

3. トイレ建設の経緯

3-1. デザインの始まりから今まで

3-1-1 デザインに対する考え方

私たちは、夢を持っています。将来私たち日本人がいなくなっても、私たちが作ってきた最初のトイレが次々と進化し、広く広がっていき、飲み水への汚物の混入なども減り、健康な生活が当たり前のようにになって、関連したたくさんの産業がおこり、そのうち、日本人が来ているいるやっていたことなども忘れ去られ、昔からそこにあったように地元になじんでゆくようになる夢を持っています。

そんな夢を実現するために、今作りつつあるエコサン型トイレのデザインに対して明確な方向性を持っています。初めてのものを作り上げるデザイン作業の中ではいろいろな仕組みや形が次々と沸いてきてきりがなく、どれをやっても良いようにも思える中、そんな数多くの可能性の中で一つの正解を選ばなければなりません。そんな時はっきりした目標や未来の姿が見えていなければ、限られた時間の中で、その場所と時間の中に一番適したものに到達することは難しいと考えています。そのために、まず以下のように私たちのデザインに対する考え方をまとめ、それに沿って作業を進めました。

(1) トイレをデザインするという考え方より、そこに、かかわる人たちの生活をデザインする。そしてその人たちの未来をデザインするという立場で考えます。

- ・ トイレがそこにあることでどのように生活のパターンが変化していくか、そしてそれが、使う人、そのまた次の世代にいたる将来までどうい変化を与えていくのかまでを考えます。

(2) 捨てる文化から、ぐるぐると回る文化を目指します。



- ・ 目の前から消えてしまえばいいという考え方から離れて、すべてのものは、大きく循環し

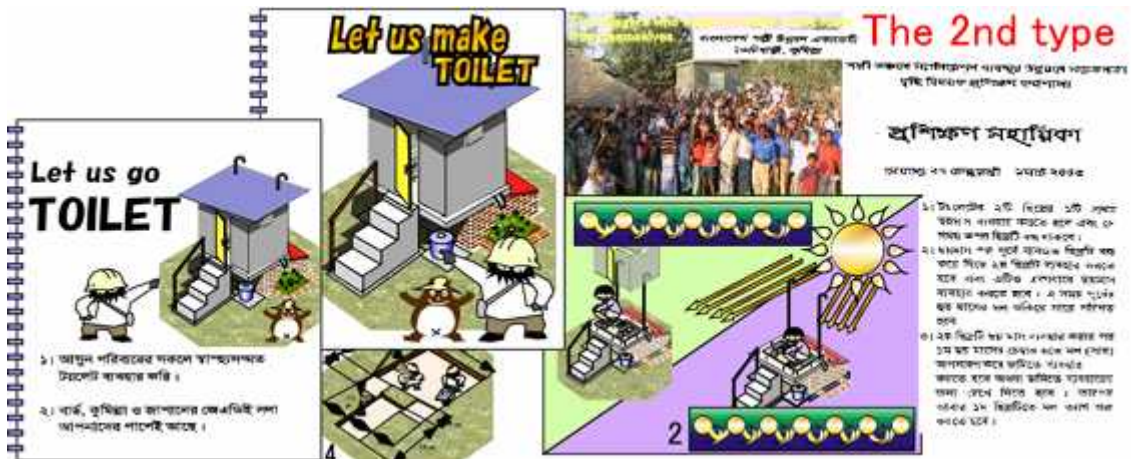
て自分たちに戻ってくる、そうだから、今、大きなぐるっと回る輪の、一部分のトイレと言う部分も大切なのだと言う考えをはっきりさせます。

(3) 使い方に多少の間違いがあっても、機能が損なわれないデザイン。

- ・ たくさんの異なる人が使います。全員に理想的な使い方を求めることなど無理な話です。それでも機能は維持していかなければなりません。そのためのデザインが必要です。それは形的にはシンプルになってゆく方向であり、消耗品を買い続けないと維持できないということではいけないなどと思っています。

(4) 自分たちだけでも間違いなく作れる形を目指します。

- ・ 日本人が作り続けるには限度があります。補修もしなければなりませんし、いずれ自分たちで作り続けることが目標ですのでそれを念頭に入れておきます。
- ・ シンプルな構造ですから似たものはすぐに作れますし、自分たちで工夫を加えて進化していくでしょう、しかし基本的な機能は確実に伝わっていかなければなりません。将来、間違っただけの亜流ができて、何らかの被害がでたときに、「日本人が教えていった。」ということにならないような工夫、資料、などが必要です。



(5) 私たちがいなくなっても自分たちで作れるコストであることが必要です。

- ・ 自分たちでお金を払ってでも作りたいという意見がたくさんあり、それは継続していく上で大切なことです。安ければ良いわけでもありませんが、作ることが可能な金額を目指します。

(6) トイレ作りが将来広まっていったとき、地元の小さな産業として根付くようなことも考える。

- ・ 新しいトイレを作るたくさんの小さな集団ができて、お互い競いながらいいものが作れるようになればいい。地元の人に仕事の機会が増えればいい。
- ・ いろいろな部品が規格化されてくれば、それを作って道端で売ることも可能だし、間違いなくそうなるはずです。作る人、売る人のためにもなるものがある。

(7) 初期のトイレは周囲の人たちの目にとまりやすく、憧れを感じさせるものとしたい。

- ・ まず、周囲の人たちに「あんなのがほしい。」と思ってもらうことが必要です。そうしないとお金を払ってでも作りたいという方向には向いてきません。

(8) ある程度たった後は、年月がたっても飽きのこないできるだけシンプルなものとする。

- ・ 経年変化という言葉があります。使っていれば汚れたり壊れたりしてきます。それに対応するには、表面にきれいな色を塗ったり、飾りをつけたりということではすぐにどうにもなりません。基本形状が機能的で無駄がなく美しいことが必要です。素材そのもの、たとえばレンガそのものの美しさを出すほうが良いと考えます。汚れが目立たない工夫も

必要です。

- ・日本人と他の国の人たちの感覚は異なります。それはそれぞれの暮らしていく場所、気候、歴史、宗教などによって積み重ねられてきた長い生活の中から培われてきた文化が、それぞれの重みで花開いてきた結果で、どちらが良いとか悪いとか言う問題ではありません。日本人の当たり前を押し付けることなく、それぞれの生活に溶け込むことを考えました。活動している村の中で、エコサントイレはけっこう目に付くくらいの存在感があります。それは、毎日の生活の場面の中で、いやおうなく地元の人はずーっと見続け、感じ続けなければいけない環境となります。その点に注意して気持ちよく暮らせる空間となるよう考えていきます。

(9) 体の不自由な人や子供たちにも安心して使えるものとしします。

- ・安価にしようとしてばかりいると、往々この点が見過ごされます。手すりくらいはつけなければいけないと考えます。

(10) 将来、母屋に設置できる形も考える。

- ・農村では今は一般的にトイレは母屋と別に外にあり、そのためその生活を基本にして独立したトイレを作っていますが、いずれ、母屋の部屋から直接利用できるほうが便利ですし、安価になります。そのための提案をしておく必要があります。

以上 10 項目がトイレのデザインをまとめていき、できる限り現場を回り、数百の現場一つずつ見て意見を交換し合い、たくさんの村での勉強会で話し合ってきた私たちの基本的な考え方です。

3-1-2 トイレデザインの流れ

BARD でエコサン型のトイレを作り始めてから、各地の NPO でも多くのトイレを作り始め、私達のデザインも徐々に変わりつつあります。それには失敗したり、作業にかかわるそれぞれのグループの性格や夢、地域の条件などが影響して進化しています。以下にその流れを整理します。

