Sida Evaluation 04/21

Water Education in African Cities

United Nations Human Settlements Program

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Department for Infrastructure
and Economic Co-operation

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1 Executive Summary

Part A—Background

1. The Values-based Water Education (VBWE) Project is a component of the "Managing Water for African Cities Programme", a collaborative venture of UNCHS (Habitat) and UNEP established in 1997 within the framework of the United Nations System-Wide Special Initiative on Africa. The rationale for the VBWE project was one of sensitising water users to the need to value water in the conduct of their daily lives. This was to be achieved through educational means in schools and communities. It was instituted formally in March 2000 and in March 2001 the Swedish International Development Co-operation Agency (Sida) and UN-HABITAT concluded an agreement for its implementation to be conducted in the participating African cities.

2. The project has had the following components:

a) Curriculum development and introduction of water education in pilot schools in each city

b) The establishment of water education classrooms in each city. This would also include the introduction of schools water audits and water quality education.

c) The introduction of non-formal education with community initiatives.

d) Other activities

3. Activity (a) was planned as a cascaded programme of training in which teachers would be trained by a small group of people who had already been introduced to the technique of EHV. As a first step in the process UN-HABITAT convened two sub-regional workshops to expose educators and those involved in the implementation of the project to the concept of VBWE and its possible use through formal, non-formal and informal channels; and to develop country-level action plans for project implementation in the participating countries. The workshops were held in Ndola, Zambia and Accra, Ghana.

4. Activity (b) was carried out in collaboration with the utility Swedish Water Development (SWD). SWD commissioned the Stockholm Water Company (SWC) to provide a programme together with the Stockholm Water Institute (SIWI). SWC has had considerable experience in water-related environmental education and SIWI is an awareness-building scientific and technical NGO with wide international experience. The SWD team played a major role in a second set of TOT workshops in June (Lusaka and Addis Ababa) and October (Accra, Abidjan, Dakar and Nairobi) 2003. These were designed to introduce the notion of the "water classroom" to the trainers at country level. Guidelines were provided on how to establish and run a water classroom and in addition Schools Water Audits and Water Quality Education were planned for each city.

5. Under Activity (c) the following was planned for each city:

- Identify on-going non-formal education initiatives
- Conduct VBWE needs assessment
- Develop appropriate resource materials and tools
- Conduct TOT workshop for NFE practitioners
- Conduct pilot tests in selected communities

In practice the approach to non-formal education has varied from country to country. The main focus has been carried out in one city, Nairobi. Here the project has been conducted through a consortium of NGOs who, following two exploratory workshops, have instituted a series of pilot projects throughout the city. In this sense Nairobi is being considered as a test case. Other countries are developing this component based on their local situations. In some countries, non-formal education is treated as part of the formal education programme.

6. Other planned activities included information exchange and North-South twinning arrangements, water health care education and organising study visits. There have been preliminary discussions on using the Internet to facilitate information exchange between African and Swedish schools linking schools through the Internet but not much more appears to have been done so far. There have also been a number of international forums and expert group meetings that have taken place in recent months. Finally UN-HABITAT launched a trust fund in October 2002 with the aim of contributing to the MDG targets for 2015.

Part B—Field Visits and Main Evaluation

7. The value of the project has been some $800,000 spent over a period of 3 years. The project has been backstopped by a small project staff at UN-HABITAT who have carried out their tasks with flair and enthusiasm. With these funds a variety of outputs have resulted. These are outlined in the main text. In the view of the evaluation this represents good value for a relatively small investment of resources, especially so given the novel nature of the project. This is a highly innovative project and the Swedish International Development Co-operation Agency (Sida) should be commended for having had the courage and foresight to commit scarce resources to a project that is quite new in development aid terms.

8. In terms of impact there is enthusiasm for the VBWE programme on the part of stakeholders in all countries. Despite problems and difficulties that one must expect in an innovative project of this kind, practically everyone interviewed expressed the view that UN-HABITAT and its donor bodies had been correct to pioneer the venture. They had learned a great deal in the process and looked forward to continuance in Phase 2. The points of issues and problems (outlined below) that have arisen should therefore be seen as pointers to potential improvement mechanisms that may be considered by UN-HABITAT and its collaborators.

9. In every country there is a marked lack of adequate infrastructure in the pilot schools, especially concerning water and sanitation. This takes the form of equipment malfunction such as breakages and non-repair of taps, the breakdown of boreholes and pumps, unsanitary piping, lack of adequate lavatory facilities, excessive crowding in classrooms (and lack of sufficient classrooms) and straightforward water shortages over significant periods of the school calendar year. It is hard to inculcate improved behaviour in the context of water use and management if the basic infrastructure is lacking. Phase 2 should therefore place emphasis on infrastructure provision.

10. In most cases the pilot schools chosen were basic schools dealing with the poorest sections of the community and drawn from sample locations. They were thus representative of this type of school. In general schools were fairly crowded with high teacher/pupil ratios. In some cases class sizes were up to 80 per class though the average was somewhat lower than this. It was rare, however, to find a class size smaller than 45. In some cases population pressures have meant that schools need to teach in two shifts per day. This issue should be borne in mind when planning Phase 2

11. In terms of choice of school for pilot status there were differences among the countries. In some cases the schools were chosen because they were near a source of water (say a river). In other countries the criterion of choice was as a representative of districts or zones within the cities. In two of the countries pilot schools were not confined to the capital city but were chosen also from schools in other towns or from neighbourhoods at some distance removed from the capital. This was in order to obtain a wider range of experiences about the introduction of VBWE. Schools dealt with children mainly at primary level though some included pre-school pupils and pupils from the first years of high school as well. Overall the range of schools was sufficiently representative for the purposes of a pilot project.

12. In terms of curriculum development in each country a small team of trainers was given initial training following which the "trainees" then trained teachers in the pilot schools. In all cases the TOT format has taken the form of an intensive workshop lasting around 5 days. Subsequent teacher training appears to have been carried out in a similar broad format in all the countries though often the time involved was shorter. While many examples were found of successful VBWE practice taking place and strong support from education authorities, head teachers and other stakeholder groups, it is also clear that there is room for improvement. In many cases teachers had not fully internalised the VBWE philosophy and practice, teacher training as a whole has been insufficient and there are weaknesses at the level of TOTs. Accordingly the following are recommended.

- Since the process of internalising is more complex than may be readily understood by the newcomer more time should be given in the initial training of the trainers to the underlying philosophy of VBWE and its pedagogical fundamentals
- Teacher training sessions should be confined to relatively small groups of teachers.
- Workshops should be conducted in "interactive" rather than "didactic" mode.
- Periodic refresher courses should be mounted to reinforce learning. At these the original trainers should be involved.
- Expert groups should continue to play a role in later stages of the cascade process.
- "Teachers guides" have been produced but are often rather lengthy and complex documents. Since the essence of VBWE is new to most teachers it is suggested that countries produce also a simplified and shorter version of their guides to ensure that its basic fundamentals are clearly understood.

13. Almost every pilot school visited experienced shortages of basic equipment, teaching materials and other teaching aids. These include simple items like chalk, crayons, paper and wall posters as well as more complex items like simple laboratory materials such as burettes, pencils, receptacles, a microscope etc necessary for establishing a simple water classroom. A related issue mentioned frequently concerned expenses for travel and subsistence. In some cases these problems may be due to budgetary issues at country level. In other cases the budgets allocated may simply have been insufficient. However, clearly when the VBWE project moves on to Phase 2 and where expenditures will inevitably be of a higher order, the project will need to ensure that problems of this kind are minimised. Some ideas about how to deal with this are discussed in the text.

14.One technique that some schools use is that of introducing VBWE into extracurricular activities. These are called water clubs and meet outside normal class hours as one of a number of "clubs" that pupils belong to. These appear a successful venture. It is suggested that the establishment of

such activities could be a useful complement to the more formal lessons conducted within the classroom and should therefore be encouraged in Phase 2.

15. A feature that became evident as the evaluation proceeded is the importance of organic links with the communities within which the pilot schools are located. Where this had been done the impression was given of more complete acceptance of VBWE at all levels. Accordingly it is recommended that future plans include measures to encourage this aspect.

16. Non-formal education activities were explored in detail mainly within Nairobi since time did not allow for visits to corresponding activities in the other countries. In Nairobi there has been considerable activity. The NGOs concerned have been active in promoting community-based training through a series of workshops and in the two cases visited they are clearly making an impact. However, the greater impact seems to have occurred where attention has been paid to infrastructure creation since water and sanitation conditions are poor in all cases. Accordingly while endorsing this aspect of the project and its continuance in Phase 2, it is suggested that infrastructure provision is also given high priority.

17. In all countries visited, the operational focal point has been connected to educational administration. In some cases this has been as part of the ministry of education. In other cases the relevant body has been connected with the urban management. These aspects on the whole have been managed well but some issues remain. One such issue are (patchy) links between different organs of governance. It is not always the case, for example, that water authorities and educational authorities have co-operated as closely as they might have. Nor are there always close links established between formal and non-formal activities within the same country. At present this does not appear to be a serious problem since the small pilot scale of Phase 1 has meant that some ad hoc contacts have usually been maintained. However, in the bigger projected scale of Phase 2 operations, the issue might become more serious and hence may need attention. A second issue mentioned by some countries was the non-involvement of school heads at early stages of Phase 1. Usually this was inadvertent and not designed to bypass normal channels. But it did have the effect of making the project less effective than it might have been. Accordingly the planners of Phase 2 are advised to ensure that school heads are consulted at an early stage in proceedings. A third issue were periodic complaints about shortages of funds (see para.13 above). Finally, attention should be given to the provision of incentives to encourage and reward project participants.

