season irrigation affordable also for them (e.g. in Bangladesh, India and in various African countries). Not only poor farmers benefit from this development, but also the players in the supply chain.

Micro-irrigation and market creation

Also low cost micro-irrigation has the potential of generating much additional income for poor people in areas where water is scarce. Large-scale dissemination of this technology requires the creation of vibrant markets for the low-cost micro-irrigation equipment, where every element of the value adding supply chain must be profitable.

According to the available experience, the approach to build up dissemination of low-cost micro-irrigation through market creation must include the following elements:

- Assessing feasibility
- Adaptation of technology to local conditions
- Supply chain development
- Rural mass marketing
- Agricultural integration
- Impact measurement and feedback.

Demonstration of low-cost micro-irrigation equipment[3]

A drip system made in India

The participants witnessing the equipment in operation and a look at details

An observation made:

The kit is designed for well levelled or terraced land. On the slopy demonstration plot, water flow was uneven. Thus an adaptation to local conditions was necessary. Plastic clips to squeeze the pipes and regulate water flow along the pipe were the solution to the problem.

[3] The demonstration was organised by Christoph Studer of the Swiss College of Agriculture, Zollikofen, Switzerland, and Bob Nanes, IDE Nepal.

A drum kit made in Nepal

The drum and a drip line with drippers

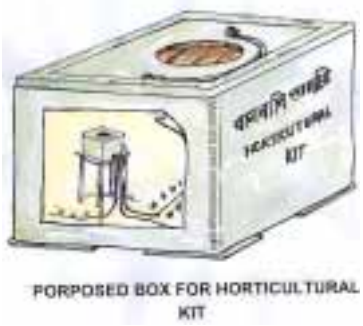
A low-cost sprinkler system from India

A horticulture income kit developed in Nepal[4]

In Nepal low-cost micro-irrigation equipment is made available on a wider scale in the form of a horticulture income kit, which allows an easy start with micro-irrigation to vegetable gardeners. Vegetable gardens are very often managed by women. The kit includes all the necessary components of the drip irrigation equipment, as well as all the material required to start growing drip irrigated vegetables. Further there are pictorial instructions on how to use the drip irrigation equip-

[4] The horticulture income kit was presented by Bob Nanes of IDE Nepal.

ment and the agricultural materials. The kit is packed neatly in a box or bucket which then serves as a water container feeding the drip lines. The horticulture income kit has been designed and developed by IDE (International Development Enterprises) Nepal. The pictures below are extracts from the pictorial instructions to illustrate the design and use of the kit (note that these are not all the pictures).



PORPOSED BOX FOR HORTICULTURAL KIT

Introducing low-cost micro-irrigation in a new country – first experiences from Eritrea[5]

Background

In Eritrea a pre-feasibility study on the potential of affordable micro-irrigation systems was undertaken by a team from CDE (Centre for Environment and Development) of the University of Berne, the College for Agriculture and Aquatic Science of the University of Asmara, and IDE (International Development Enterprises) India. The main purposes of the study were to assess the interest in different micro-irrigations systems in various areas of Eritrea, to establish contacts with local partners for further programme steps, and to begin to assess the economic, social and ecological implications of this new technology under local conditions.

For the purpose of the study different types of micro-irrigation kits were given to farmers for testing. The testers were instructed and assisted in the use of the equipment. The following kits, imported from India, were included in the test:

- Kitchen garden kit for 40 m^2
- Vegetable kit for 100 m^2
- Horticulture kit for perennial fruit crops on 130 m^2
- Micro-sprinkler kit for 160m^2 .

The interest in the micro-irrigation turned out to be high, with farmers as well as up to ministry level. Thus it was not difficult to find motivated partners for a further larger-scale testing programme.

Key insights gained so far

- In areas where sufficient irrigation water for flood irrigation is available, the interest was not substantial.
- One must assess carefully whether to address women or men. Particularly for the smaller kits, women are often likely to be the appropriate addressees.

