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Posters of a Cooperation Project

Solid Waste Management with People's Participation

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INTERNATIONAL REFERENCE CENTRE
FOR COMMUNITY WATER SUPPLY AND
SANITATION (IRC)

343-90SO-7667

Preface

The intention of His Majesty's Government of Nepal to improve the sanitary living conditions of people living in cities of the Kathmandu Valley and the interest of the GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) to strengthen waste management capabilities in cooperation projects are the basis of a Nepalese/German cooperation project under implementation in Kathmandu, Patan and Bhaktapur (Nepal).

It is the declared objective of this cooperation project to improve the sanitary living conditions in urban areas and to contribute to a development process, which can be technically and financially absorbed and which shall prove sustainable in a socio-economic sense.

The application of simple technologies, the development of appropriate strategies and an intensive cooperation with the population to comply with people's interest and to mobilize self-help potentials are major objectives of our joint work.

Strategies, objectives, achievements and difficulties of this cooperation project in the field of sanitation are displayed in a poster series which has been prepared for an international workshop on waste management and resource mobilization to be held at Kathmandu by October/November 1990.

Additionally the posters are displayed at New Delhi on the occasion of "SAFE WATER 2000", the Global Consultation on Safe Water and Sanitation, coordinated by the United Nations Development Programme UNDP.

We kindly invite all visitors to comment on our concept in writing, to make suggestions for amendments of the described development concept and to make their own experience in waste management available to allow us to further improve our implementation strategies.

Kathmandu/Nepal - Hamburg/Federal Republic of Germany
August 12, 1990

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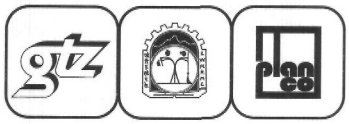
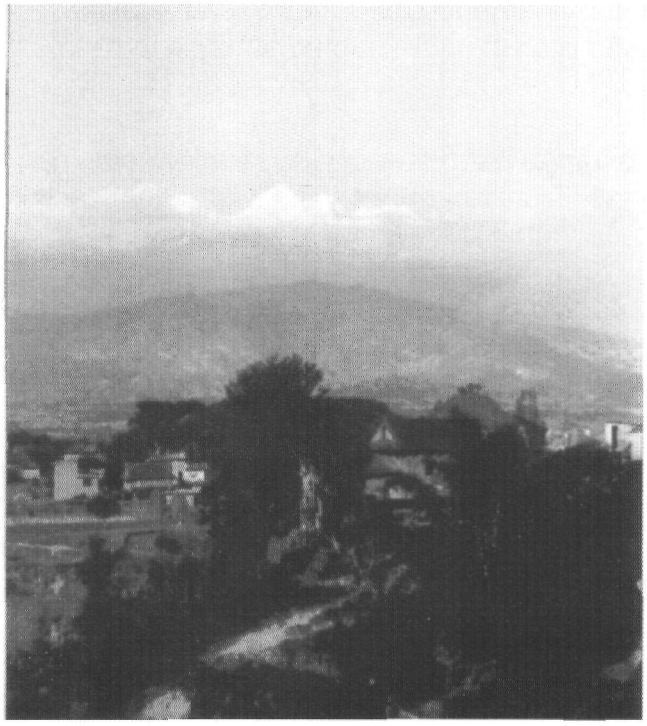
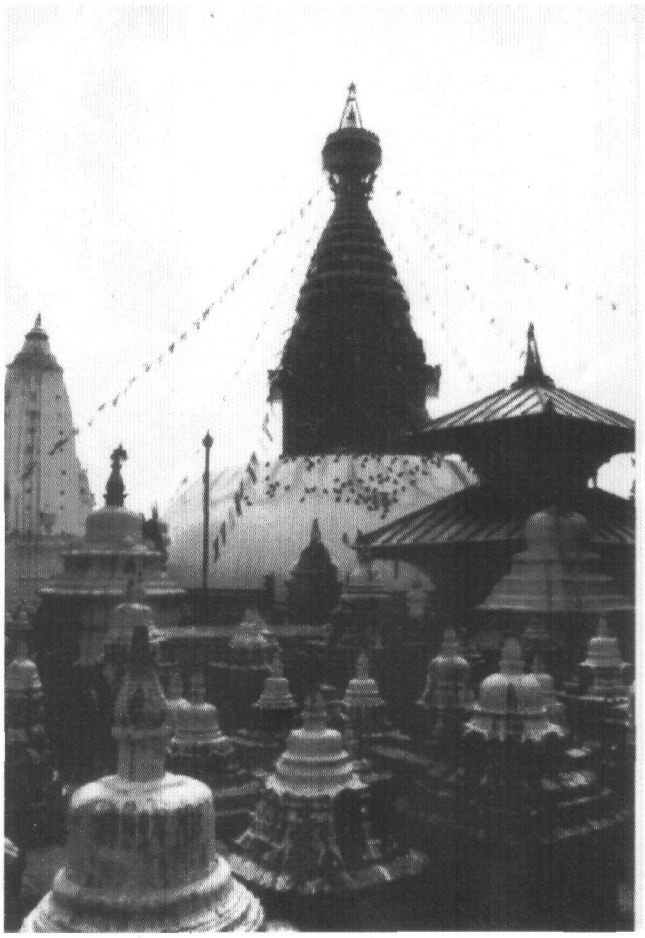
Solid Waste Management with People's Participation