概要

- 1、確実な基本を作ろうとした第 1 世代。
- 2、第一世代の欠点を修正し、よりスリムに安価にしようとした第 2 世代。
- 3、より安くして普及を目指した第 3 世代 (A)
- 4、各民間団体とともに、もっと広い地域で作り始めるため、第二世代を基にしてより安く、魅力的なものを求めていった第 3 世代 (B)
- 5、今後始まるであろう各地域の暮らしによりなじんでいく第 4 世代
- 6、居室からの利用が可能になる第 5 世代
- 7、学校などにも広がってゆく第 6 世代

以上ですが、現在までの活動では第 3 世代 (A)(B) が進行中です。

第1世代



最初に BARD の協力のもとで作ったタイプです。すべての機能を収めてしっかりしたものを作りました。このトイレを使用する各家庭の母屋よりよほど丈夫であろうと思っています。サイクロンの時なども水につからない場所につくられており、場合によたらここに逃げ込んでもいいくらいかとも考えています。

し尿分離型で、排便後、糞灰などをカップ一杯かけるようにして使いますが、上手に使っていただければ、虫の発生も、においもほとんどなく快適に利用できました。片方のタンクが一杯になったあと、ふたをしめて、反対側のタンクを利用しはじめます。数ヶ月反対側のタンクを利用して後、最初のタンクを開けましたが、ほとんど普通の土と同じような外観でにおいもほとんどなく、普通に手で握ることができる状態でした。

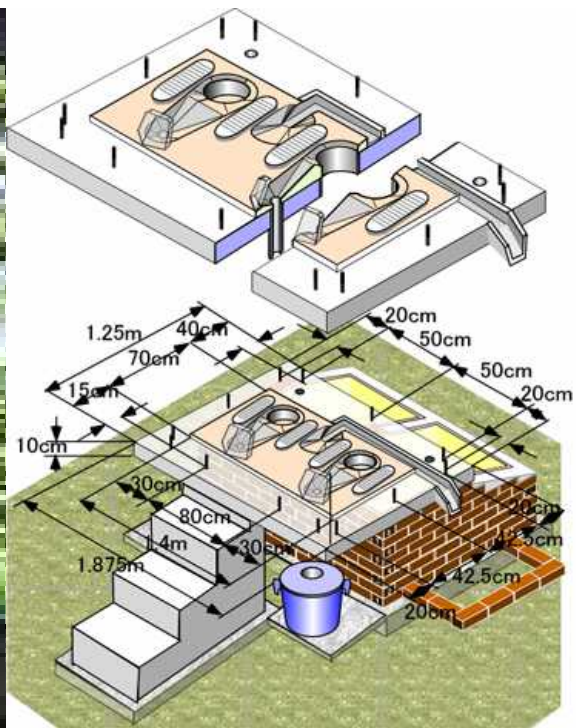
第一世代のトイレはほぼうまく機能しましたが、尿のタンクも内部に配置したため、施工不良などから尿が糞のタンクに回ってしまい、べたべたになってしまった箇所や、尿タンクの鉄板の蓋に腐食で穴があくなどの不備が見られました。



第2世代

第1世代の欠点であった、尿タンクを廃止し、尿は直接外のタンクにためることとしたため糞のタンクに尿が漏れることがなくなった。同時にたまった尿をほっておけなくなり、きちんと処理がされるようになった。また全体にスリムになり、村の中に存在する量感が適度になってきており、視覚的なわずらわしさが軽減された。より安価にできることになった。

この後、BARD だけではなく、民間団体などの参加もあり、より広く、より多様な地域への対



応が必要と考え、将来の普及に対して必要な低コスト化と、多様化への提案をして、再度デザインを考え直すきっかけとした。その、骨子は、一つ一つの部材に対する対応と、産業化を視野に入れた対応、あくまで、個人でも作る事を可能にするための対応などであった。



第3世代 (A)

BARD はシンプル化、低コスト化へと進み、左図の基本形状を策定し、全国への普及を図るきっかけとした。そのデザインの考え方は、床から下の基本的な部分を規格化し、間違いのない機能を確認した上で、上屋はそれぞれの予算に合わせて自由に作ることができることとし、より普及しやすいものを目指し、それ自体は間違っていない方向だと考えています。

第3世代 (B)

BARD に対して後発した民間グループは第二世代からスタートし、将来の事業化も視野に入れて、各地で積極的に勉強会を開き、住民の理解とともに各家庭に喜ばれるもの、各地域に溶け込むものや家庭ごとの個別化を明確にしていきながら、伝統のある村のたたずまいを壊さない景観をも配慮しはじめ、低コスト化も進んで現在では BARD より効率のよいコストでトイレを作り始めています。



問題は、たくさんの人々が作り始めたことにより、基本的な機能が正確に伝わっていくかですが、それについては今のところ、できる限り全数をチェックして回り、早いうちに考えの相違を修正しようと努力しています。

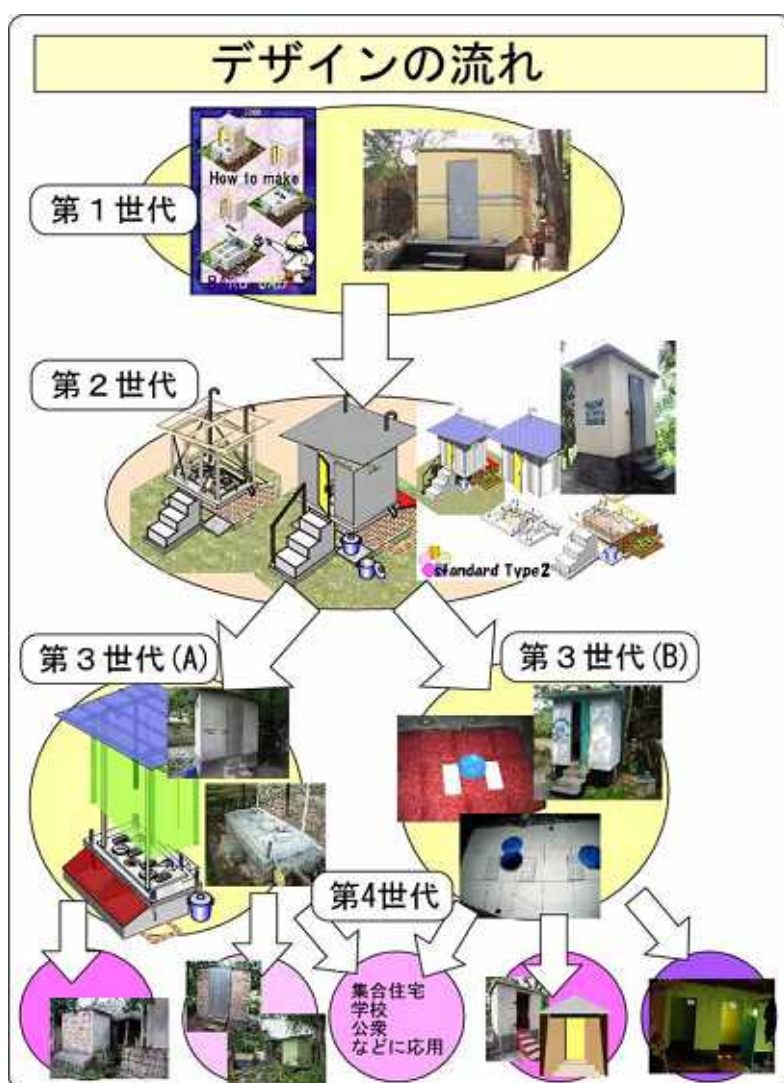


第4世代

今、BARDも民間も第4世代に入っています。それぞれ性格が異なるデザインへ進み、それぞれの方向に走り始めていくようですが、それは車の両輪で、互いに影響を及ぼして進んでいけばよりよい方向へ進んでいけるでしょう。

