



Summary Report
on the
WEEE-training preparation
Bangalore, India, 7th – 18th of December 2005

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Germany, Köln, den 11.01.2006

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1. The context

Problems due to unregulated recycling processes of electrical and electronic equipment grow with the increasing quantity of these products turning to waste (in the following called Waste from Electrical and Electronic Equipment - WEEE). Recycling and reuse of these products is complex. The volume of WEEE increases faster than the infrastructure and know how for its environmentally friendly handling.

Currently GTZ promotes two projects: Partnerships in recycling management, Eschborn, Germany and Hazardous Waste Management (HAWA), Karnataka, India, which in cooperation are preparing and testing a joint intervention in the informal WEEE recycling sector in Bangalore, India. As a training approach GTZ tries to adapt the method Profitable Environmental Management (PREMA) to the WEEE recycling situation.

In this context the author has visited GTZ-HAWA in Bangalore in order to prepare the intervention with the project staff and related organisations.

2. The findings

To sum up results of the preparatory activities for implementing and sustaining a training approach for informal WEEE recyclers the report looks at the following questions: What is the target group of the training? What contents needs to be conveyed with which methods and in which setup for the training? Who are the trainers? What can be an institutional background for the training offered as a service in the future?

The following text reflects these questions and formulates hypothesis as discussed during the trip in December, but does not necessarily answer them fully.

2.1 The companies

The large part of the WEEE recycling sector in Bangalore as in other Indian cities is currently covered by micro and small informal enterprises. Up to now only two enterprises are authorized by the Karnataka State Pollution Control Board (KSPCB) to recycle WEEE according to Indian legislation. A detailed study on the sector is currently being prepared by GTZ-HAWA. With relation to the planned training, results of the discussions on the target group for the training – the informal recyclers – as well as the possible role of the formal recyclers are explained in the following.

2.1.1 The informal recycling sector

Two segments within the recycling chain have been chosen as a target group for the training, dismantling and precious metal recovery: precious metal recovery as being the big polluter and presenting strong worker health and safety problems, dismantling due to representing a big part of the sector. Both activities are covered by the group of recyclers in Gowri Pallya which will be the location for the pilot approach. The area was chosen as a starting point due to the fact that the existing recyclers showed great interest in the goals and activities. During the last weeks they started thinking about formalising an association as a base for voicing their needs. In the two meetings held during the trip the group showed being quite clear on their benefits (e.g. staying in the market when regulations and standards become more important, knowing more about handling dangerous substances and thus extending their life span) and also the investments they have to make (e.g. paying taxes).

To get a clearer picture of the costs and benefits of the envisaged changes in the informal sector a list of costs has been established as an input to the development of a business plan (see Annex 5).

2.1.2 The formal recycling sector

Officially two companies are authorised to recycle WEEE: E-Parisaraa Private Limited and Ash Recyclers. According to HAWA staff Ash Recyclers do not have operational equipment up to now. Therefore, the investigation concentrated on E-Parisaraa.

E-Parisaraa tries to cover the full recycling chain from sorting via dismantling to precious metal recovery. At the moment operating in two sites the owner plans to invest into a full precious metal recovery unit in his new site where currently only the dismantling takes place. Therefore, a business plan was presented but is still not approved. E-Parisaraa receives comparatively little WEEE currently for the following reasons: the larger companies still do not know or trust in the authorization, the owner is not very well informed about the "informal" ways of receiving material and rather waits for companies to address him.

As an authorized recycler E-Parisaraa could be an interesting partner for the training: 1. The company could serve as a good example (e.g. with photos of good practices) for the dismantling and maybe also the precious metal recovery operations (which have not been visited during the trip). 2. The company could be a partner for buying up the dismantled and segregated WEEE fractions of the "now informal, future formalized" sector as the capacity of the precious metal recovery section is still not fully utilized. On the one hand the second option could be beneficial, if it turns out to be very complicated and little profitable to invest in the informal companies' own precious metal recovery. On the other hand the precious metal recovery offers the best profit margin and therefore status to the workers and owners as it seems now. Taking away this possibility from the informal sector needs to be looked at carefully. The discussion with E-Parisaraa showed that generally the owner is prepared to be of assistance in these activities, even though the still informal companies might be future competition for him. Therefore, precise possibilities and conditions (prices for segregated WEEE waste etc.) must be discussed further – with all partners, incl. the companies in the informal sector.