SOME GENERAL INFORMATION ON NEPAL

POPULATION

Population	17.5 million (1987)
Growth rate of population	2.6 %
Average life expectancy (1987)	
- women	50 years
- men	52 years
- infant mortality per 1000	111.5

INCOME

Per capita income (PCI)	160 US $ (1986)
Growth rate of PCI	0.5 % (1973 -86)
Share of people living below the level of absolute poverty	40 - 60 %

ACCESS TO URBAN SERVICES

Share of urban population	about 7% - 9%
Growth rate of urban population	about 4% p.a.
Urban population connected to	
- water (by tap)	47 %
- sewerage	21 %
- electricity	51 %

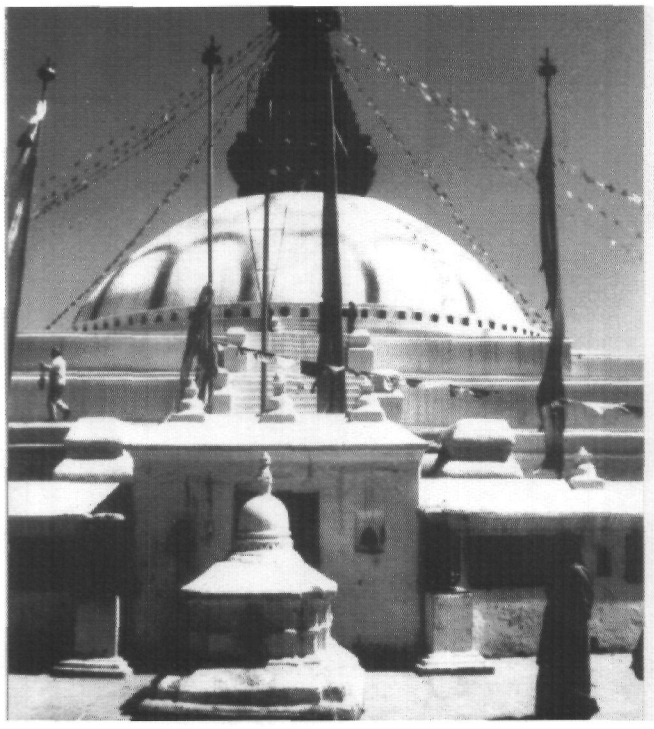
EDUCATION AND LITERACY

Literacy rate	27.8%
Student enrollment (% of school going children)	
- primary (6 - 10 years)	76.1%
- secondary (13 - 15 years)	23.1%

COMMON DISEASES

Diarrhoea, dysentery, infective hepatitis, skin infection, pneumonia, malaria, viral fevers, tuberculosis, gastro-enterities and cholera (sporadic)

Solid Waste Management with People's Participation



CHANGING CITIES OF THE KATHMANDU VALLEY

KATHMANDU

Population	352 000 (1990)
Distribution of population in percent	
- inner core area	26%
- outer core area	19%
- fringe area	55%
Annual growth rate of population	4.6%
Waste generation per day	350 cbm
Waste to be collected	206 cbm

PATAN

Population	106 000 (1990)
Distribution of population in percent	
- inner core area	25%
- outer core area	20%
- fringe area	55%
Annual growth rate of population	3.1 %
Waste generation per day	106 cbm
Waste to be collected	65 cbm

BHAKTAPUR

Population	57 000 (1990)
Annual growth rate of population	1.9%
Waste generation per day	40 cbm

Indirect cooperation with SWM+RMC. Waste collection rates unknown because municipality has no monitoring system.

Urban areas and typical densities of population (population per hectare)

Collection strategy 1990:
Waste to be collected in percent

Urban areas and typical densities of population (population per hectare)

- inner core area	400 - 1200
- outer core area	200 - 400
- fringe area	20 - 200

Collection strategy 1990:
Waste to be collected in precent

- inner core area	85%
- outer core area	60%
- fringe area	50%

Solid Waste Management with People's Participation

AN EXAMPLE OF GERMAN TECHNICAL COOPERATION IN NEPAL

Population growth is accompanied by rapid and uncontrolled urban settlement development. There is an excessive burden on municipal supply and disposal systems. The Nepalese society, however, can hardly afford necessary public services: Inadequate sanitation and hygiene facilities cannot cope with the massive threat to health caused by widespread infectious and chronic diseases. As a consequence, the danger of epidemics and infant mortality are high.