どちらも、一部はすでにトイレを直接室内から使えるように工夫を始めました。それは、いままでの、とても居室につなげなかった汚れかたや、ひどい臭いがないことがわかってきたからで、皆さんの理解が深まってきたことは良いことです。ただ、すべてトイレは屋内がよいかというと、農業を主体とした生活パターンの中で本当はどこがよいかはこれから模索していくことだと考えています。トイレとシャワーを一緒にまとめたものも作られました。室内をタイルで張り巡らして、快適な環境にしようとしています。そして、学校などへの対応、必要かどうかはまだ未知数ですが、共同住宅への応用も視野に入ってきています。

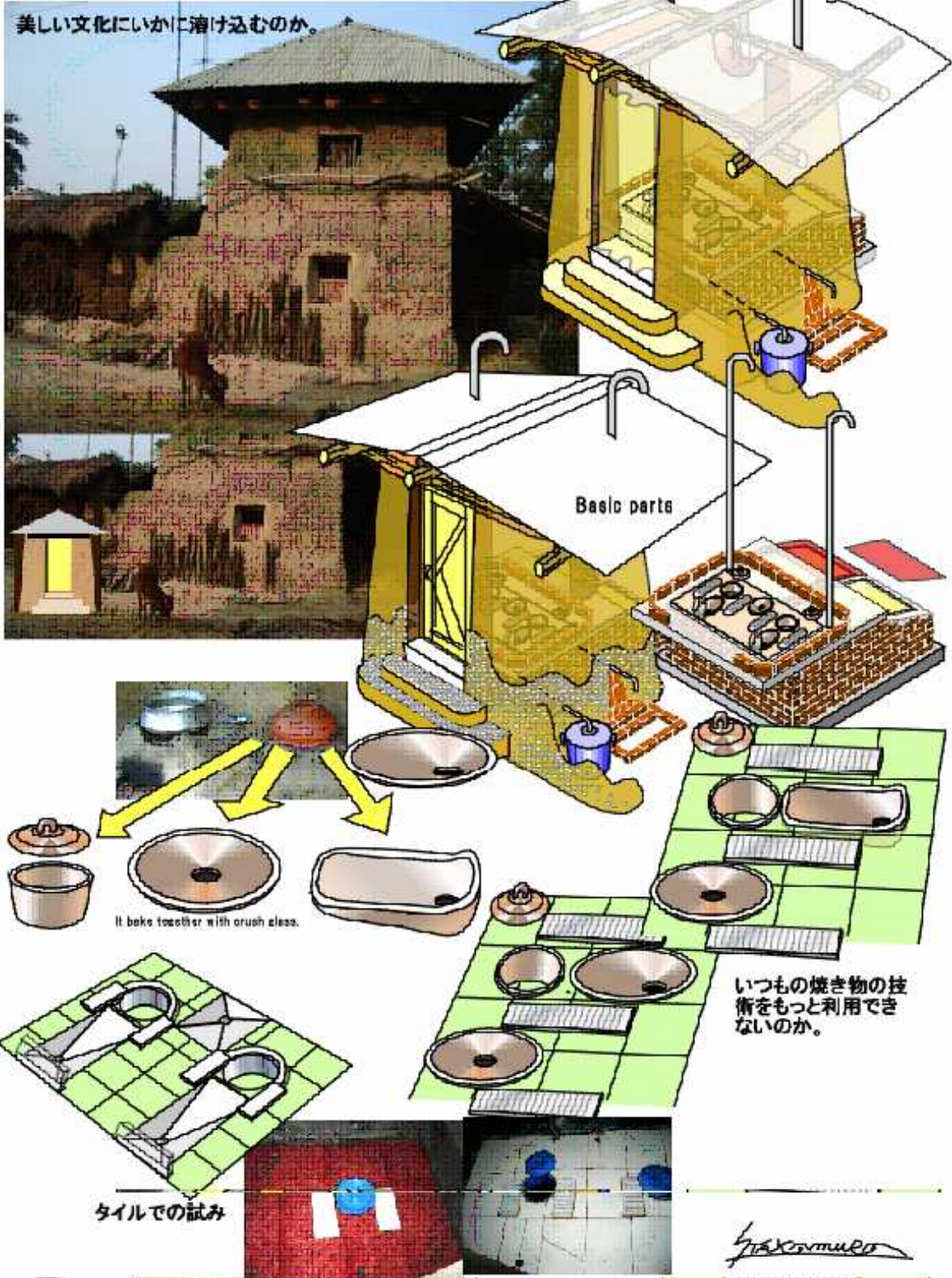
快適さを追いながらも、インド国境の、土で作られた美しい村の景観をどうやったら壊さずに共存できるかということも考え始めています。



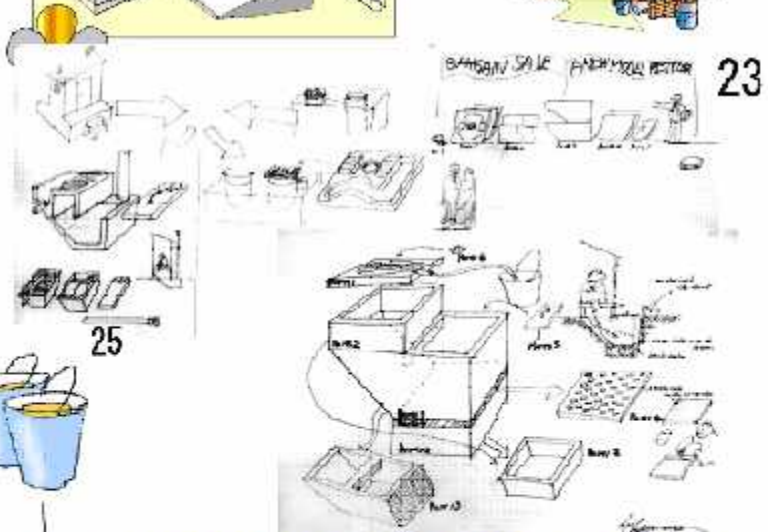
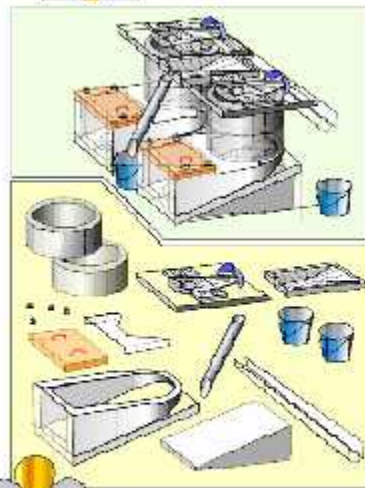
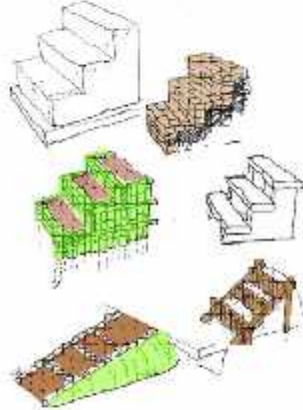
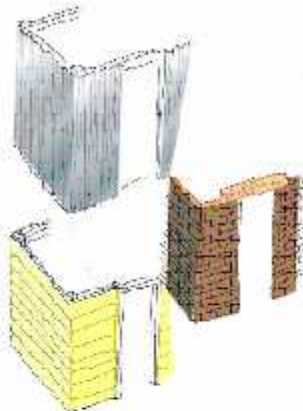
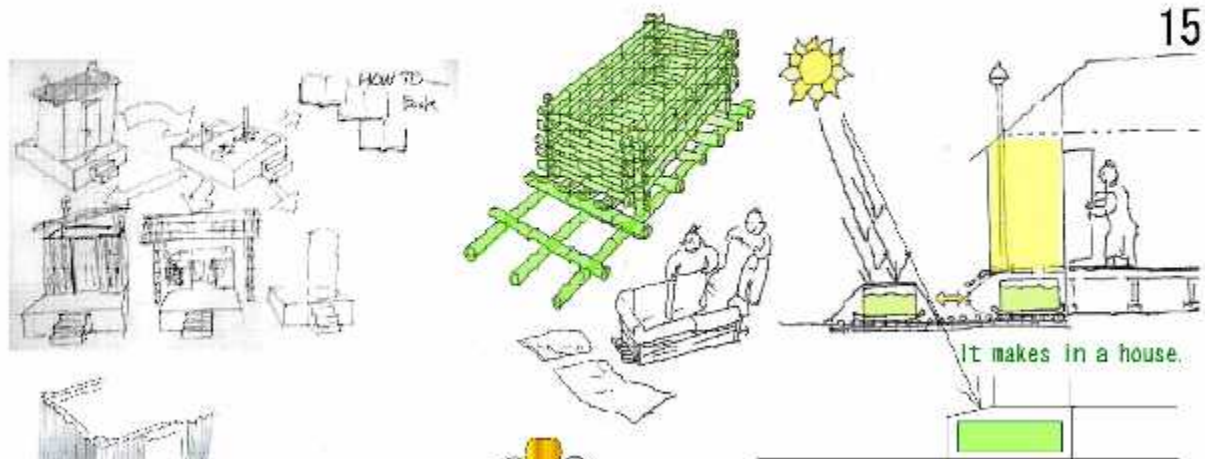
バングラはまだ、村々の民家一軒ずつへの車でのアプローチは難しいところも多く、雨季には5mも水位が上がる中で暮らしにも対応していかなければなりません。いずれ、社会インフラの整備が行き渡るとともに条件が変わり、より優れた仕組みが現れるでしょうが、今私たちが始めているエコサントイレの、捨てない技術、ぐるぐる回るといった考え方が定着して、今までなかったより好ましい仕組みが現れて、人々が利用する水がより安全になっていくことを願っています。