18. A final point to emphasise is that of the administration of Phase 2. Experience gained in this evaluation indicates that there is need for two types of backstopping. The first is pedagogic. By this is meant the need for continuous academic guidance from groups and individuals such as those who have pioneered VBWE and played such a significant role in the pilot phase. The expanded scale of Phase 2 will require a similar, but greater, scale of involvement if this phase is to be fully successful. For example, the project might establish a larger steering group consisting of knowledgeable individuals whose advice and input may be drawn upon as and when needed. Careful thought should be given to this aspect. The second type of backstopping is administrative and financial. From all accounts it is likely that Phase 2 may become larger with significant sums of money pledged to ensure the integration of new schools in the existing countries and the addition of new countries into the programme (including countries from other continents). Phase 2 will therefore be dealing with large amounts of project funding and the question arises as to how this can be managed. Some ideas on how this could be managed are provided in the text.

19. This evaluation endorses a continuance into Phase 2. Indeed it believes the VBWE programme to be a necessary one because of the breakdown of traditional behaviour and erosion of values over

much of Africa and because of the seriousness of the water crisis. Nor, as has been pointed out by many, are human values foreign to most African countries. In fact they are inherent in the African tradition. And when confronted with their existence and significance most stakeholders readily agree that their adoption is a necessary condition for a return to responsible behaviour on the part of all in society. The suggestions and comments in the previous section should therefore be seen as suggestions to strengthen this second phase and to ensure successful implementation of the mission. The forward-looking strategy for Phase 2 has been written with this endorsement in mind.

20. The underlying principle for the suggested forward-looking strategy is that schools should be seen as centres for improved water and sanitation facilities in the communities in which they are located. In each city communities through their representative councils would bid for selection in concert with school principals and other school leaders. They would be assisted where possible by representative NGO groups and would be expected to contribute resources to project proposals. Focal points would establish guidelines for proposals and select target schools against agreed criteria laid down by UN-HABITAT. Selected projects would have two components: viz. (i) a pedagogic component and (ii) a water and sanitation component. UN-HABITAT will need to expand its capacity to backstop Phase 2 accordingly.

2. Introduction

This report is based on a 2-month assignment conducted over the period March to July 2004. The first part of the assignment (covered below in Part A) was devoted mainly to a preliminary review of written documents concerning the VBWE programme. These were provided by the secretariat of UN-HABITAT. This review was carried out in March and April and led to the development of an evaluation framework and questionnaire. The second part consisted of a field visit undertaken in four of the six countries involved in the VBWE pilot phase[1]. This was carried over a 2/3-week period in May and is covered here in Part B. Inevitably the short time scale involved has reduced the opportunity to fully investigate all aspects of this pilot project. In particular the details on water classroom developments have not been explored as fully as I would have wished. Nevertheless I believe that the conclusions and forward-looking strategy outlined at the end of this report represent a fair assessment of Phase 1 of this project and a reasonable prognosis for Phase 2. Further details on the evaluation and its methodology may be seen in the Appendix.

In his address to the Expert group meeting in held in Johannesburg in 2001 Professor Kader Asmal (Minister of Education, Govt. of S Africa, noted that the original "Managing Water for African Cities Programme was a collaborative venture of UNCHS (Habitat) and UNEP established in 1997 within the framework of the United Nations System-Wide Special Initiative on Africa[2]. It was a direct follow-up of the Cape Town Declaration (1997) adopted by African Ministers addressing the urgent need for managing water for African cities". By 1999 the initiative had agreed to concentrate on three broad aims:

1. Operationalising an effective Water Demand Management (WDM) strategy in seven demonstration cities for efficient water use by domestic users, industry and public institutions

[1] It also reflects a visit to the UNESCO-SEAMEO conference in Bangkok, May 27th–30th.

[2] See UN-HABITAT (2001) page 2. The speech is given on pages 2–5 and is an excellent summary of the thinking behind the decision to introduce an educational element into the Six Cities programme.

2. Building capacity at city level to monitor and assess pollution loads entering freshwater bodies from different sources, and putting in place early warning mechanisms for timely detection of emerging hotspots of urban pollution

3. Enhancing regional capacity in the area of urban water resources management through information exchange, awareness raising, training and education

The decision to introduce Values-based Water Education (VBWE) into 7 African cities[3] seems therefore to have been as part of a gradual recognition of the importance of educating the "consumer" to appreciate the delivery of this important infrastructural resource. And very probably one influential factor may well have been the failure of previous "supply driven" approaches to dealing with water problems in developing countries. Otieno, for example in his paper to the 2001 conference[4] points out numerous examples of donor driven projects that have failed to deliver sustainable water supplies to target communities. His analysis identifies the following problems:

- Poor sense of ownership on the part of local communities
- Lack of community participation in project planning
- Lack of community involvement in catchment protection schemes
- Upstream-downstream conflict resolution issues

Each of these concerns a failure to involve target communities in the planning, implementation and subsequent management of projects. Where such "ownership" does not obtain it is common for individuated interests to take over and for facilities to be thereby abused. For Otieno therefore, the issue is really one of a need to focus more on target communities themselves. If sustainable access to water is to be achieved then the consumer (both individually and collectively) has to see that it is in his own interests to alter his value system. This can only be achieved in the long term through appropriate training and sensitisation measures that are designed to transform behaviour at every level—hence the need to adopt a "values" approach.[5]

It is precisely here that the Education in Human Values (EHV) approach can play a major role. It is an approach that has potential at any level, from affecting the behaviour of young children at primary school to changing attitudes in small local communities. It focuses on human values that are common to all humanity whatever the country, customs or religion that obtain in any community. These values include "truth", "peace", "non-violence", "love" and "right conduct". They may be taught directly through a series of processes such as group singing, story telling, silent sitting and role-play. They can also be introduced more generally into more mainstream curricula. The technique has been introduced into many countries and early indications are that it seems quite successful. For example there is evidence that child behaviour, child learning and teacher stress indicators have often improved.[6]

[3] Abidjan (Cote d'Ivoire, Accra (Ghana), Addis Ababa (Ethiopia), Dakar (Senegal), Johannesburg (South Africa), Lusaka (Zambia) and Nairobi (Kenya). In the event the Johannesburg withdrew from the programme.

[4] See Otieno (2001) pp 85–96

[5] It is interesting to note the correspondence here with other aspects of development. For example, there is now widespread agreement that sustainable development in rural parts of poor countries needs a much stronger commitment to target communities themselves who are the true custodians of development. By focusing on such communities themselves, building relevant capacities, listening to expressions of need, the concerned "donor" will be in a much better position to intervene successfully and ensure that his interventions will be sustainable and timely.

[6] See for example Jumsai (2003)

3. Part A—Background

A High-Level (Ministerial) Advisory Group comprising responsible Ministers from the seven original participating countries was established to provide oversight and guidance to programme implementation. At its second meeting held in The Hague in March 2000 this group adopted a resolution requesting the implementing agency (UN-HABITAT) to widen the scope of its programme to introduce water education in the participating cities. There followed extensive consultations with a variety of stakeholder groups culminating in a project proposal submitted to the Swedish International Development Cooperation Agency (Sida) for funding support. This was agreed to by Sida and in March 2001 an agreement was concluded between Sida and UN-HABITAT for the implementation of a water related education project to be conducted in the participating seven African cities[7]. To expedite the project UN-HABITAT then convened an Expert Group meeting in Johannesburg in April 2001. It was at this meeting that a decision was made to introduce VBWE as a component of the Water for African Cities Programme[8]. It was further decided to proceed by means of related activities as follows[9]:

1. Curriculum development and introduction of water education in pilot schools in each city
2. The establishment of water education classrooms in each city. This would also include the introduction of schools water audits and water quality education.
3. The introduction of non-formal education with community initiatives.
4. Other activities and components

1. Curriculum Development and Introduction of Water Education in Pilot Schools

This activity was planned as a cascaded programme of training in which teachers would be trained by a small group of people who had already been introduced to the technique of EHV. As a first step in the process "UN-HABITAT convened two sub-regional workshops to expose educators and those involved in the implementation of the project to the concept of VBWE and its possible use through formal, non-formal and informal channels; and to develop country-level action plans for project implementation in the participating countries."[10] The workshops were held in Ndola, Zambia and Accra, Ghana. They brought together senior professionals from the education and water sectors from all six countries and seem to have played an important role in sensitising senior stakeholder personnel to the issues involved.

(i) Training of the Trainers

Under this activity the first step was that of "training of the trainers" (or TOT). This was outsourced to a specialised educational institution in Zambia (TAISSE). Starting in early 2002 TAISSE reviewed the school curricula of the "six participating countries from kindergarten to high school, extracting water-related topics from the syllabi and preparing lesson plans."[11] These were designed to act as a pedagogic guide and supplementary materials for demonstration purposes. After preparation they were sent to educational specialists in the 6 countries for review and comment. Most of the feedback seems to have been favourable. TAISSE then convened a series of high-level workshops in each of the 6 cities between July and October 2002. It targeted inspectors of schools, curriculum developers, subject specialists and selected NGO leaders including those linked to non-formal education groups. Ministries of Education selected candidate pilot schools in each of the 6 cities.