Responsible public institutions shall improve the sanitary living conditions, especially of the mainly affected lower income groups in the cities of the Kathmandu Valley. This shall be partly achieved by introducing an effective solid waste management system. Organizational and financial constraints in the public sector are calling for an integrated concept based on people's participation and resource recovery. Besides technical appropriateness the declared target is to introduce a sustainable system with regard to political, institutional, social, economic and ecological aspects.

The following results are envisaged by the Project:

- Legislation concerning an environmentally safe waste disposal and recycling system shall be promoted.
- An institution for waste management with its own legal status shall be established and operate in close cooperation with the concerned municipalities.
- Community participation shall be achieved through mass motivation, the promotion of self-help groups, and educational programs in schools.
- Private sector activities in the fields of sanitation, hygiene and waste handling shall be identified and promoted.
- 70% of current municipal waste generation shall be disposed of at low cost.
- Concepts for the disposal of special wastes shall be developed and implemented.
- Production of compost from municipal waste shall be implemented on different production scales.
- Opportunities for recycling waste materials shall be identified to strengthen the informal sector.
- A sanitary landfill site for final waste disposal shall be organized with financially acceptable measures for environmental protection.

Political and Legal Framework

Legal uncertainty causes conflicts and controversy on priorities in dealing with the environment as a public issue. Actions demanded by society become ineffective or do not materialize. Without a legal framework efforts to support a continuous and ecologically beneficial process of improving living conditions will not last in the long run.

Politicians must give clear indications and guidelines regarding the urban waste disposal and recycling system. Existing political norms such as the Decentralization Act and the Five-Year Development Plans have to be observed in this context. In the long run a law on waste management must be incorporated into comprehensive environmental legislation.

The law on waste management was drafted by the Centre and has been approved meanwhile by the Nepalese government. Gradually the new Waste Act is being put into effective operation. An inter-ministerial group has been established to prepare a draft for further environmental legislation. Cooperation with the municipalities concerned has been officially established.

Centre's Activities

SOCIAL

- Securing people's participation
- Promotion of social equity
- Motivation instead of punishment

ECONOMIC

- Utilization of self-help potentials
- Promotion of economically sustainable structures
- Concept development for cooperation with municipalities

TECHNICAL

- Proposals for a legal framework on waste management, in particular
  - Waste Act
  - Rules and Regulations
  - Statutes and Bylaws

Institution Building

SOLID WASTE MANAGEMENT WITH PEOPLE'S PARTICIPATION - AN EXAMPLE IN NEPAL

The traditional Nepalese society did not consider domestic refuse as a social problem. Organic matters were absorbed within the natural process of decomposition or served as animal feed. With increasing urban agglomeration, division of labour and changing consumptional patterns a new kind of waste occured which endangered the persistence of ecological cycles. As a consequence, also the traditional self-help organization in waste handling and disposal dissolved.

Public institutions shall be encouraged to take over the organization of the municipal waste disposal whenever self-help activities and private initiatives are bound to fail. Available technical solutions must take account of financial constraints, organizational capabilities and the actual awareness of the people. Restoring an environmentally safe system of waste disposal means gradual and parallel development of all institutional components while respecting the cultural identity of the society.

The Centre has been operating the central functions of the urban waste disposal and recycling system since 1980. Waste collection, transport and disposal as well as compost production are carried out at low costs. Advantages of decentralized waste collection are utilized through cooperation with the municipalities as far as necessary and possible. Systematic support is extended by the Centre to self-help efforts and private initiatives.

Centre's Activities

SOCIAL

- Development of awareness through motivation, information and education
- Motivation of direct responsibility and participation
- Support of self-help activities
- Implementation of a manpower development plan

ECONOMIC

- Coverage of disposal costs through regular revenues
- Implementation of cost reduction schemes
- Introduction of commercial accounting
- Systematic budget planning and control
- Investment planning and cost-benefit analyses

TECHNICAL

- Consistent and goal-oriented planning
- Development of efficient organizational structures
- Introduction of tariff schemes for waste disposal
- Introduction of a management information system

People's Participation

Public services should only be provided if acceptable solutions are not achieved by private initiative or through the market mechanism. Concepts based on technical criteria alone tend to ignore the importance of people's participation. The consequences will be often unrealistic technological sophistication and high costs. Responsibilities of the individual waste producer for protecting the environment remain obscure leading to uncooperative indifference and ecological failure.

The awareness of the people for their personal benefits from waste management and resource recovery shall be established on a sustainable basis. The effects on hygienic and environmental conditions shall be demonstrated. Cooperation between the Centre, the municipalities and citizens shall be promoted.