生活に溶け込むための試み1

美しい文化にいかに溶け込むのか。



生活に溶け込むための試み2



New possibility

makes by a standard type.

3-2. トイレ建設ワークショップ等の開催

3-2-1. トイレ建設に至るまでの経緯

以下に、トイレ建設にいたるまでの経緯を示す。

DATA	活動名	活動内容	備考
07/11/30-08/2/9	Motivational Campaign:	エコサン・トイレの普及啓発に関わる各村での説明会	CVDPの集会時にパンフレット等を持ち込み説明。延べ19回開催。参加者12 - 36人
07/12	Formation of Eco-san Committees	エコサン・トイレ委員会の設立(6ヶ村)	各村のチェアマン、コーチエアマン、マネジャー、宗教リーダー、メンバー、BAR D、JADEで構成。トイレ候補者選定、建設、管理指導
07/12/25 & 12/29	Mason Training:	各村のMasonを召集し、2日間にわたるトイレ建設トレーニング	6ヶ村の20人を対象にトイレ建設指導。
08/1-08/3	Pre-questionnaire Survey:	既エコサン利用者、新エコサン希望者、その他、合計330世帯を対象に、アンケート調査を実施。	
07/12-08/3	Selection of Eco-toilets	エコサン設置基準を設け、希望者の調停を行う。	自己負担建設費の20%の規約のため、希望者の変更が相次いだ。
08/3/23-29	Training Workshops on Use of Eco-toilets	エコサン新規希望世帯の夫婦を参集し、適正な使い方についてワークショップを行う。	
08/3-08/10	Construction of Eco-toilets	2008年3月末から建設が始まる。	

3-2-2 Activities of the Project: (諸活動の内容)

The activities of the first phase are described below:

(1) Motivational Campaign:

Eco-toilet is the new concept to the farmer households. So, they need to know the cost and benefits of eco-toilets. It is not ordinary toilet. The use of eco-toilet is different compare to usually used toilet like pit latrine in rural households. So, performing the ecological sanitation activities at rural level it is important to motivate the people regarding the cost, use, and benefits of eco-toilets before going to construction. Keeping this in mind, six motivational campaigns were done in six different villages. The details of motivational campaign are given below:

Date	Name of the Village	Resource Persons	No. of Villagers attended	Contents
30/11/2007	Bamoil	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	35	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
01/12/2007	Raicho	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	31	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
3/12/2007	Joypur (North)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	23	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
7/12/2007	Raicho and Joypur (South)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	18 and 24	Motivation to use eco-toilet, JICA partnership and 20% cost sharing

Date	Name of the Village	Resource Persons	No. of Villagers attended	Contents
8/12/2007	Joypur (South)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	34	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
9/12/2007	Hatighara	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	28	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
11/12/2007	Hatighara	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	27	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
16/12/2007	Raicho and Hatighara	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	15 and 20	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
17/12/2007	Joypur (North) and Joypur (South)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	35 and 23	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
28/12/2007	Kalikapur	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	36	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
29/01/2008	Raicho	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	38	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
30/01/2008	Joypur (North) and Joypur (South)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	12 and 26	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
31/01/2008	Joypur (North)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	35	Motivation to use eco-toilet, JICA partnership and 20% cost sharing
9/02/2008	Joypur (North) and Joypur (South)	Dr. Masudul Hoq Chowdhury Abdullah Al Mamun Md. Jamal Hossain Md. Anwar Hossain Bhuiyan	25 and 28	Motivation to use eco-toilet, JICA partnership and 20% cost sharing

(2) Formation of Eco-san Committees

In six different villages six different eco-san committees were formed. This committee consisted of society managing committee leaders and Sub-assistant Agricultural Officer. The project manager and the BARD officials are also the member of each committee. The eco-san committee in each village did the construction work. Through this committee meeting the interested toilet owners were selected.

(3) Mason Training:

For the sustainability of the project a training course was organised for the skilled masons among these project villages on hand on skilled how to constructed eco-toilets. Twenty masons attended in the training workshop and the duration of the workshop was two days (25 December 2007 and 29 December 2007). Name and addresses of the participants are given below:

Sl. No.	Name of the Participants	Father's Name	Name of the Village
1	Md. Ali Ahmed	Md. Abdur Rashid	Raicho
2	Md. Ramiz Uddin	Md. Aminullah	Raicho
3	Md. Khoka	Md. Ali Akber	Raicho
4	Md. Amir Hossain	Md. Kala Mia	Hatighara
5	Md. Billal Hossain	Md. Hiron Mia	Hatighara
6	Md. Abul Hossain	Md. Kala Mia	Hatighara
7	Md Harun Ur Rashid	Md. Kala Mia	Hatighara
8	Md. Akter Hossain	Rustam Mia	Joypur (South)
9	Anwar Hossain	Syeed Ali	Joypur (South)
10	Mohammed Ali	Md. Safar Ali	Joypur (South)
11	Md. Abu Taher	Md. Abdul Gofur	Joypur (South)
12	Md. Abdul Latif	Md. Hamid Mia	Joypur (North)
13	Md. Dulal Mia	Md. Alal Mia	Joypur (North)
14	Md. Tazul Islam	Md. Abdur Rahman	Joypur (North)
15	Md. Hanif	Md. Abdul Mojib	Joypur (North)
16	Md. Abul Barek-1	Md. Tayeb Ali	Kakikapur
17	Md. Ayet Ali	Md. Ali Ahmed	Kakikapur
18	Md. Abdul Barek	Md. Bazlu Mia	Kakikapur
19	Md. Titu Mia	Md. Afaz Uddin	Kakikapur
20	Md. Mahbubur Rahman	Md. Ali Ashraf	Kakikapur

Goal and Objectives of the Mason Training :

The broad/general objective of the training workshop was to orient the participants about the construction of low cost eco-toilets for sustainable sanitation. The specific objectives of the workshop were:

- i) To orient the participants with the ecological sanitation.
- ii) To provide an overview of the construction of eco-toilets
- iii) To enable the participants to construct eco-toilets by themselves.