[5] This study was presented by Brigitta Stillhardt and Pablo Loosli, Centre for Environment and Development, University of Bern.

- The land holding system often does not encourage investment in longer term horticulture. (re-allocation of land every 7-9 years). Thus the horticulture kit received rather little interest.
- There should be a filter cloth (to filter water containing a lot of particles) included in the kits, and some spare parts to ensure quick repair.
- The micro-sprinkler needs tap water with sufficient pressure or the possibility to place the water source at 10 m height to function properly. Further it cannot be used in windy weather.
- Animals have to be strictly kept away from the irrigated plots, because they not only destroy the plants but also the equipment. The necesssary fencing adds to the cost.
- The overall taxation on material import adds 10% to the equipment cost.

Important questions still open

- No reliable economic assessment was yet possible, because of rapidly changing prices in the markets.
- The potential socio-economic and ecological effects of an introduction of micro-irrigation are not yet understood.

  In areas where water is very scarce it needs to be assessed whether conflicts between use of water for drinking and other household purposes and irrigation may arise.

  Because of the more efficient water use with micro-irrigation, return flow to groundwater is reduced. If micro-irrigation use is widespread in an area, there is an increased risk of aquifer overexploitation.

  How will the additional income be used? If it is invested in animals, then growing herds may increase pressure on grasslands.

  Will there be enough organic fertilisers? Or will farmers adopt unecologically high levels of chemical fertilisers?

  How can the danger of soil salinisation be dealt with?

Next steps

Together with the identified partners a larger-scale testing phase will be carried out in the coming winter months, which should on the one hand raise the interest of many more people and provide further answers to open questions.

Poverty impact and market development of micro-irrigation systems in India and Nepal[6]

IDE (International Development Enterprises) has introduced micro-irrigation systems in various places in India and Nepal. Now a study was conducted to assess livelihood and other impact of these systems.in five regions. This excerpt focuses on the following three regions (in the other two regions micro-irrigation has been introduced only very recently):

- Nepali hills, where the focus of the intervention is on poverty reduction
- Maikaal region in Madya Pradesh, India, with focus on market development and organic cotton growers
- Kola region in Karnataka, India, with focus on market development and mulberry cultivation.

Observations made in the Nepali hills

- IDE Nepal focuses on the creation of micro-irrigation communities and ensures intensive technical support to adopters.
- Adopters are largely women who buy the ready-made kits and grow vegetables in kitchen gardens. They achieve additional cash income and household vegetable consumption.
- Due to the focus on whole communities there is a risk of local gluts in the markets.
- Another risk are water use conflicts, because mostly the community drinking water supply is used for irrigation.
- The IDE approach is fool-proof (i.e. adopters are sure to be able to use the kits successfully), but very resource intensive. No market development beyond IDE's own channel could be observed.