The Community Participation Section (COPATS) has been established at the Centre and is active in the following fields: (1) Motivational campaigns in the town area, (2) Promotion of self-help groups, (3) Courtyard rehabilitation, (4) Programs for the promotion of environmental awareness in schools, and (5) Information and motivation via mass media.

Centre's Activities

SOCIAL

- Selective promotion of opinion-leaders and target groups
- Preserving the cultural identity of the society in public relation work
- Surveys on special social aspects

ECONOMIC

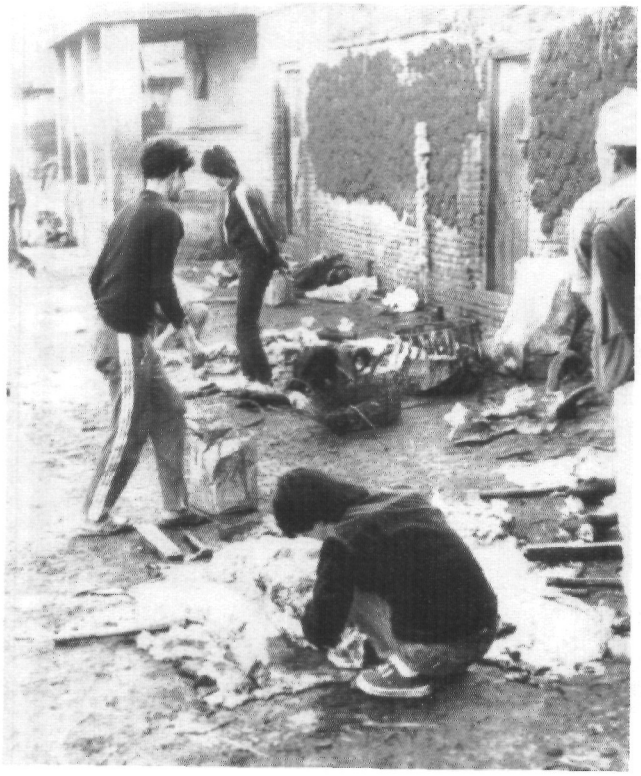
- Maximum mobilization of self-help potentials
- Promotion of awareness for a cost-saving waste management
- Support for local motivators as multipliers
- Program development with high dissemination potential

TECHNICAL

- Production of audio-visual aids for group-specific motivation
- Provision of material and equipment for self-help groups
- Development of educational material for schools
- Regular contributions for television, radio, newspapers

Solid Waste Management with People's Participation

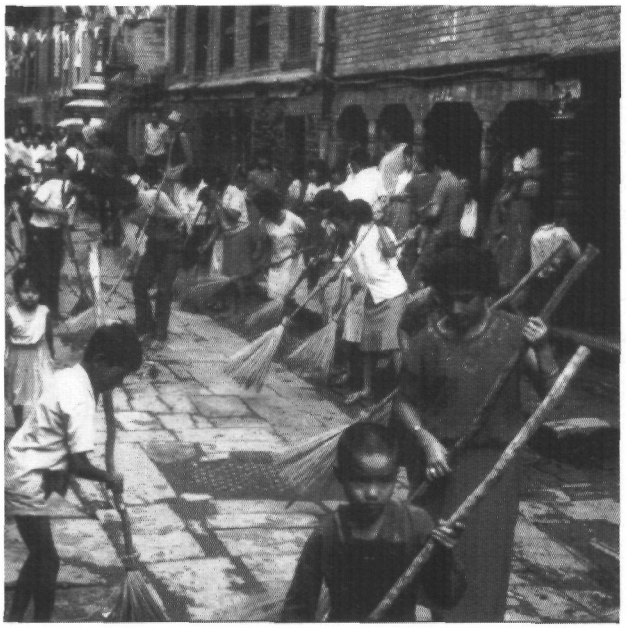
Traditional life in the streets
of the Kathmandu Valley



Waste in the street

Self-Help Groups

The establishment of self-help groups is generally hampered by different levels of awareness, the lack of communication and individual efforts, as well as by exaggerated reliance on public services. Public institutions, on the other hand, are reluctant to cooperate with citizens' committees because conflicts of interests may occur and are difficult to balance. More than in other societies religious factors constitute additional obstacles to the organization of self-help groups in Nepal.



Existing structures of self-help shall be supported. New self-help groups shall be established by activating local motivators and by organizing ward committees. The readiness of private initiatives and public authorities to cooperate shall be promoted on both sides.

Up to now 28 self-help groups in street and ward cleansing have been supported - with varying success. The support program will be continued, especially in areas where the functioning of the waste disposal system is not satisfactory. In addition, contacts with non-governmental organizations working in the fields of waste handling and environmental protection have been established and will be intensified.