Contents of Mason Training Workshop:

There were 2 academic discussions and 7 practical sessions on eco-toilets constructions in the training workshop. The details of the workshop content are given below:

Date and Day	Time	Events	Resource Person (S)
<u>25/12/2007</u> Tuesday	9:30-10:00	Inauguration of the Training Workshop	DG, BARD, Project Director and Relevant Resource Persons
	10:00-11:00	Introduction to Eco-toilets	Dr. Masudul Hoq Chowdhury
	11:00-11:30	Tea Break	
	11:30-12:30	Theoretical perspective and Drawing and Design of Eco-toilets	Md. Jamal Hossain Abdullah Al Mamun
	12:30-1:30	Digging of Soil for the construction	Md. Jamal Hossain Anwar Hossain Bhuiyan
	1:30-2:30	Beak for lunch and prayer	Md. Jamal Hossain
	2:30-3:30	Floor and Side wall construction	Md. Jamal Hossain
	3:30-4:30	Rod, pipe cutting and slab casting	
<u>25/12/2007</u> Tuesday	9:30-10:30	Pulling of Slab and placement in the stipulated place	Md. Jamal Hossain
	10:30-11:00	Tea Break	Md. Jamal Hossain
	11:00-12:00	Slab finishing	Md. Jamal Hossain
	12:00-1:00	Construction of Side wall	Md. Jamal Hossain
	1:00-2:30	Break for Lunch and prayer	
	2:30-3:30	Side wall finishing	Md. Jamal Hossain Anwar Hossain Bhuiyan
	3:30-4:30	Construction of Roof	Md. Jamal Hossain Anwar Hossain Bhuiyan

(4) Pre-questionnaire Survey:

Three hundred households including eco-toilet owners, newly interested and others were surveyed to know the status of the households, current attitude towards the toilet use, current awareness of health and hygiene in living environment, performance of toilet and human excreta, management of human excreta and intention to improve toilet and willingness to pay etc.

(5) Construction of Eco-toilets:

Construction of eco-toilet is the main segment of the project. Earlier, JFGE financed the construction work. So, the project personnel did the construction work. Now, in this project there was provision for people's financial participation. Our calculation was based on the previous price but now the price of all construction materials was increased twice or thrice. So, people need more financial participation. Therefore, some households withdraw their name from the list. In Raicho and Hatighara village people are more motivated to have eco-toilet in their own households because they know the benefits of eco-toilets from the previously eco-toilet installed households. In Joypur (N) and Joypur (S) village people are motivated but these two

village are now going to urbanize or semi-urbanize. They already have gas line in their households. On the other hand, some households need eco-toilet but they don't have enough land to construct new eco-toilet in Joypur (N) and Joypur (S) village. But for Bamoil and Kalikapur village this concept is very new to them. First they agreed but after that they withdraw their name. They are not interested especially the use of eco-toilet because they said that it is troublesome to use. Finally 99 eco-toilets were constructed in six villages.

Name of the Village	Number of Newly Constructed Eco-toilets
Raicho	35
Hatighara	25
Joypur (South)	10
Joypur (North)	11
Kalikapur	14
Bamoil	04
Total	99

The detail list of 99 eco-toilet owners are given below:

「トイレ選定基準」

- エコサン・トイレに関心と理解を有していること。
- 住居に近く、家族全員が容易に使える場所を確保できる事。
- トイレの所有意識を持たせるため、建設コストの少なくとも20%を負担する事。
- 適切な管理が出来る事。(清掃、灰をまく、し尿の活用など)
- し尿を農地利用するため、農地を有しており農作業ができる事。
- 農地還元するし尿が衛生的に安全である場合、適当な時期に用いる事。
- 設置世帯は、追跡調査(モニタリング)に応じる事。
- 設置世帯は、トイレの維持管理にかかる全ての負担を負う事。

Eco-toilet Number	Name of the Toilet Owners
R-01	Mr. Abdur Rashid
R-02	Mr. Abdus Sattar
R-03	Mr. Md. Mostafa
R-04	Mr. Md. Sabiz Mia
R-05	Mr. Harun Mia
R-06	Mr. Abdur Rahim
R-07	Mr. Abdus Salam
R-08	Mr. Safiullah
R-09	Mr. Alamgir Hossain
R-10	Mr. Mokhlesur Rahman
R-11	Mr. Musleh Uddin
R-12	Mr. Mamin Mia
R-13	Mr. Shahid Mia
R-14	Mr. Abdul Aziz
R-15	Mr. Ali Abad
R-16	Maolana Delwar Hossain
R-17	Mr. Tazul Islam
R-18	Mr. Shahidul Hoque
R-19	Mr. Ali Ashrab
R-20	Mr. Nurul Islam
R-21	Mr. Abul Hashem
R-22	Mr. Abul Kashem
R-23	Mr. Shafiqul Islam
R-24	Mr. Abul Kashem
R-25	Mr. Sultan Ahmed
R-26	Mr. Iman Ali
R-27	Mr. Zakir Hossain
R-28	Mr. Hannan Mia
R-29	Mr. Rabindra Chandra Bakshi
R-30	Mr. Nurul Islam
R-31	Mr. Zayanal Abedin
R-32	Mr. Zohor Ali
R-33	Mr. Abu Taher
R-34	Mr. Habiz Mia
R-35	Mr. Hamid Mia
H-01	Mr. Md. Amir Hossain
H-02	Mr. Md. Hafizul Islam
H-03	Mr. Harunur Rashid
H-04	Mr. Md. Monirul Islam
H-05	Mr. Md. Abu Taher
H-06	Mr. Md. Zahirul Islam
H-07	Mr. Md. Nurul Islam
H-08	Mr. Md. Amirul Islam
H-09	Mr. Md. Billal Hossain
H-10	Mr. Md. Abul Hossain
H-11	Mr. Md. Kamal Hossain
H-12	Mr. Md. Fazlul Hoq
H-13	Mr. Md. Aman Ullah
H-14	Mr. Md. Jashim Uddin
H-15	Mr. Md. Anowar Hossain
H-16	Mr. Md. Moksat Ali
H-17	Mr. Md. Altaf Hossain
H-18	Mr. Md. Akhter Hossain
H-19	Mr. Md. Hazi Ibrahim
H-20	Mr. Md. Moniruzzaman
H-21	Mr. Md. Shafiqur Rahman
H-22	Mr. Md. Humuayan Kabir
H-23	Mr. Md. Aliullah

Eco-toilet Number	Name of the Toilet Owners
H-24	Mr. Abdul Malek
H-25	Mr. Md. Shamsul Hoq
JS-01	Mr. Md. Nowab Ali
JS-02	Mr. Md. Shahid Ullah
JS-03	Mrs. Bilkis Akhter
JS-04	Mr. Rustom Ali
JS-05	Mr. Jamal Hossain
JS-06	Mrs. Halima Mannan
JS-07	Mr. Mohammed Ali
JS-08	Mr. Rowshan Ara Hashem
JS-09	Mr. Md. Asu Mia
JS-10	Mr. Md. Ismail Hossain
JN-01	Mr. Abdul Quddus
JN-02	Mr. Dulal Mia
JN-03	Mr. Harun Mia
JN-04	Mrs. Meharun Nesa
JN-05	Mr. Farid Mia
JN-06	Mr. Shah Jahan
JN-07	Mr. Humayan Kabir
JN-08	Mr. Md. Alauddin
JN-09	Mr. Shamsul Hoque
JN-10	Mr. Shafiqul Islam
JN-11	Mr. Abul Kalam
K-01	Mr. Md. Nashu Mia
K-02	Mr. Abdul Malek
K-03	Mr. Suruz Mia
K-04	Mr. Jamal Hossain
K-05	Mr. Mafizul Islam
K-06	Mr. Younus Mia
K-07	Mr. M.A. Motaleb
K-08	Mrs. Kazal Rekha
K-09	Mr. Md. Safar Ali
K-10	Mr. Abdul Jalil
K-11	Mr. Iqbal Hossain
K-12	Mr. Ayet Ali
K-13	Mr. Titu Mia
K-14	Mr. Md. Shahjahan
B-01	Mr. Firoz Ahmed
B-02	Mr. Md. Mazibur Rahman
B-03	Mr. Md. Kamal Mia
B-04	Mr. Md. Yousuf

R=Raicho, H=Hatighara, JN=Joypur (North), JS= Joypur (South), K= Kalikapur, B= Bamoil.