[7] But see footnote 4 above.

[8] Although UN-HABITAT has no special expertise in educational matters it was felt that it was the most appropriate body for historic and operational reasons

[9] These activities are a précis of those outlined in UN-HABITAT (2004), Annex 1, pp 15–19

[10] See UN-HABITAT (2003; 4) p 201

[11] See TAISSE (Undated; 3) Part 1.

The workshops were opened by high-level government personnel and lasted for around 5 days each. Their objectives were broadly to help trainees understand EHV in relationship to water education and to integrate values into water related topics drawn from school curricula. A secondary consideration was that the trainees could also become VBWE trainers in their own countries. Having been introduced to the VBWE techniques trainees began to develop their own country-specific lesson plans and latterly prepared action plans for subsequent phases of the project. The end result of this TOT phase was the creation of national teams of trainers for each country who would in turn impart VBWE training to primary and secondary level teachers in their respective countries.

Table I: Summary of progress in Curriculum Development and Introducing Water Education in Pilot Schools

City/ Country	Number of pilot schools	Project Activities				Monitoring
		Development of teacher training resources material	Training of trainers for water classrooms	Training of teachers from pilot schools	Pilot testing in schools	
Abidjan (Cote d'Ivoire)	9	Accomplished March 2003	Accomplished October 2003	Accomplished March/April 2003	Started June 2003	Accomplished July 2003
Accra (Ghana)	6	Accomplished March 2003	Accomplished October 2003	Accomplished March 2003	Started April 2003	Accomplished July 2003
Addis Ababa (Ethiopia)	6	Accomplished in May 2003	Accomplished June 2003	Accomplished June 2003	Started September 2003	Accomplished August 2003
Dakar (Senegal)	10	Accomplished March 2003	Accomplished October 2003	Accomplished March 2003	Started April 2003	Accomplished July 2003
Lusaka (Zambia)	6	Drafting Workshop August 2003	Accomplished June 2003	Accomplished August 2003	Started September 2003	Accomplished September 2003
Nairobi (Kenya)	8	Accomplished May 2003	Accomplished October 2003	Accomplished July 2003	Started September 2003	Accomplished February 2004

Source: UN-HABITAT (2004)

(ii) Training of Teachers from Pilot Schools

Having received training during the TOT phase, the next step was to train the teachers in these schools. Table 1 above summarises the progress made in this activity over the period March to September 2003. In order to achieve this each country's trainers developed teacher training resource material. This material was then used in the training process.

(iii) Pilot Testing in Schools

Table 1 also summarises this stage in the cascaded process, that of introducing VBWE directly into the pilot schools themselves. It was begun in Dakar (April 2003). In all cases a team from TAISSE monitored the progress of this stage completing their work in Nairobi in February 2004.

2. Water Classrooms

This activity anticipated the following steps for each city:

- Locating a suitable site (sites) for a water classroom
- Setting up the classroom infrastructure
- Developing resource materials and an inventory list of equipment

- Recruiting teachers to run the classrooms
- Training these teachers
- Designing and distributing a water classroom brochure
- Officially opening the classrooms
- Information dissemination to all schools in the city
- Training c. 1000 children in the classroom

In addition Schools Water Audits and Water Quality Education were planned for each city. This was to include:

- Organising consultations to identify a focal points for a school water audit in each city
- Establishing a city schools water audit committee
- Developing water audit resource materials/kits
- Conducting city audit TOT workshops for teachers
- Operationalising water audits in pilot schools
- Identify suitable streams and rivers in the city
- Grouping schools in close proximity to a stretch of this river or stream
- Developing/adapting water quality kits
- Conducting water quality education training workshops for schools
- Setting up schools water quality databases.

An important input for the water classroom component was the contribution from Sweden. Not only (as noted above) did Sida contribute financially but also the utility Swedish Water Development (SWD) was commissioned to take part in the process and to share Swedish experiences in water education. SWD then commissioned the Stockholm Water Company (SWC) to provide a programme together with the Stockholm Water Institute (SIWI). SWC has had considerable experience in water-related environmental education and SIWI is an awareness-building scientific and technical NGO with wide international experience. The SWD team played a major role in a second set of TOT workshops in June (Lusaka and Addis Ababa) and October (Accra, Abidjan, Dakar and Nairobi) 2003. These were designed to introduce the notion of the "water classroom" to the trainers at country level.

Each workshop lasted for around 2 days and was based around three texts, viz.

- *The Handbook, The World of Water – Adventures of an African Water Drop*
- *The Water Cycle (poster)*
- *Water Audit – Quality and Quantity*

Also guidelines were provided on how to establish and run a water classroom. The workshops appear to have been carried out successfully. Actual provision of classroom infrastructure has been the responsibility of the classroom host. UN-HABITAT was only responsible for facilitating the purchase of classroom equipment. Countries are also free to establish classrooms outside (hosted by a water utility) or

within schools. Most of the cities claim to have now finished necessary renovations or construction of infrastructure. UN-HABITAT has also disbursed funds for purchase of necessary equipment. However, as we shall see below actual classroom teaching has often not started due to delays in the construction of the classrooms.

3. Non-Formal Education [NFE] with Community Initiatives

An important part of Phase 1 has been the view that it is necessary not only for VBWE practice to be introduced into the formal school curriculum, but also for the project to reach non-formal channels particularly those in deprived urban communities. Under this heading the following was planned for each city:

- Identify on-going non-formal education initiatives
- Conduct VBWE needs assessment
- Develop appropriate resource materials and tools
- Conduct TOT workshop for NFE practitioners
- Conduct pilot tests in selected communities

The approach has been one of encouraging NGOs to integrate their activities with the VBWE project. In some countries (e.g. Senegal) this has involved working with government/city authorities since the NGOs concerned only operate in direct partnership with central authority. A second mode was adopted in Nairobi and involved working with a consortium of NGOs to integrate VBWE factors with their on-going programmes. Here the project was entitled the Value-Based and Water Sanitation Education (VB-WSE) project with a greater apparent emphasis on sanitation aspects. The implementing group was a consortium of 6 NGOs working within informal settlements. The six NGOs were Kenya Freedom from Hunger Council (KFHC) (lead organisation), Intermediate Technology Development Group-East Africa (ITDG-EA), Maji na Ufanisi (MNU), Earth Care Africa (ECAF), St John's Community Centre (SJCC) and Africa Water Network (AWN). The activity began with a VB-WSE TOT workshop in Embu, Kenya. This took place between 14th and 18th October 2001 and brought together experts from the implementation agencies, UN-HABITAT as well as implementers through formal channels such as schools. One output from this workshop is a VB-WSE Training Guide for Community Channels. There is evidence that this guide has since been improved to reflect the needs of communities in managing water, environment and sanitation issues by inculcating human values through continuous consultations with individual stakeholders.[12]

There has since been a second Joint VB-WSE Sensitisation Workshop for Community Leaders and Community Resource persons held between 9th and 11th September 2003. This workshop brought together VB-WSE through community channels TOTs, community leaders and community resource persons. The idea was to hold an interactive set of meetings where community participants would share their experiences in water, environment, sanitation and hygiene within informal settlements. In this way there would be added an essential participation element to the activity. Also pilot testing of VBWE programme has been started in selected communities. It is intended that the experiences gained so far will be replicated in the other five cities.

[12] See UN-HABITAT (2004), p 43 where the claim is made.

4. Other Activities and Components

These included the following:

- Information exchange and North-South twinning arrangements
- Water health care education
- Organising study visits

There have been preliminary discussions on using the Internet to facilitate information exchange between African and Swedish schools linking schools through the Internet. This is being planned by SWD but not much more appears to have been done that is not already discussed above. However, finally there have also been a number of international forums and expert group meetings that have taken place in recent months as follows:

This was held in August 2003 in Nairobi to review progress on Phase 1 and make appropriate recommendations for implementation of Phase 2. It outlined the following activities for Phase II of the water education component:

- Conduct VBWE teacher training programmes in colleges of education
- Conduct VBWE in service refresher training programmes in schools
- Conduct VBWE orientation programmes for new schools
- Undertake sanitation and hygiene in VBWE in schools and communities
- Reinforce learning activities in water classrooms through the provision of resource materials adapted to local conditions and needs.
- Reinforce non-formal VBWE programmes in communities and informal schools with focus on propoor governance
- Construct water and sanitation facilities
- Review of existing teacher education curricula and development of resource material
- Initiate collaborative and partnership arrangements with relevant institutions and stakeholders
- Link VBWE activities with ongoing public awareness campaigns
- Develop in-built monitoring and evaluation mechanisms in VBWE programmes.
- Conduct school study visits, competitions and twining of schools.

(b) Water Education Session at the first Pan-African Implementation and Partnership Conference on Water (PANAFCON)

This was held in Addis Ababa from December 8th to 13th under the aegis of the African Ministers' Council on Water (AMCOW). It was attended by approximately 1000 delegates and 45 water and environment ministers representing countries throughout the continent. It was co-sponsored by UN-HABITAT, UNECA, UNEP, WMO, UNESCO, FAO, UNDP, UNICEF, AfDB, NEPAD and the Ethiopian Ministry of Water Resources. Its aim was to determine how to urgently strengthen water governance in the region in order to meet collectively WSSD targets and the MDGs on safe water and sanitation. During this conference UN-HABITAT organised a session on Water and Sanitation for African

Cities, together with the Water and Sanitation Programme (WSP) of the World Bank, UNEP/GPA and the African Water Task Force (AWTF). The session dealt with the key challenges faced by African cities in this sector and the need to share good practices.