Centre's Activities

SOCIAL

- Support of women's organizations to improve sanitary conditions in slum areas
- Support of critical journalism on environmental issues
- Promotion of hygiene and sanitation at schools

ECONOMIC

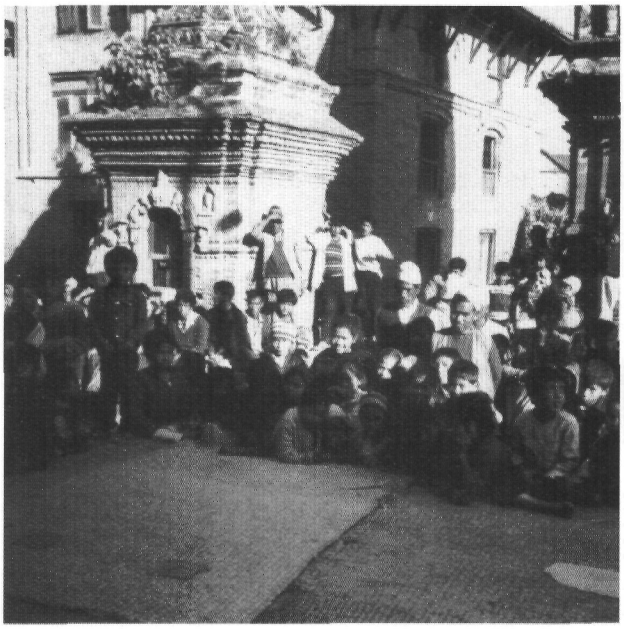
- Financial support and economic consulting
- Evaluation of the Waste Act with special emphasis on its effects on people's participation

TECHNICAL

- Provision of equipment for street cleansing (brooms, shovels, handcarts)
- Provision of didactical material for motivation work
- Technical support for the construction of public toilets

Motivation Campaigns

Waste containers at strategic collection points constitute a new element in the urban waste disposal system. For the Centre the container operation is technically feasible and much cheaper than extensive house-to-house collection. However, the effectiveness of the container system would be limited without people's awareness of the need for active participation in the waste collection. Moreover, individual support can be expected only if the container sites are acceptable.



The participation of the population in the direct transport of waste to containers shall be achieved through information and motivation. Also the sweepers of the municipalities have to be motivated to drop their collected waste into the containers. Drivers of the municipal waste transport fleet are to be convinced to discharge the waste at the Centre's transfer stations.

Intensive motivation campaigns are regularly conducted at sites where dirty surroundings indicate deficiencies in the waste collection system. Procedures and programs for campaigns are adjusted to the specific situation at each container site. An evaluation of previous campaigns is carried out to adapt motivation activities to the overall strategy of the Centre.

Centre's Activities

SOCIAL

- Improvement of the situation according to the local population's interests
- Reorientation of sweepers and drivers
- Cooperation with ward cleaning committees and assistance in establishing self-help groups

ECONOMIC

- Concentration of campaigns on "deficit areas" indicated by a low rate of disposal or high waste pollution
- Standardization of applied audio-visual aids
- Achievement of cost-efficiency in campaign activities

TECHNICAL

- Specific analyses for individual town districts
- Concentrated use of a media vehicle equipped with standard audio-visual software
- Dissemination of didactical material to support motivation work of multipliers and self-help groups

Courtyard Rehabilitation

SOLID WASTE MANAGEMENT WITH PEOPLE'S PARTICIPATION – AN EXAMPLE IN NEPAL

The attractive architecture of inner courtyards forms the traditional picture of Nepalese towns. Courtyards constitute the actual centre of urban social life and communication. The decline of social structures associated with a growing population density was followed by the physical decay of the courtyards. No longer kept clean they turned into private waste dumps. As breeding grounds for pathogenic agents they became a severe threat to the health of residents.

Rehabilitation of courtyards shall bring about improvements of the hygienic conditions of the urban population. A special program utilizing the residents' self-help potentials shall support the rehabilitation of civil structures and sewerage systems in the courtyards. The permanent cleansing of the courtyards after rehabilitation shall be ensured through motivational programs. The traditional way of life and the historical urban architecture shall be preserved.

Annually about 60 out of 1,300 courtyards are included in the rehabilitation program. Up to now, a total of 300 courtyards has been improved. Almost half of the rehabilitation costs are contributed generally by the courtyard residents either in kind (work and material) or in direct payments. The remainder is covered by the Centre, partly also by the municipalities. Between 70 and 80 percent of the courtyards are maintained in clean and hygienic conditions after rehabilitation.