2.2 The training

The following goals were agreed on during the discussions:

- Improving the current recycling processes in terms of environmental impacts and worker health and safety to fulfil respective legal demands with the E-Waste Guide
- Detecting savings potentials in these improvements with the NPO concept
- Defining first measures, starting implementation and organising follow-up for the companies
- Fostering the recently started network of enterprises in order so get support for further implementation of the measures
- Setting the basis for a programme which might give other inputs in the process of formalisation and integration in the recycling business
- Establishing case studies to be able to see, if the approach is successful in the sector.

Further goals were discussed, e.g. fostering registration/formalization of the companies, conveying knowledge needed in formal enterprises such as accounting etc. It was agreed to concentrate on very concrete hands-on knowledge to enable the enterprises to operate on a legal basis first and add accounting techniques or deepen knowledge of chemical management etc. at a later stage, if necessary. Thus the training programme might be extended in the future.

2.2.1 The contents and method

Generally speaking the team appreciated the PREMA approach as a basis for the development of the WEEE training. This comprises:

- Company group approach for the training
- Company visits during the trainings with an immediate evaluation afterwards,
- Development of a WEEE Guide as a basis for detecting improvement potentials in the company,

- Good Housekeeping Cycle as a method to deal with the detected improvement potentials,
- Developing measures, analysing their expected effects and elaboration of an action plan for the prioritized measures,
- Accompanying the implementation of the measures in the company networking group after the training.

The WEEE Guide will contain three main elements:

- legal aspects,
- technical aspects related to WEEE
- PREMA/Good Housekeeping (GHK) aspects.

The legal situation now refers to mainly a few Acts, e.g. the Water Act or the Hazardous Substances Act. The specific legal basis for WEEE recycling is currently being developed, but not yet enacted. The existing proposal for the legal formulation (see Annex 6) is still very broad and does not go into detail concerning the specific recycling practices. Therefore, the WEEE Guide can only rely on existing legislation for now and anticipate very probable aspects for the future legislation.

The WEEE Guide will also include technical specifications such as the rules and regulations given in the Material Safety Data Sheets of the specific substances used in the recycling processes.

All of these aspects will be put in the WEEE Guide on the basis of the results of the WEEE sector study Bangalore, which is currently being finished by the GTZ-HAWA project.

Both of these aspects, the legal and technical ones will be complemented by aspects of the PREMA approach concentrating on the triple win: improved resource use translated into economic and environmental benefits combined with management aspects for improved chances of implementation.

It has to be further explored, to which degree the NPO concept will be introduced as a basis of the whole WEEE training concept, as the relevance might not be strong in some segments of the recycling chain such as the dismantling segment (for more details of the PREMA approach see www.premanet.net).

On the basis of the WEEE sector study Bangalore case studies will be developed to learn more about the economic relevance of possible improvement activities initiated by the training. As the basics are under development no concrete materials could be developed up to now.

2.2.2 The setup

The training setup is planned as follows: The first part will consist of a Training of Trainers (ToT) for a group of consultants/trainers. The second part will consist of the company training run by the newly trained facilitators in the local language. A third phase is the implementation of the measures developed during the training which will be accompanied by the newly trained facilitators/consultants. Problems arising in the implementation can be discussed in networking meetings of the companies facilitated by consultants.

Thus, consultants and the relevant organisations are directly involved from the start in developing and improving the training approach. Training in the local language will ensure a closer connection to the enterprises and will foster a more open atmosphere. With local consultants it is much easier to organise the follow-up activities in the companies and document results.