(c) Country Implementation Plan Formulation for Phase II of the Water for African Cities Programme

This was held in Addis Ababa from 6th to 7th December 2003 just before the PANAFCON meeting. "The Workshop was attended by some 50 policy makers and water sector experts from 16 African countries. It provided a forum for all participating cities to work together in formulating their country implementation plans, and to begin the process of fostering synergy and nurturing the principle of sharing and disseminating experiences between participating cities. Phase II of the water education component of the programme was discussed and country plans formulated"[13]

(d) SE Asia Regional Consultation on VBWE

This took place in Manila from 29th November to 2nd December 2003 and was jointly organised by UN-HABITAT and SEAMEO. It was hosted by the Department of Education of the Government of Philippines. The consultation was attended by over 100 participants drawn from 20 countries of the Asia pacific region. The participants were drawn from senior officials from ministries of education in South East Asia, experts on VBWE, representatives of agencies responsible for provision of school water and sanitation facilities, and representatives of international agencies. During this meeting experiences from Africa were shared with participants.

Water and Sanitation Trust Fund

An important issue affecting the viability of the VBWE programme (and the 6 cities programme more generally) is that of providing the necessary resources to ensure its success. Another is that of providing necessary infrastructure for water and sanitation delivery. It is one thing to introduce values as a means of improving the sustainable use and management of water. But if there is little improvement on the supply side such injunctions may tend to fall on deaf ears. UN-HABITAT launched a trust fund in October 2002 with the aim of contributing to the MDG targets for 2015. In June 2003 UN-HABITAT went on to publish a working paper[14] suggesting appropriate modalities for the functioning of this fund. It argued that such a fund would be the most efficient means of mobilising the necessary resources since it represents a targeted means of ensuring effective donor aid. It also argued that UN-HABITAT should be the lead agency and manager of the fund.

It was recommended in this paper that the following activities should be supported from the fund:

- Mobilisation of political will through advocacy and exchange of information
- Public awareness raising
- Supporting the development of knowledge-based networks n best practice
- Creating a new ethic among children and communities through VBWE
- Developing a pro-poor governance framework to facilitate targeted investment
- Strengthening capacities for integrated water and sanitation management
- Demonstration and piloting new approaches to service provision
- Monitoring of progress towards water and sanitation MDGs for cities

[13] See UN Habitat (2004), p 11.
[14] See UN-HABITAT (2003; 5)

Part B—Field Visits and Main Evaluation

1. Generic Points

(i) Project Outputs

The value of the project has been some $800,000 spent over a period of 3 years. The project has been backstopped by a small project staff at UN-HABITAT[15] who have carried out their tasks with flair and enthusiasm. What should be emphasised is the novel nature of this project. With these funds the following outputs have resulted:

- 45 pilot schools have been introduced to the VBWE process
- 12 TOT seminars for curriculum development have been held
- A cadre of trainers have been trained in all countries
- Many teachers have been trained for all pilot schools
- 6 Water classroom TOT workshops have been held
- Many small school-based water classrooms have been constructed
- Many lesson plans have been produced
- A series of instructional handbooks have been prepared
- 6 National teaching guides have been prepared
- 6 Monitoring visits have taken place and reports prepared
- 6 National reports have been produced
- A large number of NGO-backed workshops have taken place in urban communities. These have been reported formally by the resource groups concerned.

In the view of the evaluation this represents considerable value for a relatively small investment of resources. In particular this review would like to commend the performance of TAISSE. The overall cost of the TAISSE programme component was fairly limited at some $70,000. The evaluation believes that this aspect has not only been successful but also that it represents considerable value for money.

(ii) Project Impact

There is enthusiasm for the VBWE programme on the part of all countries. Despite problems and difficulties that one must expect in an innovative project of this kind, practically everyone interviewed expressed the view that UN-HABITAT and its donor bodies had been correct to pioneer the venture. They had learned a great deal in the process and looked forward to continuance in Phase 2. In the words of one national focal point leader, "The VBWE project has given us the opportunity to re-integrate a tradition that had been lost from our educational system". The points of issues and problems (outlined below) that have arisen should therefore be seen as pointers to potential improvement mechanisms that may be considered by UN-HABITAT and its collaborators.

(iii) Project Process

- The policy of allowing individual countries to take ownership of the project and to integrate the VBWE philosophy into their respective educational systems is also the correct one. There are, for

[15] In effect one part-time officer equivalent has dealt with this pilot project at UN-HABITAT headquarters. This complement is certainly too small for the larger plans being considered for Phase 2.

example, big differences between the approach of the Francophone and Anglophone systems and any attempt to impose a rigid framework would have proved counterproductive. Conversely, delegates to the Dakar TOT clearly benefited from exchanges of ideas and experiences. *This diversity served to enrich discussions and should therefore inform future plans in Phase 2.*

- In every country the evaluation was struck by the lack of adequate infrastructure in the pilot schools, especially concerning water and sanitation. This took the form of equipment malfunction such as breakages and non-repair of taps, the breakdown of boreholes and pumps, unsanitary piping, lack of adequate lavatory facilities, excessive crowding in classrooms (and lack of sufficient classrooms) and straightforward water shortages over significant periods of the school calendar year. Some of this is certainly due to the contextual problem of underdevelopment but it is nevertheless a generic problem and will certainly inhibit the spread of VBWE in Phase 2 unless steps are taken to ameliorate it. It becomes hard to inculcate improved behaviour in the context of water use and management if the basic infrastructure is lacking. In most cases the need is therefore for resources to upgrade facilities although in some cases fairly simple technological solutions such as roof water harvesting could be introduced at relatively low cost. *Phase 2 should therefore place emphasis on infrastructure provision.*

- In most cases the pilot schools chosen were basic schools dealing with the poorest sections of the community and drawn from sample locations. *They were thus representative of this type of school.*
  In general schools were fairly crowded with high teacher/pupil ratios. In some cases class sizes were up to 80 per class though the average was somewhat lower than this. It was rare, however, to find a class size smaller than 45. In some cases population pressures have meant that schools need to teach in two shifts per day. Half the pupils come in the morning and half come in the afternoon.
  One reason for the high levels of demand is that some countries have recently introduced free primary education. On the one hand this has opened education to a much larger proportion of young children than previously. However, at the same time resources have not been able to cope with the increase. One country, for example, cannot afford to engage newly qualified teachers (a figure of around 3,000 unemployed was mentioned) because of macroeconomic budgetary constraints. The head teacher of a school in that country claimed that the introduction of free education at primary level had reduced his annual budget to around one quarter of its original level. *This factor should be borne in mind when planning Phase 2*

- In terms of choice of school for pilot status there were differences among the countries. In some cases the schools were chosen because they were near a source of water (say a river). In other countries the criterion of choice was as a representative of districts or zones within the cities. In two of the countries pilot schools were not confined to the capital city but were chosen also from schools in other towns or from neighbourhoods at some distance removed from the capital. This was in order to obtain a wider range of experiences about the introduction of VBWE. Schools dealt with children mainly at primary level though some included pre-school pupils and pupils from the first years of high school as well. *Overall the range of schools was sufficiently representative for the pilot project.*

2. Specific Points

(i) Training of the Trainers and the Teachers

As outlined above the method adopted by the project has been a cascading one whereby for each country a small team of trainers was given initial training following which the "trainees" then trained teachers in the pilot schools. The evaluation only witnessed the Dakar TOT workshop although of course a larger number of TOT workshops have already taken place and reports shared with the evaluation.
In all cases the TOT format has taken the form of an intensive workshop lasting around 5 days.
To begin with there are sessions introducing VBWE its philosophy and rationale. This is followed by an

introduction to the "core" human values and to the direct and indirect methods of inculcating these values. There follows the presentation of outline sample lesson plans to the participants designed to show how human values may be introduced into particular disciplines. Following this, participants are split into working groups at which they design their own lesson plans. Finally the workshop regroups in plenary session for presentation of findings, exchange of views, drawing up of draft action plans and concluding remarks. On the whole (with one apparent exception) subsequent teacher training appears to have been carried out in a similar broad format in all the countries. Trainers gathered pilot school-teachers together for periods ranging from two to five days. The pattern of training followed a similar format.

While many examples were found of successful VBWE practice taking place and strong support from education authorities, head teachers and other stakeholder groups, it is also clear that improvements need to be made. Hence *visits to the pilot schools came across cases where teachers had clearly not been able to properly assimilate the essence of VBWE.* For example, some could not tell me when asked, what the core values were. Many were also a little confused about how the direct method should ideally be introduced. One area of relative weakness was the reluctance of some countries to use the technique of "guided visualisation". In one country, for example, despite the trainers having been trained in how to use it, the final teaching guide given to the pilot schoolteachers omitted it entirely. In another country the technique appears to have been mistakenly confused with "meditation" and on this ground removed from the teachers guide. In fact the teachers themselves (and some other stakeholders as well) often expressed the feeling that the teacher training as a whole has been insufficient.