Centre's Activities

SOCIAL

- Selection and motivation of resident groups with self-help potential
- Cooperation with the municipalities in establishing priorities
- Establishment of informal cleaning committees
- Support of the self-help groups after rehabilitation

ECONOMIC

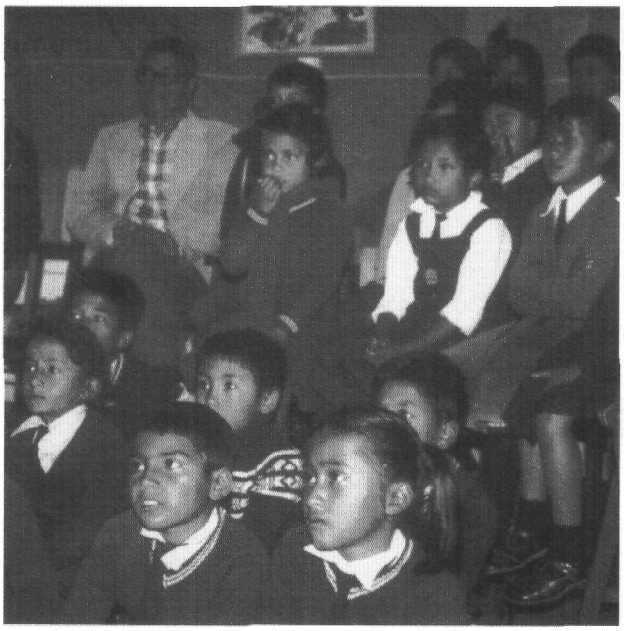
- Contributions to the cost of materials
- Purchase of construction material at low cost
- Motivation of courtyard residents to deliver their waste directly to the container

TECHNICAL

- Program development and engineering for civil works
- Removal of waste (about 30 tonnes per basic cleaning)
- Employment of local contractors for the rehabilitation of sewerage systems and courtyard paving
- Provision of a waste container near the courtyard

School Education

The ability of a society to improve its living conditions will not be fully utilized if the younger generation is excluded from the process of consciousness development. Without direct participation of children and adolescents in the responsibility for their environment it will be difficult to find solutions which are successful in the long run.



The promotion of environmental awareness has to start from early childhood. By introducing environmental education at school, sustainable changes in behaviour concerning hygiene, waste management and resource recovery shall be secured.

A systematic extension of lesson plans is under progress and will enable the teaching staff at primary schools to provoke and increase the sensibility and awareness of children for their environment. Learning material is developed to attract children's attention by games and group work related to the environment instead of drilling behaviour patterns.

Centre's Activities

SOCIAL

- Program development related to the social and cultural identity of society
- Cooperation with the Ministry of Education
- Participation of teachers in the development of educational material
- Adaptation of programs based on practical tests

ECONOMIC

- Regional dissemination by utilizing the formal school system
- Development of teaching and learning material with local staff and resources
- Adaptation of educational material for motivation activities outside the school system

TECHNICAL

- Extension of the curricula for primary schools
- Elaboration of detailed lesson plans and teaching material
- Preparation of a playbook for children

School Education

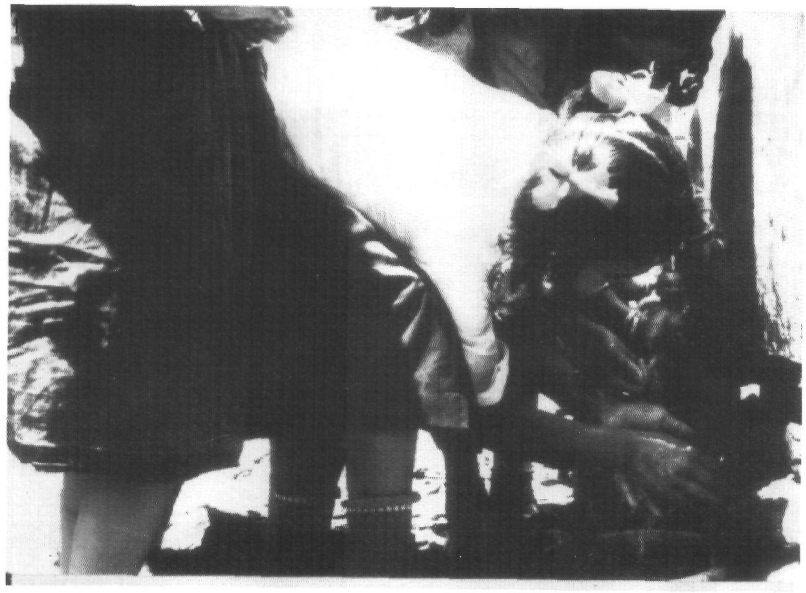
Proper recycling is interesting and a convincing means to develop awareness. Children are trained in paper recycling.

The understanding of a clean environment is developed by practicing cleaning tasks.

SCHOOL EDUCATION

About 50% of the population have not yet achieved the age of 15 years. This figure indicates that long run sustainability of development can only be achieved if children develop consciousness for sanitary behavior. Not the old generation, but children constitute the most important target group for consciousness development.