Funding for the training should be sourced at different groups. If the training will be offered as a market oriented service later local costs should be aimed at being covered locally in the long run: the training should not be for free for the participating companies; at least a small fee should be charged here to give value to the service. If IT manufacturing companies send their staff to be trained, e.g. as trainers/consultants in the field, they should pay a market-oriented fee. Apart from these participants, IT manufacturing companies might be interested in establishing a well-working WEEE recycling market and therefore, be interested in taking up an active role in this training, e.g. financially. A set of

questions was sent to the MAIT officials and remains to be answered. For starting the pilot phase obviously a large part of the funding needs to come from international organisations such as GTZ. Depending on the pace of the development of the material trainings can take place at the end of March beginning of April within two subsequent weeks (proposal for rough moderation plan see Annex 4).

2.3 The trainers

Three groups of trainers/consultants are envisaged for being trained to facilitate the company workshop and other related activities:

- Consultants with environmental background, e.g. staff of CSD, Saahas etc.
- Consultants/staff of related organisations, e.g. GTZ Delhi, CII etc. for linking the activities closely to other groups developing training in the field
- Environmental managers etc. from IT manufacturing companies

The first group would be important to follow-up with the companies of the first training, document the case studies of measures implemented and their effects as well as multiply the training for further groups in the future in the region of Bangalore. Suggested participants in this group are, e.g. Naveen and Kishore of CSD or Wilma Rodrigues of Saahas.

The second group will be essential to disseminate the approach in institutions and other regions to avoid parallel investments and double work. This group might take part in both the ToT and the company workshop to be trainers for their institutions/regions afterwards or take part in only one of them/ just be involved in essential discussions for later dissemination activities. Interest was shown by Ulrike Killguss, GTZ-Delhi, or Kavita Vemuri, TN-TDPC/CII. More key actors could be selected here.

The third group could be invited in case IT manufacturing companies are interested in promoting appropriate recycling methods for their own WEEE. Those could also add internal rules and regulations for WEEE recycling into the Guide. The issue was discussed already with Vishakha Das, CSR officer WeP Peripherals who showed interest to be further informed.

For more information on the requirements for the trainers/consultants, please refer to Annex 8.

For selection also see Action Plan in Annex 2.

2.4 The host

For the following reasons it might be advisable to select a host organisation:

- Offer and promote the training as a market-oriented service sustainably,
- Link up the trainers of different institutional backgrounds,
- Establish and keep the contact to the target group, the companies, and
- Detect the need for training,
- Organize the training, i.e. calling for the trainers, organising funds (from companies or other sources), training facilities etc.
- Provide office facilities and being a long term and continuous partner and contact for related interested organisations.

GTZ-HAWA covers these activities at the moment, but will not be the partner in the long run. Therefore, other institutions need to be involved in offering the training in the future. Various organisations were discussed, like E-Waste Agency (EWA, formerly "Nodal Agency"), the Centre for Sustainable Development (CSD), the Environmental Management and Policy Research Institute (EMPRI), Small Industry Services Institute (SISI), Industrial Training Institute (ITI).

As a result from discussions with e.g. Dr. Raveendra (EWA/CSD) or Sunjay Handu (MAIT), Mr. Porst and Mr. Swaminath (EMPRI) the following setup might be given a priority for the start: a combination of EWA and EMPRI.

EWA would be the natural partner for the WEEE training initiative. The organisations and people connected in EWA know the target group better than the other organisations and might fulfil most of

the above mentioned functions for a host. As EWA is not a professional training provider EMPRI could come in to cover that part in the future, i.e. provide training facilities etc.

As EWA is a young organisation only, being a channel for organising and offering the training in the future could sharpen its profile and make it more visible for the IT-manufacturers, the recyclers and state institutions. GTZ and EMPRI have been cooperating before. For the currently planned and future training the exact role of EMPRI needs to be discussed and assessed if cost and benefit of involving the institution is worthwhile.