Clearly internalising the process of internalising the VBWE philosophy and practice is more complex than may be readily understood by the newcomer and requires therefore more intense introductory sessions to begin with. In fact the problems could probably be ameliorated if *more time were given in the initial TOTs to the underlying philosophy of VBWE and its pedagogical fundamentals.* The trainers would then be in a stronger position to introduce VBWE to the teachers. For example, the Dakar workshop was perhaps a little too heavily weighted in explaining the recent curricular reforms in Senegal (replacing a knowledge-based curriculum with an outcomes-based one) with the result that basic VBWE introductory points were given a correspondingly short treatment. Informal discussion with participants suggested that they would have liked a more balanced introductory day. The remaining group sessions appeared to go well, however. A return to the style of TOT undertaken in Addis Ababa is therefore to be recommended.

Teacher training should also probably be confined to relatively small groups of teachers so as to ensure that VBWE principles and practice are fully understood and assimilated. One country attempted to train c. 600 teachers in one large group in 2 days and this was clearly insufficient. Other countries trained smaller groups with the expectations that the trained teachers would then be able to pass on this knowledge to their peers in the pilot schools. Again the evidence indicates that this did not work well. It seems therefore that more thought should be given to this aspect of the VBWE programme. In addition to the more intensive training at the TOT level outlined above, it may be necessary for training groups like TAISSE or the Kenya Institute of Education (KIE) to play a more continuing role in the later stages of the cascade process. The problem could also be helped by periodic refresher courses at which the original trainers were involved.

A final point is the issue of a clearly and simply written "teachers guide". Two of the countries visited have so far produced one. The others are in the process of producing it. The guides seen are substantial pieces of work. However, one country had produced a guide that in the evaluator's opinion is far too complex. Indeed he simply could not understand large chunks of an extremely lengthy and unduly academic document. Since the essence of VBWE is possibly new to most teachers *it is suggested that all*

countries produce also a simplified and shorter version of their guides to ensure that its basic fundamentals are clearly understood.

(ii) Equipment and Materials

Almost every pilot school visited experienced shortages of basic equipment, teaching materials and other teaching aids. This would include simple items like chalk, crayons, paper and wall posters as well as more complex items such as simple laboratory materials such as burettes, pencils, receptacles, a microscope etc necessary for establishing a simple water classroom. With the best will in the world even the most gifted and enthusiastic teacher will have difficulty introducing VBWE without the necessary basic resources. A related issue mentioned frequently concerned expenses for travel and subsistence. This issue appeared at all levels. For example, in one country necessary visits on the part of school inspectors were not properly financed. In another country there is a need to transport pupils at Grades 5 and 6 to a water classroom 64 kilometres away. In some cases these problems may be due to budgetary issues at country level. In other cases the budgets allocated may simply have been insufficient. However, clearly when the VBWE project moves on to Phase 2 and where expenditures will inevitably be of a higher order, the project will need to ensure that problems of this kind are minimised. Some ideas about how to deal with this are discussed below.

(iii) Extracurricular Clubs

One technique that some countries use is that of introducing VBWE into extracurricular activities. These are called water clubs and meet outside normal class hours as one of a number of "clubs" that pupils belong to.[16] For example, in one country the water clubs typically carry out a number of activities such as weekly 15-minute "mini-media" radio broadcasts on a loudspeaker system within the school compound, waste water harvesting and using this water to irrigate small vegetable gardens. In two schools the produce is then sold to help defray the school budget. The heads of these schools claimed that they had been able to cut their monthly water bills by substantial amounts as a result of the inputs of their water clubs. *It is suggested that the establishment of such activities would be a useful complement to the more formal lessons conducted within the classroom.*

(iv) Community Involvement

One feature that became evident as the evaluation proceeded is the importance of organic links with the communities within which the pilot schools are located. Where this had been done the impression was given of more complete acceptance of VBWE at all levels. For example, in one country a pilot school is situated in an arid area where there is excessive wind and no shade for the pupils. In 2000 the headmaster had become concerned that remediary tree planting was unsuccessful and launched an environmental action programme with the help of a resource person from one of the national ministries. There were many possible causes of poor growth performance but eventually it was found that the problem was largely one of salination. The local groundwater system is alkaline with a strong salt content and the trees could not cope. With community help the school built two large containers (10 cubic metres each). These were filled with water and then left for the salt to accumulate at the bottom in sequence. Over the past 4 years the trees have grown enormously some reaching a height of 5 metres. Over 900 trees have now been planted and there is little problem of shade. Indeed the trees are now coppiced and the wood sold to raise income for the school. In addition windbreaks have been established. The headmaster believes that the values programme is reinforcing what has already been established. He mentioned the fostering of a spirit of enquiry among the pupils, right conduct promotion and co-operation and solidarity with the community. Thus the tree planting technology has been shared with the local community who in turn have begun to appreciate the VBWE project in the school.

[16] Others deal with topics like HIV/AIDS, sporting activities, environmental sustainability etc.

In another country a strong attempt has been made to reach the communities within which the schools are operating. The education authority organised for each community 2 meetings to which were invited the community chief, the women's president, religious leaders, youth leaders etc. In a third country a lot of effort is placed on sensitising the school management committees who meet around three times per annum and act as a sort of steering committee for the communities (they have executive sub-committees that meet more often). These consist of the headmaster, community chiefs, a representative of the director of education in the community, religious representatives, especially for the church schools, a community representative, a PTA representative, a women's representative and a representative of the local assembly. In yet another country one of the pilot schools has an active PTA through which it links to the communities involved. *In all cases it appears that the integration of VBWE activities in the pilot schools has been assisted by steps taken to integrate with local communities.*

(v) Water Classrooms

The establishment of water classrooms (and related activities such as twinning of schools) seems to have been slightly disappointing in that some of the proposed objectives were not achieved. Although there were one or two unavoidable circumstances here, the sum of money allocated by UN-HABITAT was quite large at some $140,000. To an extent this figure was influenced by the relatively high costs of commissioning work from an institution (SWD) located in the North. In future planning of Phase 2 operations project managers are advised where possible to use locally based organisations as much as possible. This will have two impacts. First it will improve value for money. Secondly, it is likely to permit greater capacity building in component skills.

Two types of classroom may be distinguished. The first is the large classroom established by the city water authority and designed to be used by all the schools (and other groups) in the city on some kind of contractual basis. The argument for creating such a classroom is one of economic efficiency since first class facilities can thus be made available to all school communities on a rotational basis. This route has been followed in three countries but so far progress has been slow. In one country I was unable to meet with the appropriate water authority but was told that little progress has so far been made. In another country the planned water classroom is to be on the site of the country's very first water treatment plant (now abandoned). The plant was originally built in the mid 1930s and is now defunct. The plan is to convert some of the buildings to training and teaching facilities with full audio-visual and other necessary laboratory equipment. The water classroom would then be used as a teaching centre for all schools in the city and would be available also for other interested bodies and individuals. The original treatment block will be retained for museum purposes.

The major issue however, is delay in construction of the water classroom, which has now been in the pipeline for over a year. The tender document has now been revised once and is undergoing a technical evaluation. A copy was given to the evaluation. If this is satisfactory the contractual bidding process will begin to secure an appropriate local private contractor to carry out the work. However, this is likely to be a cumbersome process. An additional point is that although anticipated construction time is likely to be around 120 days the advent of poor weather conditions may hold back proceedings. The best estimate therefore is that this water classroom will not be operational until January 2005, over two years from initial planning inception. The main obstacle, I was told, has been local government reform which has been in process the past two years or so. This reform is intended to change the structure of the municipal authority and has involved substantial restructuring with considerable changes in personnel and function. Resultant disruption has held back plans in many bureaux including this one.

The second type of water classroom is that of an ordinary classroom fitted with special but simple facilities for VBWE training. Experience here is also a little disappointing. On the one hand examples were shown of completed classrooms that are up and running with reasonably good facilities. On the

other hand many of the classrooms viewed are poorly equipped and many schools have not yet begun to invest in this area. The main reasons for this appear to be lack of resources and poor infrastructure in the schools. This may be an area that the planners of Phase 2 may wish to look at closely. In principle there are arguments in favour of the introduction of both types of water classroom. On the other hand progress has been much slower than initially envisaged so that changes in developing this aspect may be needed. One interesting suggestion is that of the mobile water classroom pioneered in South Africa. This is a vehicle like a bus that has been fitted out as a water classroom with all the necessary facilities for teaching aspects of water management and use. It may then be driven around many schools that can benefit from its availability. *Phase 2 planners may wish to consider whether this type of classroom might provide better value for money than the large water classroom.*

(vi) Non-Formal Education

As outlined earlier an important part of Phase 1 has been the view that it is necessary not only for VBWE practice to be introduced into the formal school curriculum, but also for the project to reach non-formal channels particularly those in deprived urban communities. The approach has been one of encouraging NGOs to integrate their activities with the VBWE project. In some countries (e.g. Senegal) this has involved working with government/city authorities since the NGOs concerned only operate in direct partnership with central authority. Because of lack of time, however, there was little opportunity to investigate this mode in detail. A second mode was adopted in Nairobi and involved working with a consortium of NGOs to integrate VBWE factors with their on-going programmes. In this context reference should be made to the remarks in the earlier sections of this report regarding the functions of the NGOs who have been the prime movers for this aspect. The strategy adopted has been one of adding VBWE practices to already on-going activities

A meeting was held with all the NGOs at the Kenya Freedom from Hunger Council (KFHC) who have acted as the lead NGO of the steering committee. The groups were enthusiastic about the training, which they, along with representatives from the formal sector, had undergone. After the initial training on Human Values they had separated into two groups—the teachers to integrate VBWE into school subjects, and the NGOs to integrate human values into their community development projects. These community projects clearly saw the importance of the five core human values and recognized the need to integrate them into their own lives as well as passing them on to community members. Over the past 6 months or so there have been a series of further training workshops mounted in target communities.