Information on proper waste handling as a social task...

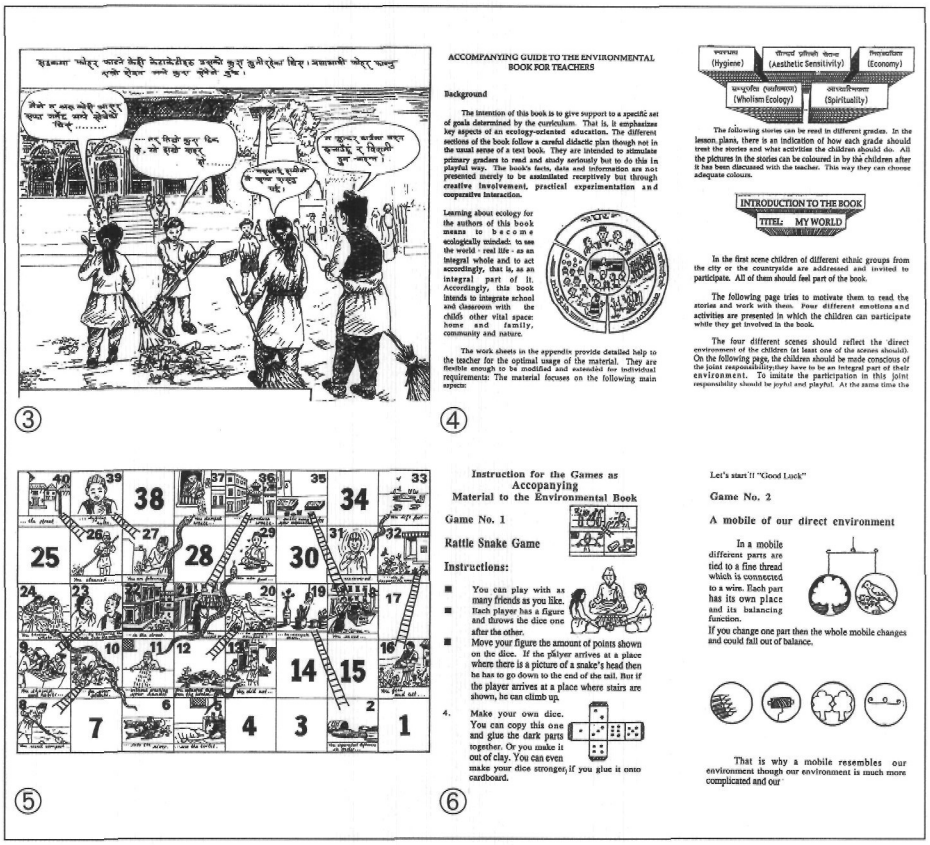


...and on individual cleanliness.

School Education

SOLID WASTE MANAGEMENT WITH PEOPLE'S PARTICIPATION – AN EXAMPLE IN NEPAL

①



③

ACCOMPANYING GUIDE TO THE ENVIRONMENTAL BOOK FOR TEACHERS

Background

The intention of this book is to give support to a specific set of goals determined by the curriculum. That is, it emphasizes key aspects of an ecology-oriented education. The different sections of the book follow a careful didactic plan though not in the usual sense of a text book. They are intended to stimulate primary graders to read and study seriously but to do this in playful way. The book's facts, data and information are not presented merely to be assimilated receptively but through creative involvement, practical experimentation and cooperative interaction.

Learning about ecology for the authors of this book means to become ecologically minded: to see the world - real life - as an integral whole and to act accordingly, that is, as an integral part of it. Accordingly, this book intends to integrate school and classroom with the child's other vital space: home and family, community and nature.

The work sheets in the appendix provide detailed help to the teacher for the optimal usage of the material. They are flexible enough to be modified and extended for individual requirements: The material focuses on the following main aspects:

④

(Hygiene) (Aesthetic Sensitivity) (Economy)
(Wholism Ecology) (Spirituality)

The following stories can be read in different grades. In the lesson plans, there is an indication of how each grade should treat the stories and what activities the children should do. All the pictures in the stories can be coloured in by the children after it has been discussed with the teacher. This way they can choose adequate colours.

INTRODUCTION TO THE BOOK
TITEL: MY WORLD

In the first scene children of different ethnic groups from the city or the countryside are addressed and invited to participate. All of them should feel part of the book.

The following page tries to motivate them to read the stories and work with them. Four different emotions and activities are presented in which the children can participate while they get involved in the book.