3. The next steps

The development of a training setup has been initiated with the visit, but a lot of activities remain to be covered still (see Action Plan in Annex 2). Therefore, a small development group has been put together who will inform each other and give feedback for the inputs to the training etc. Participants in the group are listed in Annex 3.

4. The link to the project „Partnerships in recycling management“

Judging from the first trip the envisaged approach in the WEEE recycling sector with this specific training meets the requirements of the project and might help to gain new insights for partnerships in recycling management for the following reasons:

- The target group is part of the informal sector “earning their living with waste”.
- The goal of the project is in line with the above described training approach: incorporating the informal sector in a waste management partnership taking into account different interest groups and potentials balancing the idea of sustainability and integrating market forces.
- Just as formulated for the project the goal of the approach is to explore how the informal sector can be integrated into the service system.
- Intermediaries such as international donors (GTZ/EMPA), state institutions (e.g. KSPCB), NGO (CSD, Saahas) and even private WEEE manufacturing and recycling units are involved.
- The results of the implemented and planned activities might allow to draw conclusions and generalise e.g. “Do’s and Don’t’s” of dealing with the informal sector in waste management systems.

On the whole the approach seems interesting for the project. Judging from these impressions supporting the training approach as one option of achieving the goals might be worthwhile for the project.

5. The recommendations

The first recommendation is simply: go on!, which means, generally speaking, it seems to be the right road. The following recommendations are given on the basis of just a very short period of time in India. Take them as an input for discussions:

- Foster EWA as a broker between all actors interested in the recycling sector: GTZ-HAWA is a driving force for all the activities in the E-Waste sector at the moment. Thus, they are having a growing impact on the actors in the field, pushed a lot of activities (WEEE study of Bangalore situation, WEEE training and WEEE notification/guidelines etc.) and are recognised now as the representative institution. The CII Chennai for examples tried to gather information for the trainings and turned to GTZ to get it. At the same time GTZ initiated a nodal agency EWA for the WEEE sector. In the long run, EWA might be the organisation taking over. To foster EWA’s role for the activities they might be more strongly promoted to be the leading institution in the sector and GTZ assessing EWA to fulfil the required activities.
- Involve training providers such as EMPRI in a discussion on what their role could be in offering WEEE training and what specific conditions a cooperation would bring about

- Involve the new association of informal recyclers as soon as possible in EWA activities and discussions on the new Act/Notification on WEEE recycling. The sooner it becomes visible that getting organised in the sector gives the informal sector a voice the more the probability rises that other parts of the informal sector will build networks as well. Chances rise that a substantial part of the informal sector might formalise and stay in the sector. Also visibility for the governmental organisations is strengthened.
- Put effort in getting the IT manufacturers (either all of MAIT or just a few key actors) in the boat to participate in trainings and to even partly fund establishing the WEEE recycling sector as they are the first to benefit.
- Coordinate well with activities in the field in Chennai, Delhi and Mumbai as parallel training developments might take place.

The annex

1. List of activities
2. Action plan for WEEE training development group
3. Participants in WEEE training development group
4. Rough moderation plans for WEEE training (under development)
5. Economic aspects changing the informal sector through formalisation and WEEE Guidelines
6. Draft of the Guidelines commented by MAIT
7. Short description of EMPRI by Mahesh Thimmaiah, GM-EMRPI
8. Preparatory information for the WEEE Training
9. Photo documentation (CD)
10. Copies of the presentations held at a meeting in the Indo-German Chamber of Commerce (CD)