The evaluation was taken to see two communities, in Kibera and in Kiambui. In Kiambui (located in East Nairobi) a youth group is running major water/sanitation projects under the supervision of the St. Johns Community Centre which is situated possibly a mile from the community. One project is the establishment of a drainage system, which is cemented, and brick built to prevent flooding and improve cleanliness especially during rainy periods. The youth group sweep and clean this drains regularly though they are uncovered and therefore could still lead to disease. The evaluation was informed that the youth group planned to hold a "clean-up action day" on the 29th of May when it would try to involve the whole community. A second project is the refurbishment two blocks of two showers and five communal gallery outlet toilets, originally built in 1999 by the World Bank.

It has also started a savings a credit scheme that started in February 2004, which operates on the basis of 4% interest on money deposited. The purpose of the loan scheme is to save up for school fees and business start-ups. This is situated at the water point. The water point has three taps where water is sold at KSh2/- for 20 litres; the water is relatively safe because it flows through metal pipes whereas the others in the community are plastic and often break, thereby infecting the water. The bill for the water point is paid to the City Council and the water tank holds 10,000 litres. This community has no electricity, which limits the amount of business that can be conducted, and lighting is by kerosene lamps.

The youth group also runs membership for toilet facilities for 30 days use of toilet facilities for person or visiting guests. The 30 days cost KSh50/-, which is a saving to the daily payment rate. Finally is has organised a rubbish dumping site located about 20 yards away from the edge of the community. There are plans to build proper containerised and recycling facilities.

The Kibera group is also mainly a voluntary youth operation but unlike the Kiambui group is not establishing specific projects. Instead it is trying to establish the adoption of values as part of its generic programme in community health care education (HIV/AIDS, prevention of drug abuse, environmental awareness on sanitation, poverty alleviation and how to handle business). It has a small resource centre, which promotes reading in the community, and also encourages community media and plays. There are four "villages" in the Kibera community. The area visited has a 50% Muslim population. There is a mosque and a school, which seats 60 students. Here, despite an acceptance of the importance of values on the part of the community, there remains much to be done. Water and sanitation provision is very poor and while there is much appreciation of the VBWE project and what it brings to the community, clearly an input on the infrastructure side is much needed.

From these meetings and sight of other documentation the evaluation has concluded that the strategy adopted by UN-HABITAT is the correct one. Responses of the community leaders and other stakeholders were positive, as were those of the partner NGOs. In addition the strategy fits with the overall policy of building on existing activities and procedures rather than trying to create new activities from scratch. Also in this way the investment of minimal resources (c. $20,000) has leveraged considerable output and impact so that the on a value-for-money criterion the results are favourable. *Nevertheless the need for better infrastructure provision is pressing and should be stressed in Phase 2 plans.*

In this context it should be noted that there are now a growing number of cases testifying to the importance of mobilising community support. A good source here is the recent book *Water and Sanitation in the World's Cities* produced by UN-HABITAT and co-published with Earthscan Publications.[17] The pattern that appears to produce success is one of initial intervention by an NGO (or a consortium of NGOs) that is able to tap into the customs and needs of the communities and secure mobilisation of community resources to improve water and sanitation conditions (sometimes with some resource support from the NGO as well). In this way the community "owns" the resultant project and is able to dictate what needs to be done along with determining how this should take place. Very often the community and the NGO(s) are then able to put pressure on government authorities to provide the types of greater assistance needed for final project success. Phase 2 managers are therefore encouraged to take note of these points in planned facility supply measures.

(vii) Other Planned Aspects

A number of other planned activities were described in Part A above but have not progressed very far. These concern items such as the introduction of schools water audits and water quality education in each city, information exchange and North-South twinning arrangements, water health care education and the organisation of study visits. Some of these have depended on the development of water classroom facilities, which has been slower than anticipated. Others may have been affected by lack of resources or the need to concentrate on "core" agendas such as progressing activities in the pilot schools.[18] Nevertheless, such objectives should not be lost sight of in Phase 2. For example, the sharing of experiences across schools (and countries) is an important learning device that will certainly help the overall success of this phase.

[17] See in particular chapter 7 entitled "Governance for Good Water and Sanitation Provision" which contains many illustrative case studies. The full reference may be found in the Appendix.

[18] Another factor may have been the fact that the SWA has apparently closed down and has not been able to provide relevant support. .

(viii) Issues of Governance

In all countries visited, the operational focal point has been connected to educational administration. In some cases this has been as part of the Ministry of Education. In other cases the relevant body has been connected with urban management. In the case of one country the initial contact had been made with the relevant city authority that subcontracted operations to a national educational institution. Usually there followed the creation of a steering committee, which acts as the executive focal point for the VBWE project. For example, in 2001 the Ministry of Education for one country established a small executive committee consisting of three people, an Inspector General and two pedagogical advisers (for science and education) to progress the VBWE project. In turn this committee is guided by a larger steering committee having representatives form the following Ministries: Interior, Forestry and Water; Health; Urbanisation; Family, Women and Children; Communication and Economic Infrastructure. It also has representation from the water utility and an NGO with strong activity in the water and sanitation area. It meets around twice a year. In this case the executive committee than selected 9 schools as pilot schools (6 primary—all in 1 "group"), 2 pre-school and 1 secondary. Each of these schools is located near water.

One issue that appears to arise are (patchy) links between different organs of governance. It is not always the case, for example, that water authorities and educational authorities have co-operated as closely as they might have. Nor are there always close links established between formal and non-formal activities within the same country. At present this does not appear to be a serious problem since the small pilot scale of Phase 1 has meant that some ad hoc contacts have usually been maintained. However, in the bigger projected scale of Phase 2 operations, the issue might become more serious and hence may need attention. A second issue mentioned by some countries was the non-involvement of school heads at early stages of Phase 1. Usually this was inadvertent and not designed to bypass normal channels. But it did have the effect of making the project less effective than it might have been. Accordingly the planners of Phase 2 are advised to ensure that school heads are consulted at an early stage in proceedings. It might also be advantageous if they were to be given the full VBWE training as well. A point raised by some of those interviewed is the need for incentives to encourage and reward project participants. This need not be financial. The award of certificates for trainees, opportunities for travel, attendance at conferences/workshops etc. could certainly encourage teachers to put effort into their application of VBWE ideas. At non-formal levels the provision of badges and T-shirts could make all the difference in the motivation of youth groups such as those in the Kenyan communities. Such groups are voluntary and even small rewards could reap dividends.

A final point to emphasise is that of the administration of Phase 2. Experience gained in this evaluation indicates that there is need for two types of backstopping. The first is pedagogic. By this is meant the need for continuous academic guidance from groups and individuals such as those who have pioneered VBWE and played such a significant role in the pilot phase. The expanded scale of Phase 2 will require a similar, but greater, scale of involvement if this phase is to be fully successful. For example, the project might establish a larger steering group consisting of knowledgeable individuals whose advice and input may be drawn upon as and when needed. Careful thought should be given to this aspect. The second type of backstopping is administrative and financial. From all accounts it is likely that Phase 2 may become larger with significant sums of money pledged to ensure the integration of new schools in the existing countries and the addition of new countries into the programme (including countries from other continents). Phase 2 will therefore be dealing with large amounts of project funding and the question arises as to how this can be managed.

It is hard to envisage UN-HABITAT with its current resources, as having the capacity to manage such levels of project aid especially where the needs are often for relatively small sums to reach schools. Already in the pilot phase officers have had some difficulty keeping abreast with on-going activities.

With expanded funding these problems must inevitably increase. Moreover it is likely that there will be advantages to having dispersed forms of project management. Accordingly some thought has been given to the issue and the following suggestions added. Consideration may be given to:

1. Possibilities for subcontracting project management to regional research centres or universities.
2. Possibilities for subcontracting project management to regional political bodies. In the African case these might be bodies associated with the AU such as ECOWAS and SADC. Links with the NEPAD might also be advisable in this case.
3. Possibilities for subcontracting project management to other organs of the UN system. For example UNDP has country offices and considerable experience in the disbursement of funds. Other agencies may also be suitable such as UNESCO and/or UNICEF. The latter has a fairly large programme currently operational with objectives that are not far removed from that of the VBWE project.
4. The expansion of UN-HABITAT itself to establish small offices at regional level. Their function would then be largely managing project funds.
5. The need to ensure effective disbursement of funds at national levels. Since the sums of money are large it may be suggested that annual project audits are contracted out to a reputable accountancy firm. Funds would then be disbursed on an annual basis with continuing support being tied to adequate performance in the previous year.

In all case the existence of watertight governance arrangements (such as MoUs) would be necessary. And in some cases there may be need for significant capacity building to ensure adequate technical competence on the part of project managers.