The four different scenes should reflect the direct environment of the children (at least one of the scenes should). On the following page, the children should be made conscious of the joint responsibility;they have to be an integral part of their environment. To imitate the participation in this joint responsibility should be joyful and playful. At the same time the

⑤

Instruction for the Games as Accompanying Material to the Environmental Book

Game No. 1

Rattle Snake Game

Instructions:

- You can play with as many friends as you like.
- Each player has a figure and throws the dice one after the other.
- Move your figure the amount of points shown on the dice. If the player arrives at a place where there is a picture of a snake's head then he has to go down to the end of the tail. But if the player arrives at a place where stairs are shown, he can climb up.

4. Make your own dice. You can copy this one and glue the dark parts together. Or you make it out of clay. You can even make your dice stronger, if you glue it onto cardboard.

⑥

Let's start !! "Good Luck"

Game No. 2

A mobile of our direct environment

In a mobile different parts are tied to a fine thread which is connected to a wire. Each part has its own place and its balancing function.

If you change one part then the whole mobile changes and could fall out of balance.

That is why a mobile resembles our environment though our environment is much more complicated and our

(see enlargement next page)

②

By education of children the sanitary behavior of the population shall be changed to improve hygienic living conditions. Teachers (1) and other adult "key persons" (2) shall be used as multipliers to disseminate new ideas.

In cooperation with the Ministry of Education SWM+RMC developed an ENVIRONMENTAL BOOK for children (3). The concept of the book is based on the cultural experience of the population. The design was done by students of the Campus of Fine Arts in Kathmandu.

The concept of educational psychology applied in the environmental book is based on the idea that children learn by playing and by enjoying their lessons. Environment and hygiene are not presented as a "mathematic formula" but as positive experience of life.

Since most teachers are neither trained in these ideas of education nor in the concept of proper environmental behavior, an accompanying guide to the environmental book was developed to train and to help teachers (4).

Additionally about 90 lesson plans are developed to guide and ease the teachers work.

Last but not least a set of games (5) with respective instructions (6) shall increase the children's interest in environmental improvement and proper hygiene.

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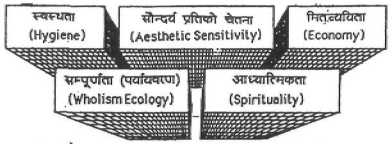

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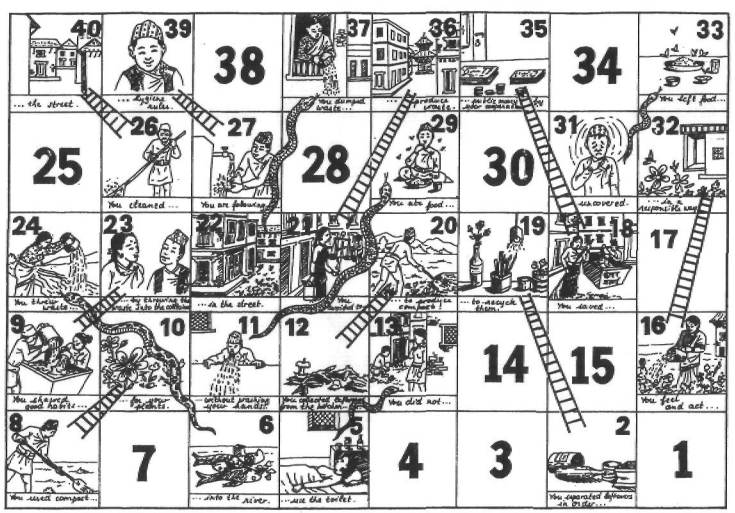

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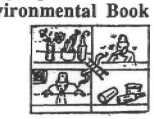

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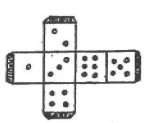

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(enlargement from preceding page)

Mass Media

A system of waste management and resource recovery will be successful only if it is supported by the entire population. Local campaigns, promotion of self-help groups and creation of awareness at schools are aiming at specific parts of society. The total population, however, cannot be reached this way.

All available mass media and their communication techniques shall be utilized to motivate people to play their part in waste management and resource recovery. The public shall be approached with a broad and informative coverage as well as with attractive entertainment programs. To achieve sustainability, a continuous information and motivation process supported by the mass media has to be maintained.

The Centre operates its own studio for the production of television films. In addition to regular transmissions on TV, radio programs and newspaper articles are prepared. A semi-annual journal on waste management and resource recovery is published. The Centre is represented at national fairs and exhibitions with information stands.

Centre's Activities

SOCIAL

- Treatment of waste topics within entertainment programs
- Current information on the Centre's activities
- Promotion of cooperation with critical journalists

ECONOMIC

- Employment of local free-lancers in the production of audio-visual material
- Low-cost production of spot messages and advertisements with high dissemination effect

TECHNICAL

- Production of feature and documentary films
- Production of an animation film
- "Grafitty" poster competitions
- Permanent exhibition at the Centre
- Ongoing press releases