Annex 1: List of Activities

Thu 8th 10:30-14h	Meeting with IT manufacturers in the Indo-German Chamber of Commerce, Bangalore
Thu 8th 14:30-18:30h	Introductions, first discussions and exchange as well as planning of dates in the office in Bangalore
Fri 9th 10-11h	Discussion with Jürgen Porst
Fri 9th 11-12:30	Discussion with CII about training, contacting the informal sector etc. for Chennai
Fri 9th 12:30-14:45	Discussion with Wilma Rodrigues and David Rochat: association building in informal sector, preparation for meeting
Fri 9th 14:45-17:30	Meeting in the informal sector on association building and company visit to the informal laboratory
Sat 10th 12h-20h	Visit at E. Parisara, Mr Parthasarathy and Ms Sondermann CIM
Sat 10th evening	German business group meeting
Mon 12th full day	Introduction to PREMA for E-Waste team of HAWA, , David Bineesha, Wilma, David, Chetana Jürgen
Tue 13th 11h-16h	Discussion of the Guidelines for E-Waste and setup of Future Recycling system Bineesha, David, Anja Hartmann
Wed 14th 10-17h	Rapid Assessment team meeting, Kishore, Naveen (both CSD), Bineesha, David (both HAWA), Vaideesh (Ecoworks) in the morning, Reena (market expert), David, Vaideesh, Bineesha in the afternoon
Thu 15th	Discussion of a general outline of training, David (HAWA),
Thu 15 th	Conversation with Vaideesh on institutional aspects and poss. Trainers
Fri 16th 10h	Sunjay Handu (MAIT Tyco Electronics) conversation on institutional aspects, answers in written remain to be sent
Fri 16th	Vishakha Das, CSR officer WeP Peripherals + colleague, Wilma Rodrigues, Saahas, David (HAWA), Bineesha (HAWA)

Annex 2 Action Plan for developing a WEEE training for the segments precious metal discovery and dismantling of the WEEE recycling chain

Activity	Responsible	Specifics	Deadline
GHK general Guide	Suse and David	Take out the questions relevant for the sectors chosen for the pilot training	Mid Jan
Legal aspects of handling the relevant resources (chemicals, water, energy etc.)	Bineesha	Look at Indian legislation, e.g. <ul style="list-style-type: none"> • Water Act • Hazardous Substances Act • Air Act • Pollution Act Look at WHO, ILO, corporate demands Match the relevant articles in the law with the material flows in the sectors For each relevant material provide applicable legislation, Provide it to Suse to transform into questions for the WEEE Guide	2 nd and 3 rd week of Jan
Technical aspects	David	Taking MSDS to check and list which are the best practices for the inputs and the possible NPO Provide a list for each input and NPO	Mid Feb
Adapt info to WEEE GHK Guide	Suse	Take David's, Bineesha's lists Transform lists to questions	Beginning of March
Translate the WEEE GHK Guide to Hindi/Urdu	Who could do this?		Till training starts (leave time for copying)
Adapt handouts and other training material	Suse with David and Bineesha	Establish moderation plans and corresponding material for the ToT and the entrepreneurs' training	Beginning of March
Translate the handouts to Hindi/Urdu	Who could do this?	Translate material for the entrepreneurs' training	Till training starts (leave time for copying)
Develop case studies for presenting in the training/marketing	Suse with David and Bineesha	Taking the hot spots from B's and D's research to formulate a scenario which can be used as an example in the training course	Beginning of march
Illustrating the hot spots and improvement measures with photos	Who could do this?	Take the existing photos of "before" and "after" and complement them with new ones to illustrate most important aspects Deliver to Suse, David, Bineesha Poss. Illustrate the Guide and Case Studies	Mid Feb
Analyse economic aspects of recycling activities for an individual company in both sectors	CSD and Suse	Fill in table	17 th of Dec
Draw conclusions from economic data and RA study for economic viability of recycling processes	Suse, Bineesha, David	Establish a Business plan for the dismantling and gold recovery (tba)	Starting Mid Dec
Select trainers	Project staff and Suse	Select trainers (from list with suggestions and e.g. companies) and inform them about conditions (time, fee/ salary etc.), Poss. establish contract with them	Inform on time requirements as soon as possible Contract until