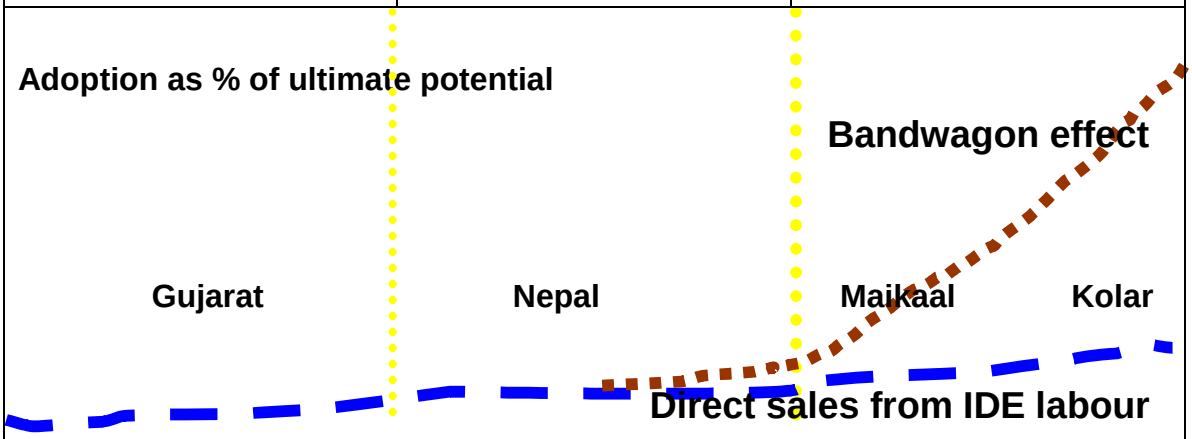
Observations in Maikaal and Kola

- In both the areas adopters are middle-level farmers.
- The motivation to go for micro-irrigation is water scarcity.
- Impacts are better product quality, higher yields, less labour and input use, and 15-30% higher profits.
- In these areas farmers buy custom-built systems, ready made kits are not used.
- In both the areas micro-irrigation has been introduced several years ago. The technology is well established now and the market has developed.

[6] The study was conducted and the results presented by Dr. Tushaar Shah, IWMI India, and Jack Keller, Irrigation Consultant, USA.

- New brands are available with the suppliers, local manufacture emerges, lower cost equipment is the focus of these new introductions; all this indicates that there is sound competition in the market.

Stages in market development derived from the study

Stage I: Concept Establishment	Stage II: Promotional Pioneering	Stage III: Market Take-off
		
Time		
IDE as well as its offerings have no presence in the social setting	IDE emerges as a pioneer of a new technology	IDE ends up as one of the many players on the market, but in some ways is more equal than the rest.
Focus on getting the technology to work for 'target' farmers • Understanding the target customer and her needs • Understanding the potential of the technology • Product development, trials, adaptation • Customer feedback and adaptation	*Focus on market development for IDE product line* • Promotion of the KB product range among target segments • Developing manufacturers, distributors, dealers • Establish and defend quality and pricing benchmarks for KB range • Encourage, stiumulate, support competing chains	*Focus on strategic management of the market* • Focus on the MI products market as a whole to influence its *structure, conduct & performance* • Identify opportunities for 'standard setting' and market expansion. • Keep working with the 'target' segment. • 'Boundary maintenance' for the market as a whole

The freshwater and cotton programme of WWF Switzerland[7]

Cotton is grown, processed and traded worldwide. The cotton sub-sector is known for inefficient use of water, high levels of pesticide use, contributions to degradation of wetlands, rivers and lakes, and threats for biodiversity.

The freshwater and cotton programme of WWF wants to raise awareness about these problems and demonstrate viable alternatives. Towards this end it supports organic cotton production.

In the Maikaal project in Eastern India farmers grow organic cotton which is then exported to Switzerland and marketed by COOP (one of the two largest retail chains in Switzerland). Currently 1100 farmers in 90 villages cultivate 8000 acres of organic cotton, resulting in the production of 2500 tons of certified organic cotton. The yields are between 350 and 800 kg per acre. The incentives to the farmers are a premium on the price, access to extension services and guaranteed acceptance of their produce.

In Maikaal drip irrigation was introduced in order to increase water use efficiency. The response is encouraging. The pay-back period for investments is short, because with drip irrigation yields increase substantially. Paired row planting patterns reduce the cost of drip irrigation and farmers begin to buy components and assemble the systems themselves, reducing the cost further to 9000 Rs. per acre.

Key conclusions are that organic cotton is an economically viable options. Limited water resources are a major driving force for adapting local farming systems. Drip irrigation contributes to reversing trends to water resource depletion and promotes conversion to more sustainable farming practices.

[7] This presentation was offered by Nicole Santer of WWF Switzerland, Zurich, and Nicole North of the consultancy firm INFRAS Zurich.

ANNEX II – List of participants

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