5 Conclusions

This evaluation report has attempted to provide an analysis of the strengths, weaknesses and opportunities associated with the VBWE programme that may be derived from its pilot phase. This is a highly innovative project and Sida should be commended for having had the courage and foresight to commit scarce resources to a project that is quite new in development aid terms. UN-HABITAT should also be commended for putting in place a new type of project methodology that has shown considerable strengths. It is certainly one that may be employed in future contexts beyond the issues of water and sanitation. The project has clearly captured the imagination not only of those participating in Phase 1 itself but also of those cities and countries that have since been informed about its inception and progress. In this context note should be taken of the great interest shown by countries in other regions of the world, as outlined in the international symposia mentioned in Part A above. The evaluation was fortunate in being able to attend the recent SEAMEO-UNESCO Education Congress in Bangkok. At this congress one of the topics was VBWE including a session entitled "Africa-Asia Meet Forum" where Africa delegates were able to share experiences with their fellow delegates from Asian countries. The resultant discussion testified to the intention of such countries (and others) to place VBWE as a central plank in their future educational and water and sanitation activities.

This evaluation is persuaded of such enthusiasm and interest. It endorses therefore a continuance into Phase 2. Indeed it believes the VBWE programme to be a necessary one because of the breakdown of

traditional behaviour and erosion of values over much of Africa and because of the seriousness of the water crisis. Nor, as has been pointed out by many, are human values foreign to most African countries. In fact they are inherent in the African tradition. And when confronted with their existence and significance most stakeholders readily agree that their adoption is a necessary condition for a return to responsible behaviour on the part of all in society. The suggestions and comments in the previous section should therefore be seen as suggestions to strengthen this second phase and to ensure successful implementation of the mission.

6 Forward-Looking Strategy

UN-HABITAT is advised to adopt the following strategic guidelines in its implementation of Phase 2 activities. The suggested basic framework is that schools should be seen as centres for improved water and sanitation facilities in the communities in which they are located. In each city communities through their representative councils would bid for selection in concert with school principals and other school leaders. They would be assisted where possible by representative NGO groups and would be expected to contribute resources to project proposals. Focal points would establish guidelines for proposals and select target schools against agreed criteria laid down by UN-HABITAT. They would be expected to do this through a decision-making structure of the type outlined below in the "governance" section (D) where the city water authority would be fully represented. For non-formal education projects UN-HABITAT may consider that focusing arrangements on a school-centred basis might also prove a fruitful strategy.

Selected projects would have two components: viz. (i) a pedagogic component and (ii) a water and sanitation component. The former would follow the procedures developed in Phase 1 subject to the amendments outlined in sub-section A below. A distinction should be made between Phase 1 and Phase 2 cities. In Phase 1 cities procedures would simply be amended and improved versions of current practice extended to new schools. With Phase 2 cities greater emphasis on an initial improvement to the cascade training process is recommended. The second component would aim to create water and sanitation facilities of a simple but sustainable type using low-cost technologies where possible. UN-HABITAT should prepare draft guidelines for this component and community participation in construction and maintenance should be encouraged. Again as outlined below UN-HABITAT will need to build up its own capacities to backstop the larger scope of Phase 2 activity. Some suggestions on this are outlined in sub-section D below.

In more detail the following proposals are recommended:

A. Curriculum Development

The broad cascading procedures used in Phase 1 should be continued but amended as follows:

- Target schools should continue to focus on economically poor areas
- More time should be given in the initial training of the trainers to the underlying philosophy of VBWE and its pedagogical fundamentals
- Subsequent teacher training sessions should be confined to relatively small groups of teachers.
- Trained teachers should not be expected on their own to train their colleagues
- Workshops should be conducted in "interactive" rather than "didactic" mode.

- Periodic refresher courses should be mounted for teachers to reinforce learning. At these the original trainers should be involved.
- Expert groups should be enhanced (see below) and should continue to play a role in later stages of the cascade process.
- Countries should produce a simplified and shorter version of their "Teachers Guides", to ensure that their basic fundamentals are clearly understood.
- Countries should be encouraged to adopt the use of school water clubs and related extramural activities wherever possible. This might be made a condition of UN-HABITAT funding.
- National focal points (see below) should do more to establish networking between schools both in country and internationally. They should also make greater efforts to do this electronically. In this context they should enter into dialogue with national telecommunications offices with a view to improving connectivity either through satellite or cable technology.
- UN-HABITAT should establish an "expert group" to oversee and contribute to the curriculum development process. Such a group would act both as a steering committee (advising UN-HABITAT on relevant matters) and as a source of expertise that may be drawn upon as and when needed. The members of this group would be people who understand the fundamentals of VBWE and be able to communicate these to all stakeholders involved. Such a group should be chaired by a senior person with relevant credentials in this area.

B. Water Classrooms

- The smaller type of classroom should continue to be supported.
- However, there are questions about the advisability of the larger version that should be explored in planning Phase 2 operations. If a decision is made to go ahead with this type of classroom then there should be close supervision of projects with clear project management and supervision arrangements.
- Consideration should also be given to the mobile version since this may turn out to be a cheaper and more effective alternative.
- In the case of the small classrooms within schools, their equipment should be mobilised and managed by the relevant education authority and be part of that budget.

C. Community Involvement

- As outline above project plans for Phase 2 should include specific efforts to encourage and reward community involvement in VBWE interventions. For example where there is an active PTA, it should be asked to be involved in curriculum development and delivery in that school.
- Similarly community leaders in project-supported schools should play a similar role. This is especially important where infrastructure funding is included in the support package since local inputs could be an important part of the arrangements.
- The Nairobi model of community support may not be directly operational in all countries but where it is, it should be supported in Phase 2.
- In addition all community projects should include infrastructure provision. The NGOs and community leaders concerned should be encouraged to develop water and sanitation infrastructure plans with relevant authorities and to include such plans in project proposals.

- For administration purposes for community-based projects consortium groups should be formed. These would then become responsible for project delivery.

D. Governance Arrangements

- The policy of allowing individual countries to take ownership of the project and to integrate the VBWE philosophy into their respective educational systems should be continued.
- The policy of running the VBWE programme through "focal points" connected to education should also be continued. These should maintain close contact with UN-HABITAT through regular reporting arrangements.
- All focal points should be required to establish steering committees whose function it will be to ensure adequate horizontal contact/consultation among stakeholder groups.
- In particular there should be regular mechanisms for consultation between education authorities and water and sanitation authorities. This might be done by means of a consultative sub-committee to the steering committee. Such a sub-committee would be expected to meet regularly throughout the year. It would be expected to co-ordinate measures to integrate infrastructure provision (including water classroom provision where relevant) with curriculum development.
- School principals and other school leaders should be regularly consulted by focal points.
- Focal points should institute incentives to encourage and reward project participants.
- UN-HABITAT should appoint a full-time programme officer to backstop Phase 2 activities. Such a person would have the responsibility of formulating, agreeing and monitoring MoU arrangements with the participating cities through their focal points. He/she would also be charged with setting out the projected path of Phase 2 activities in consultation with senior officers.
- UN-HABITAT should consider the feasibility of creating regional field offices to manage Phase 2 project grants. These could perhaps be housed in the facilities of other bodies including those of the wider UN system (along the lines of suggestions contained in the main text). To begin with there might be four such offices, one each for East, South, West and North Africa.
- The recommended project management scenario is hence one managed in broad outline by HQ in Nairobi, financed by the projected trust fund but administered by regional field offices. Such bureaux would then co-ordinate projects with national focal points. Budgets would be developed with specific periodic milestones built into the original plan. Internationally respected accounting firms would carry out regular (perhaps annual) audits and project continuance would be dependent on positive approvals at each stage.
- Phase 2 should be carefully planned since there is a danger of too much being attempted too quickly in too many countries. The HQ should therefore establish a staggered time frame for VBWE interventions. This should have two elements. The first is the establishment of VBWE projects in new countries. The second is the extension of the programme to other schools in the original countries. In both cases focal points should be given very clear guidelines about project frameworks and time scales.

E. Equipment and Materials

- Careful attention should be paid to the supply of basic equipment and materials needed for effective classroom teaching. UN-HABITAT should give high priority to this aspect.

- As outlined above major emphasis should be placed on the establishment of adequate water and sanitation facilities in schools. National focal points should be charged with including this in all project submissions. Close liaison with national water authorities is therefore advised in this regard.

F. Other Recommendations

- It is recommended that UN-HABITAT take steps to encourage the introduction of VBWE principles into cognate programmes in universities and national colleges of education. Since this is not directly part of its formal mandate it should liaise with other institutions like UNESCO in this regard. There is now a UNESCO group based in Hong Kong that has developed programmes with ideas that are similar to those of the VBWE philosophy. The recommended pedagogic steering group should be charged with bringing about this type of integration.
- Many schools and communities visited could do more with the facilities they have. One clear case is rainwater harvesting and associated pond construction, but others could include the construction of simple drainage facilities and refuse collection facilities. Attention should be paid to the use of the use of equipment that is relatively breakage-proof like plunger taps, for example. UN-HABITAT is encouraged to explore the development and use of simple technological solutions to these and similar problems.
- It is recommended that in Phase 2 operations UN-HABITAT should take every reasonable opportunity to employ personnel and organisations based in the developing world. This will economise on scarce resources while at the same time helping to build capacity for the future.

Appendix

A Methodology

The methodology adopted may be split into of two parts. The first consisted of a preliminary review of written documents concerning the VBWE programme. This was carried out in March and April and led to the development of an evaluation framework and questionnaire as outlined below. The second part comprised a field visit undertaken in four of the six countries involved in the VBWE pilot phase[19]. This was carried over a 3-week period in May. A preliminary draft was then compiled. This was circulated to stakeholders to take account of any factual errors. A final draft was then prepared. Further details on the evaluation are mentioned below.