			training
Select institution to host the training now and/or in the future	Project staff and Suse	Discuss with HAWA and EWA which function the host would have and which would be an appropriate institution, e.g. EMPRI	Until training starts
Find support / funds for the training	Project staff and Suse, involve EWA and MAIT		Until training starts
Organize logistics for the training	HAWA team	Suse will offer checklists Organize training facilities, copy material, invite companies etc.	Until training
Implement Training of Trainers (ToT) for the WEEE training	Suse with team		End March (Approx. 1 week)
Implement company training	New trainers with coaching by Suse		End March/ Start April (Approx. 1 week)
Follow-up with the company training	New trainers/ consultants With coaching by Suse	Facilitating company network meetings, Visiting and consulting companies during implementation Documenting results in form of case studies	Regularly after the training
Selecting key actors of organisations, e.g. in other regions to promote and disseminate/ coordinate WEEE activities	Project team with Suse, involve EWA	Selecting key actors, Present idea or results of trainings, Involve in training, e.g. as trainers to disseminate training in other regions	As of now

Annex 3 Participants of WEEE training development group

Jürgen Porst, GTZ-HAWA – hawagtz@vsnl.net

David Rochat, EMPA/GTZ-HAWA – rochatdavid@gmail.com

Rolf Widmer, EMPA – rolf.widmer@empa.ch

Wilma Rodrigues, Saahas – response@saahas.org

Dr. Raveendra, Naveen G.V. and colleagues, CSD and EWA – csdbng@yahoo.co.in

Vaideesh, Ecoworks – vaideesh@vsnl.net



Annex 4 Rough moderation plans for the WEEE training

Programme Training of Trainers for WEEE training in co-operation with GTZ 2006

prepared by Susanne Arlinghaus

	Monday	Tuesday	Wednesday	Thursday	Friday
Start 9:00	Introduction	Introduction to WEEE - Good Housekeeping	Company Visits	Evaluation: Causes and Measures	Networking in the recycling sector WEEE
	NPO concept: Exercise on Case Study	Exercise: Short tour of the venue	Continuation	Evaluation : Economic effects	Exercise: Action Learning Set
Lunch					
End 18:00	Continuation Case Study	Preparation of the company visit	Evaluation of the company visit: Role of the consultant	Evaluation: Environmental, organisational, workplace health and safety aspects	Follow-up of the training, preparation of entrepreneurs workshop
	Intro to PREMA consultancy	Exercise: Role of the consultant in consultancy	Evaluation of the company visit: improvement potentials	Elaboration of and Action Plan and a Flow Chart	Assessments and evaluation



Programme WEEE Company Training in co-operation with GTZ 2006

prepared by Susanne Arlinghaus

	Monday	Tuesday	Wednesday	Thursday	Friday
Start 9:00	Introduction	Preparation of the company visits II	Company visits	Evaluation of the company visits: Improvement Potentials	Networking with the Action Learning Set
	NPO concept: Exercise Case Study	Organisation and Logistics for the company visit		Evaluation: Analysis of Causes and Development of Measures	Follow-up of the training Evaluation and closing ceremony
Lunch					
End 18:00	Introduction into WEEE - Good Housekeeping	Company visits	Company visits	Evaluation: Analysis of the expected effects	Training evaluation and feedback (only with trainers/consultants)
	Preparation of the company visits I			Development of an action plan	(to be continued)



Annex 5 Economic aspects changing the informal sector through formalisation and WEEE Guidelines