(6) Training Workshops on Use of Eco-toilets:

Four training workshops were organized in four different villages. The detailed report of the workshops are given in annexure.

(7) Problems encountered regarding the construction of Eco-toilets:

1) People's Financial Participation:

When BARD and JADE started the construction of eco-toilets i.e., the lean season of Bangladesh. It was just after the cyclone SIRD. Suddenly, the price food and other commodities were increasing. The selected households are poorer compare to other households since they need toilet first and they do not have any good quality toilet or sanitary system in their houses. So, some households are not interested to participate financially to have eco-toilets in their households.

2) Brick wall vs Tin wall:

We have calculated the construction cost by estimating the use of tin cost as sidewall. The people said if they have a toilet constructing by tin wall by participating taka 2000 (Two thousand) will not be feasible. Because, toilet is one of the prestigious issues for any household. So, Brick made wall should be the important factors. But if people will construct brick wall they need more financial participation. So, some households withdraw their name from the list. But, obviously they want eco-toilet in their own households.

3) Higher price of construction materials:

When we calculated the price of the construction materials and when we went for construction the price increased twice or sometimes thrice in some construction materials like rod, cement, tin, brick, sand. But we have our fixed budget. So, higher price of construction materials had to pay by them. It is one of the reasons for withdrawal and delayed construction.

4) Leadership:

Leadership is one of the factors to work with the people. People should believe the society manager or the eco-toilet implementation committee. The society decided that first of all the interested households should pay taka 3000 to the society and they will be enlisted. But some household owners not believe the society leadership. They are thinking that there might be some corruptions by the manager of the society. So, even they showed the interest to have eco-toilet in their own households but afterwards, they just withdraw their names.

5) Problem of ownerships:

The households who paid taka 3000 to the society manager, among them some are thinking that all responsibilities go to the manager. They paid so they don't want to do any type of activities regarding the construction. Even they don't want to touch single brick. Therefore, the construction work delayed.

6) Shortage of Manpower:

We trained the mason from the villagers. Some masons are engaged in other construction works and they booked for months. So, who will construct the eco-toilet is one of the main questions. After that, the selected masons were working as part time worker for the construction of eco-toilets. So, construction works delayed. In addition, it was impossible to monitor the construction of 99 eco-toilets by BARD engineer. Therefore, some construction work was faulty and need to reconstruct.

7) Cultivating and Harvesting season:

Every year From March-April is the Boro cultivating and May is the main harvesting season. This year almost all the households have the food shortage. So, they are very much involved for Boro cultivating and after that the harvesting. Other factors are the weather forecast for cyclone NIRGIS. They are very much anxious about the cyclone disaster. It may cause the delayed of the construction.

8) Recommendations:

- Close monitoring is very much important to construct eco-toilet by using people's financial participation. So, in each village there should be one person in each village to monitor the construction work regularly. This person might be appointed from the respective village.
- Leadership of the toilet construction is very much important. So, there must be one organization for eco-toilet construction in village level with people's participation.
- Pick season and lean season should be considered for the construction work.
- There should be flexibility of budget. Because, total budget should be made according the current market price.
- There should be some allowances for the construction of each toilet in each village for the society manager. The allowances given were very much insufficient to them.

Annexure

Training Workshop on Ecological Sanitation and Use of Eco-toilets in Hatighara Village Development Cooperative Society Ltd. Workshop Completion Report(1)

1. Introduction:

After successful completion of the construction of eco-toilets in household level the necessary orientation training is required for the users on how to use these eco-toilets. In Hatighara Village total 25 eco-toilets were being constructed with the technical support from Japan Association of Drainage and Environment (JADE) and financial support from Japan International Cooperation Agency (JICA).

2. Duration: The training workshop was conducted on 23 March 2008 from 9:00 AM to 5:00 PM.

3. Venue: Hatighara Comprehensive Village Development Cooperative Society Hall Room.

4. Participants:

One male and one female household member from each toilet owner household were selected for this training workshop. So, the total participants number was 50 (fifty). The list of

participants are given below:

5. Contents: The contents of the workshop covers mainly on ecological sanitation, healthy environment, and proper use of eco-toilets and management of human excreta. The detailed workshop programme are given below:

Time	Subject/Events	Resource Person
9:00-10:00	Introduction to eco-toilets and ecological sanitation	Dr. Masudul Hoq Chowdhury
10:00-11:00	Difference between traditional pit latrine and eco-toilets	Abdullah Al Mamun
11:00-11:30	Tea Break	
11:30-1:00	Socio-cultural and Health benefit of eco-toilets: Open discussion	Abdullah Al Mamun
1:00-2:00	Break for Lunch and Prayer	
2:00-3:00	Practical Demonstration of eco-toilet use	Abdullah Al Mamun Md. Jamal Hossain 4 old eco-toilet users
3:00-4:00	Individual Demonstration	Dr. Masudul Hoq Chowdhury
4:00-5:00	Use of Urine and Feces in Agricultural Production and its benefits.	Md. Anowar Hossain Bhuiyan

Training Workshop on Ecological Sanitation and Use of Eco-toilets in Raicho Village Development Cooperative Society Ltd. Workshop Completion Report(2)

1. Introduction:

After successful completion of the construction of eco-toilets in household level the necessary orientation training is required for the users on how to use these eco-toilets. In Raicho Village total 35 eco-toilets were being constructed with the technical support from Japan Association of Drainage and Environment (JADE) and financial support from Japan International Cooperation Agency (JICA).

2. Duration: The training workshop was conducted on 24 March 2008 from 9:00 AM to 5:00 PM.

3. Venue: Raicho Comprehensive Village Development Cooperative Society Hall Room.

4. Participants:

One male and one female household member from each toilet owner household were selected for this training workshop. So, the total participants number was 70 (Seventy). The list of participants are given below:

5. Contents: The contents of the workshop covers mainly on ecological sanitation, healthy environment, and proper use of eco-toilets and management of human excreta.

Training Workshop on Ecological Sanitation and Use of Eco-toilets in Joypur (North) Village Development Cooperative Society Ltd. Workshop Completion Report(3)

1. Introduction:

After successful completion of the construction of eco-toilets in household level the necessary orientation training is required for the users on how to use these eco-toilets. In Joypur (North) Village total 11 and in Joypur (South) 10 eco-toilets were being constructed with the technical

support from Japan Association of Drainage and Environment (JADE) and financial support from Japan International Cooperation Agency (JICA).