Income from sales	Informal status	Formal status
% of precious metals in total WEEE	2 gms of gold per kilogramme of gold plated materials.	How much reduced and when (software producers' trend)
Sales of gold etc. to market	Informal/ illegal Rs. 550-600/gm	Controlled market access and prices (currently 700-720, Dec 2005)
Copper	Rs. 160/kg	
Gold plated material	Rs. 18/kg	
Brass	Not available (N/A)	
Plastics	Rs. 12/kg	
Aluminium	Rs. 60/kg	
Iron	Rs. 13/kg	
Steel parts	Rs. 10/kg	
PCB	Rs. 20/kg	
ICs (Integrated Circuit Boards, working for reuse)	Rs. 2/kg	
CRT (colour, working/regunned)	Rs. 1500-1700 up to 3000/ tube (depending on the size)	
Damaged CRT (colour, damaged, for regunning)	Rs. 400-600/ piece	
CRT (Black and white)	Rs. 20/ piece	
Printers (to be reused)		
Dot matrix printer	Rs. 200/ unit	
Ink jet printer	Rs. 1200/ unit	
Laser printer	Rs. 1500/ unit	
CD ROMs (to be reused)	Rs. 15/ piece	
Floppy Drives (to be reused)	Rs. 15/ piece	
Modems (to be reused)	Rs. 25/kg	
Keyboards (to be reused)	Rs. 10/ piece	
Processors (for gold recovery)	Rs. 10/ piece, Rs. 800-1000/kg	
Plastic Cabinets	Same as for plastics	
Transistors (to be reused)	Rs. 25/ piece	
Monitor yoke	Rs. 25/ piece	
Chips (for copper recycling)	Rs. 8/ kg	
Capacitors (to be reused)	Rs. 2/ kg, Rs. 1-2/ piece	
Resistors (to be reused)	Rs. 2/ kg, Rs. 1-2/ piece	
SMPS (to be reused)	Rs. 200/ piece	
CPU (to be reused)	Rs. 150-175/ piece	
Hard discs (to be reused)	Rs. 20-25/ piece	
Power cables	Rs. 40-50/ kg	
Computer system (whole, to be reused)	Rs. 2,500-3,000/ piece	
Bias (for gold recycling)	Rs. 15/ kg	
Batteries	Rs. 18/ kg	
CRT mesh (iron, iron recycling)	Rs. 8-10/ kg	

Expenditure		
<i>Inputs</i>		
Raw materials purchase (WEEE)		
Mixed scrap per Kg	Rs. 40-50/kg	



PCB, Connectors	Rs. 22-25/kg	
Water	N/A	
Electricity	N/A	
Nitric Acid	Rs. 15/ litre	
Cyanide	Rs. 380-400/kg	
Mercury	Rs. 800/ kg	
Hydrochloric Acid	Rs. 35/ litre	
Soldering inputs	Rs. 250-300/kg	
Electron guns	Rs. 250/ piece	
Silica Powder	Rs. 40/kg	
Paint		
Sulphuric acid	Rs. 25/ litre	
CRT	Rs. 150 (b/w)-300 (colour)	
Processors	Rs. 10/piece Rs. 80-1000/kg	
Chips (copper)	Rs. 8/kg	
Bias (gold pins)	Rs. 15/kg	
Also refer to previous page for items which are purchased from dismantling		
<i>Processing Costs</i>		
How many people in one operation?	1-2 (family members)	Would wage and contracts need to be formalized? What are the consequences?
Wage per person	Rs. 150 / day (as family members no regular payment ...)	
Rent/ Costs of a slot	none	Higher in a proper industrial zone?
Pots and Pans	4-5	Do we need to look at investment costs for proper equipment?
Oven	1	Do we need to look at investment costs for proper equipment?
Protective gear (gloves, goggles etc.)	none	??
Handling of materials (new machinery, laboratory)	Almost none	What would gold recyclers and dismantlers need to invest here? What would be depreciation or interest for credits?
Air compressor for gold and silver recycling	Rs. 1200	
KSPCB fee	None	
<i>Treatment and Disposal</i>		
Treatment of wastes (real NPO)	none	Which would be the items disposed of? Which are the fees?
<i>Transportation</i>		
Dealer to dismantler	Rs. 700 per bulk load	
Registering costs (one time)	none	
Profit		
Taxation	none	Which parts are taxed? Which tariff? Exempted?