2. Duration: The training workshop was conducted on 29 March 2008 from 9:00 AM to 5:00 PM.

3. Venue: Joypur (North) Comprehensive Village Development Cooperative Society Hall Room.

4. Participants:

One male and one female household member from each toilet owner household were selected for this training workshop. So, the total participants number was 42 (Forth Two). The list of participants are given below:

5. Contents: The contents of the workshop covers mainly on ecological sanitation, healthy environment, and proper use of eco-toilets and management of human excreta.

Training Workshop on Ecological Sanitation and Use of Eco-toilets in Kalikapur Village Development Cooperative Society Ltd. Workshop Completion Report(4)

1. Introduction:

After successful completion of the construction of eco-toilets in household level the necessary orientation training is required for the users on how to use these eco-toilets. In Kalikapur Village total 14 and in Bamoil Village 04 eco-toilets were being constructed with the technical support from Japan Association of Drainage and Environment (JADE) and financial support from Japan International Cooperation Agency (JICA).

2. Duration: The training workshop was conducted on 27 March 2008 from 9:00 AM to 5:00 PM.

3. Venue: Kalikapur Comprehensive Village Development Cooperative Society Hall Room.

4. Participants:

One male and one female household member from each toilet owner household were selected for this training workshop. So, the total participants number was 36 (Thirty Six). The list of participants are given below:

5. Contents: The contents of the workshop covers mainly on ecological sanitation, healthy environment, and proper use of eco-toilets and management of human excreta.

3-3. 建設後の経緯（2008年4月 - 10月まで）

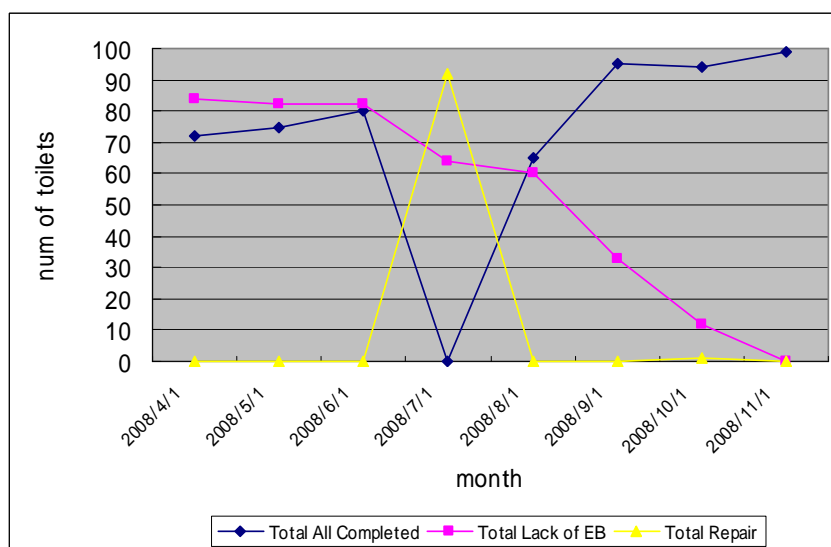
3-3-1 トイレ建設と補修

トイレ建設は2008年3月末からいっせいに始まった。建設は、Mason（大工）や労働者が確保できれば、約10日で建設可能である。しかしながら、ボロ米の収穫期（4-5月）と重なり、労働者の確保が困難な事情もあり、おおむね5月末の完成となった。

その後、多くのトイレが使用開始されたが、ことに7月の激しい雨に遭遇し、ほとんどのトイレに欠陥が見つかった。糞貯留タンクをカバーするヒートパネルが寸足らずのため、雨水が浸入し、全てのトイレの補修が余儀なくされた。

表 トイレ建設・補修の経過

Village	Situation	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08
Raicho	All Completed	30	32	35	0	35	35	35	35
	Lack of EB	25	23	23	23	23	23	6	0
	Repair	0	0	0	35	0	0	0	0
Hatighara	All Completed	20	21	22	0	0	23	23	25
	Lack of EB	25	25	25	25	25	3	0	0
	Repair	0	0	0	23	0	0	0	0
Joypur (North)	All Completed	0	0	0	0	6	11	10	11
	Lack of EB	10	10	10	4	4	1	1	0
	Repair	0	0	0	10	0	0	1	0
Joypur (South)	All Completed	8	8	9	0	9	9	9	10
	Lack of EB	8	8	8	8	4	3	2	0
	Repair	0	0	0	10	0	0	0	0
Kalikapur	All Completed	12	12	12	0	13	13	13	14
	Lack of EB	14	14	14	2	2	2	2	0
	Repair	0	0	0	12	0	0	0	0
Bamoil	All Completed	2	2	2	0	2	4	4	4
	Lack of EB	2	2	2	2	2	1	1	0
	Repair	0	0	0	2	0	0	0	0
Village	Situation	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08
Total	All Completed	72	75	80	0	65	95	94	99
	Lack of EB	84	82	82	64	60	33	12	0
	Repair	0	0	0	92	0	0	1	0



3-3-2 トイレ・モニタリング

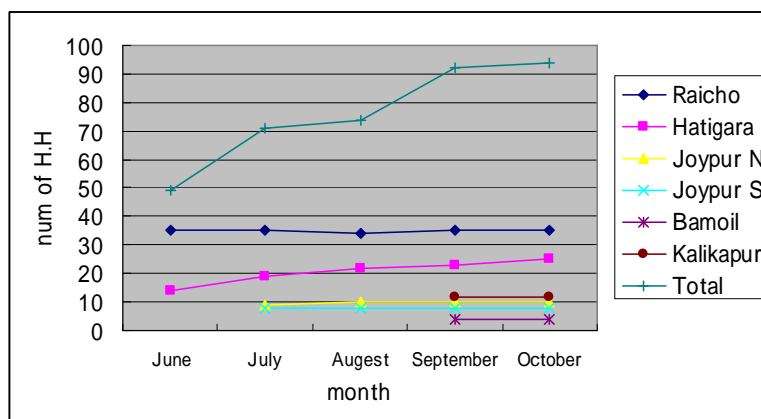
トイレ利用開始後、下表に示すモニタリング・チェックリストを使用世帯に配布し、村のトイレ委員会が、月ごとに回収し、適切な使用法について助言する方法を採用した。チェックリストは、週一回の頻度でトイレ委員会のメンバーが記入し、これを BARD スタッフが、月ごとに回収している。

チェックリスト

No.	Items
Question 1:	Is the Floor of Toilet Clean ?
Question 2:	Is around the urinal and fecal hole Clean ?
Question 3:	Is around the hole for anal washing water place Clean ?
Question 4:	Are toilet cleaning brush inside the toilet ?
Question 5:	Are ash bucket inside the toilet?
Question 6:	Are Ash used regularly?
Question 7:	Are water bucket inside the toilet?
Question 8:	Is water available in the bucket during checking?
Question 9:	Is ash available in the bucket during checking?
Question 10:	Is the fecal hole covered?
Question 11:	Are maggots inside the vault ?
Question 12:	Are many flies inside vault?
Question 13:	Is urine used with mixing water in the field ?
Question 14:	Are Slipper available in front of Toilet during inspection ?
Question 15:	Is there any mistake during toilet use?
Question 16:	Does bad smell come from toilet ?
Question 17:	Does bad smell come from urine tank ?
Question 18:	Does toilet use regularly ?
Question 19:	Is there any problem for using the toilet ?
Question 20:	How many times toilet use everyday ?
Question 21:	Does the anal washing floor clean ?

表 チェックリストの回収状況

	Raicho	Hatigara	Joypur N	Joypur S	Bamoil	Kalikapur	Total
June	35	14					49
July	35	19	9	8			71
August	34	22	10	8			74
September	35	23	10	8	4	12	92
October	35	25	10	8	4	12	94



付録) 建設終了が 2008 年 10 月末となったトイレが 4 基ある。その大きな理由は、使用者とトイレコミッティとの金銭的な問題であるが、トイレコミッティ間のトラブルもある。

Process and findings of few cases on Eco-toilet failure

The second phase of ecotoilet construction was started from February 2008 which was being undertaken by BARD in collaboration with JADE with the financial support of Japan International Cooperation Agency (JICA). In the first phase BARD and JADE constructed 15 ecotoilets where the cost was about taka 35,000 (thirty five thousand) per toilet. During that phase several workshops were held and the villagers suggested to reduce the cost of construction and if it becomes to near about taka 8000 (eight thousand) to 10,000 (ten thousand) then the new toilet owners will contribute at least 20% of the total construction cost. Accordingly BARD and JADE designed the project proposal to extend and experiment this project for wider range. This proposal was placed to JICA for funding and then JICA agreed to collaborate with BARD and JADE. In the project protocol it was outlined to construct 100 (one hundred) ecotoilets in six villages namely Raicho, Hatighara, Joypur (North), Joypur (South), Bamoil and Kalikapur. It is noted that Bamoil and Kalikapur are the new villages where the previously setup eco-toilets were not exist.

The construction process was started by formation of ecosan committee in each village where the Chairman of the respective cooperative Society was selected as the President of the ecosan committee. In this process, six ecosan committees were formed in six villages where BARD and JADE representatives are the member of that committees.

JADE provided about taka 8200 (eight thousand two hundred) for the construction of each toilet. There were several meetings with ecosan committees to implement this project specially the construction of ecotoilets in six villages. The outcomes of these meetings are as follows:

- a) The toilet owners will be selected by the society itself.
- b) The toilet owners will contribute the rest amount of money needed for construction.
- c) BARD will assist the construction process specially the technical side of the construction.
- d) The toilet owner's contribution will be collected by the society itself and ecosan committee will assist them.
- e) The committee will spend all money as per the expenditure to construct and BARD will provide the amount of money (taka 8,200 per toilet) provided by JICA and JADE.
- f) BARD will monitor the whole construction process of ecotoilets.
- g) BARD will conduct the training courses regarding the proper use of ecotoilets.

As per the decision of the ecosan committees the ecotoilets construction started with toilet owner's financial participation. During the collection of money from the owners those who agreed to participate at the beginning and have ecosan toilet in their homestead area, some owners faced the difficulties to arrange money and the societies specially Joypur (North),

Joypur (South), Kalikapur and Bamoil faced the same difficulties and ultimately they had to reduce the number of toilets installation. But on the other hand, Raicho and Hatighara wanted more toilets what was listed previously. So, finally the number of toilets were installed in six villages were Raicho-35, Hatighara-25, Joypur (N+S)-21, Kalikapur-14 and Bamoil-4.

It was found that among the 99 ecotoilets 4 toilets have some difficulties in terms of construction or use. The processes and findings are discussed below separately:

1. Case 1:

a) Toilet No. JN-07

b) Name of the Toilet Owner: Mr. Humayan Kabir

Mr. Humayan Kabir was the small electronic mechanic working in Joypur (N) village and his shop was near the society office. When BARD and JADE officials went the society office and described the project specially to install ecotoilets in their villages, he was very much interested to get one in his homestead area since he does not have a good quality and environment friendly toilet. The ecosan committee of this village calculated the unit cost of one ecotoilet and it was found that the unit cost for construction might be taka 10,500 (ten thousand five hundred). So, deducting the JICA contribution, he had to pay taka 2300 (two thousand three hundred) to get one ecotoilet.

His net income was not so good and he was thinking to go abroad for more income. He lost his father at the early childhood and there is no other family member for income. So, the whole family depends on his income. He was SSC pass and so, he is not interested to go to Saudi Arabia or other Middle –East countries as labour. Therefore he tried to go to South Korea as small-scale electronic worker so, he need to know the Korean language.

At the beginning of the construction he left for Dhaka to attended Korean language class and stayed in Dhaka without giving the full contribution of his part. The toilet committee communicated with him several times and he committed to construct the rest part of the ecotoilet after returning home. So, the toilet committee constructed the whole toilet body without roof, door and evaporation bed.

Mr. Kabir returned home on 25 October 2008 and the started the reconstruction of toilet remaining part. He promised to use the toilet properly. If he can go to South Korea then his family member will use the toilet since they received the orientation of how to use the ecotoilet.

2. Case 2:

a) Toilet No. K-07

b) Name of the Toilet Owner: Mr. M. A. Motaleb

This case is the most interesting case what is being found in this project implementation process. Mr. M.A. Motaleb is the Chairman of the Kalikapur Comprehensive Village Development Cooperative Society as well as the Chairman of ecosan committee. So, when the society decided to distribute the resources for ecotoilet construction, Mr. Motaleb showed the interest to get one toilet for his use. Even he has already a sanitary toilet but he showed interest to get one ecotoilet for the labours working his house.

The Manager of the Kalikapur society Mr. Shah Alam handled all the money for toilet construction. For all the six societies the Manager of the respective societies had the responsibilities of taka collection as a part of the toilet owners and handle the toilet construction expenses. But for Kalikapur the Chairman Mr. M.A. Motaleb had the interest to handle the money, so that he can manage his contribution without spending his own money for his toilet construction. But the committee decided that the manager would be the responsible to operate the money for construction. From this point a conflict created between the Manager and the Chairman of the society regarding the toilet construction issue and after that the chairman tried to make difficulty for the manager in ecotoilet construction.

Mr. Motaleb did not contribute his part and he tried to mobilize the others. But the other toilet owners did not respond his bad opinions and they came to know the bad aims of the chairman. The toilet committee along with the BARD officials seated together several times but failed to motivate Mr. Motaleb.

Some political reasons are also working there. Few months ago from the ecotoilet construction for his house a toilet was also there. But the opposition party could not enter his house and then they broke that toilet situated outside the house. After that he wanted to construct new ecotoilet in the same place to show the opposition party. It was heard that the Manager of the society belongs to the opposition party person of the chairman but manager did not involve any activities against the chairman.

3. Case 3:

- a) Toilet No. H-14
- b) Name of the Toilet Owner: Mr. Md. Jashim Uddin

Mr. Md. Jashim Uddin is the owner of one of the ecotoilets of Hatighara. He is very idle man and no literacy. But he shared the owner's part as decided by the Hatighara ecosan committee. During the construction of his ecotoilet he paid his part but he had no helping attitude towards the mason and also the manager of the society. According to the manager's opinion he said that "I was pressurized by the society, so I paid my contribution but I don't have any interest to use ecotoilet". The manager was asked regarding his opinion but different opinion was found. According to manager's opinion he misbehaved with the mason and the carpenter during the construction. Therefore, the carpenter did not hold the door even door was constructed. The manager and the BARD officials tried to motivate him several times and finally BARD officials showed fear of police and the administration. After that he motivated to reconstruct the evaporation bed and the door. In addition he agreed that he and his family would start the toilet use from October 2008.

4. Case 4:

- a) Toilet No. H-17
- b) Name of the Toilet Owner: Mr. Md. Altaf Hossain

In Hatighara village Mr. Md. Altaf Hossain is the owner of one ecotoilet. He was supposed to pay his contribution to the manager during construction. But manager said the toilet owner did not pay the full amount of money as required and he paid almost 60% of his

contribution as needed. So, during construction the door of the toilet was not made for his toilet. But according to the opinion of the toilet owner he said that he paid all required amount of money as fixed by the ecosan committee. So, there is a conflict between the manager and the toilet owner. Because of lacking of door, the toilet is still not use by the household members.

The BARD authority tried to seat with the toilet owner and the manager of the society but failed to get them in one place. But this process should be continued by the BARD authority to motivate the toilet owner to make the toilet usable.