(i) Field Visits

Field visits were carried out over the period 6th to 22nd May 2003. During this time the evaluation visited 4 of the 6 countries, Ethiopia (Addis Ababa), Senegal (Dakar), Zambia (Lusaka and Ndola) and Kenya (Nairobi). In each country interviews were held with the administrative focal points, which were mainly connected with educational administrative authorities. Visits were made to selected pilot schools at which interviews were held with school heads, administrators, teachers and (occasionally) pupils. Unfortunately only in one city (Addis Ababa) was it possible to hold detailed discussions with water authority staff[20]. While in Senegal the evaluation also witnessed the Francophone TOT for Phase 2.

[19] It also reflects a visit to the UNESCO-SEAMEO conference in Bangkok, May 27th–30th.

[20] In Dakar a brief discussion was held with the Directeur Général de SDE, the Senegalese authority. The Lusaka Sewage and Water Authority did not appear for the pre-arranged interview and it proved impossible to arrange another interview in the time available.

At this TOT delegates from Mali, Niger, Cameroon and Burkina Faso were introduced to VBWE and explored methods of integrating human values into their educational curricula. Opportunities were taken to conduct informal ad hoc interviews with these delegates. In addition the presence of VBWE co-ordinators from Ghana (Accra) and Abidjan (Côte d'Ivoire) permitted the evaluation to hear in detail about Phase 1 VBWE experiences from these two cities.[21] Discussions were held with representatives from TAISSE who had been involved with earlier TOTs, some of whom were also involved in the Dakar TOT. While in Nairobi visits were made to the NGO steering committee responsible for the informal education programme with urban communities in this city. Brief visits were also made to two of these communities. Finally the evaluation participated in the SEAMEO-UNESCO Education Congress held in Bangkok, Thailand between 29th and 30th May.

(ii) Questionnaires
Following failed attempts made to establish telephone contacts, e-mail questionnaires were sent to Swedish Water Development (SWD) and the Lusaka Water Authority to follow up on water classroom activities. With the latter body there was no response. However, SWD provided a detailed set of views on SWD experiences. The questionnaires are appended below.

Water Education in African Cities

Dear Mr Lubambo

As you may know I am carrying out an evaluation of Phase 1 of this project. However, on our visit to Lusaka the people from the Lusaka Water Authority we had agreed to meet did not turn up for the meeting. Since no written reports have been received this has meant that we have no idea what progress has been made on the Water Education Classroom. I have tried your phone but this is out of order apparently. Accordingly I would be most grateful if you would please answer the questions outlined below. This would help me greatly to complete my task.

Yours sincerely
Norman Clark

Questions

a) Please let me know the stage the proposed Lusaka WSA water classroom has reached?

b) If there have been delays, what have these been due to?

c) How do you plan to utilise the facility when it is ready (e.g. leasing to schools, charging for use etc)?

d) What links does the Lusaka WSA have with the CDC in the Ministry of Education?

e) Do you plan to have any special governance arrangements to manage the facility? If so what will these be?

f) Do you have any contact with the Swedish groups that initiated the water classroom training?

g) What form do these take?

h) Please let me have any other information you think may be relevant for future developments of this kind in other countries?

[21] Unfortunately there was no time to include visits to Accra and Abidjan.

Water Education in African Cities

Dear Ms Forssberg

As you may know I am carrying out an evaluation of Phase 1 of this project but have been unable to reach you by telephone. I shall continue trying but in the meantime I thought I would send some questions by e-mail that you may care to respond to. I would be most grateful if you could spare the time to do this. It will help to get a balanced view of the project as a whole.

Yours sincerely
Norman Clark

Questions

a) Please give me your overall views regarding your experiences in water education training in the African context under the VBWE project (i.e. strengths, weaknesses etc.). What improvements should be made in future ventures of this kind?

b) What are your reflections on the relative advantages of large centralised classrooms (managed by a city utility) compared to smaller classroom facilities?

c) How should the large type of classroom be managed and used for optimal effectiveness (e.g. leasing to schools, charging for use etc)?

d) In your experience what forms of governance work best for the large classrooms (especially with respect to links between water and education authorities)?

e) So far there has not been much progress on some of the planned activities that flowed from your training. Have you any insights on to share with me on this point?

f) Please let me have any other information you think may be relevant for future developments of this kind in other countries?

A more general questionnaire outlined below was developed as part of the initial stages of the evaluation as specified in the original terms of reference. In the event because of time constraints it was only used as general guidelines for the evaluation.

(i) Teacher Workshop Questions

- How were target teachers selected?
- How were target schools selected?
- On what criteria were they selected?
- Who selected them?
- Who designed the workshop programmes?
- What materials were made available to participants?
- How adequate were these materials to fulfil workshop objectives?
- What initial digestion time was made available?
- How "experimental" were the workshops?
- What' problems were experienced in the workshops?

- How might these be mitigated in future?
- What follow-up arrangements were made?
- Were these satisfactory (if not how and why not etc.?)?

(ii) Water Classrooms

- At what stage in the VBWE project were these classrooms installed in the pilot schools?
- Who was responsible for their installation?
- Who provided the finance?
- Was special training given to water classroom teachers?
- How adequate was this training?
- How were resources mobilised?
- Was consideration given to setting up and running special classrooms operated outside the school environment?
- What criteria were used in this context?

(iii) Water Audits and Water Quality Education

- Who is responsible for these activities?
- What progress has been made on the following:

1. Establishing focal points for a school water audit?
2. Establishing city schools water audit committees?
3. Provision of water audit resource materials/kits?
4. Conducting city audit TOT workshops for teachers?
5. Operationalising water audits in pilot schools?
6. Identifying suitable streams and rivers?
7. Grouping schools in close proximity to a stretch of this river or stream?
8. Developing/adapting water quality kits?
9. Conducting water quality education training workshops for schools?
10. Setting up schools water quality databases?

- Where progress has been poor what have been the major constraints?

(iv) General Progress

- How effective has the introduction of VBWE been in the pilot schools?
- What criteria of effectiveness can be used in this regard?
- What have been the major constraints?
- How may these be resolved?

(v) Physical Resources

- To what extent has the lack of physical resources hindered the successful introduction of VBWE activities?
- Is this liable to continue?
- What are the main operational constraints?
- How may these be overcome?
- What would be a realistic timescale for this?

(vi) Governance and Administration

- How have national/local water authorities and educational authorities related to each other?
- How effective has been the role of the water authorities in the cities?
- What specific problems/issues have arisen?
- How may such problems be resolved?

(vii) Community Outreach

- What have been the outcomes of the community outreach activities in Nairobi?
- How efficient has been the involvement of the 6 NGOs?
- What problems have been encountered and what lessons have been learned?
- What steps have been taken to progress further the VBWE activities in Nairobi?
- What steps have been taken to progress the VBWE activities in the other cities?
- What links have been established between communities and schools?

(viii) Linkages

- What progress has been made in the following areas:

1. Information exchange and North-South twinning arrangements?
2. Water health care education?
3. Organising study visits?

B Summary Terms of Reference

Main Duties

Expected beneficiaries & ImpactsUnder the supervision of the Programme Manager of UN-HABITAT project team, the Consultant will undertake an evaluation and forward-looking appraisal of the VBWE project to assess the success in achieving the objectives of the project in the six participating countries and develop a strategy to ensure continued relevance and sustainability of the project.
The evaluation will focus on the implementation process. The evaluation will also review experiences gained and lessons learnt in the implementation of VBWE in the pilot schools in each participating country. In this regard, the Consultant shall be guided by the national action plans developed by each participating country during the TOT workshops. There would be particular emphasis on capacity building, institutional change, governance mechanisms, curriculum development and sustainability.

Objective of the Evaluation

The objective of the participatory evaluation is to assess the success in achieving the objectives of the project in the six participating countries and develop a strategy to ensure continued relevance and sustainability of the project.

Activities
The Consultant is expected to undertake the following activities:

- Hold consultations with the key stakeholders of the Project and develop a framework for end-of-project participatory evaluation;
- Undertake missions to selected countries (Zambia, Ethiopia, Kenya and Senegal) to assess the extent to which the participating countries have been able to implement activities outlined in their respective action plans;
- Prepare a draft evaluation report on achievements of the Water Education Project in the six participating countries;
- Develop a draft forward-looking project strategy for Phase 2 of the Project;
- Share the results of the end-of-project evaluation with key stakeholders at city and regional levels;
- Finalize the end-of-project evaluation report, incorporating the views of the key stakeholders;

Work plan and Timeline
The Consultant will be expected to undertake the following activities within the timelines below:

Timeline	Activity
1–10 April 2004	Review of documents and related materials
11–15 April 2004	Development of an evaluation framework and questionnaire
15–20 April 2004	Submission of inception report, including an evaluation framework
27–28 April 2004	Evaluation mission to Lusaka
30 April–1 May 2004	Evaluation mission to Ethiopia
3–5 May 2004	Undertake consultations with key stakeholders at the Francophone Workshop for VBWE Phase II – Dakar, Senegal Conduct an evaluation mission to Senegal
10–12 May 2004	Undertake consultations with key stakeholders at the Anglophone Start-up Workshop for VBWE Phase II – Nairobi, Kenya
17–18 May 2004	Conduct an evaluation mission to Kenya
19–26 May 2004	Preparation of initial paper to review findings to date
27–29 May 2004	Presentation of draft findings of evaluation at UN-HABITAT's workshop on Value-based Water Education at SEAMEO-UNESCO Education Congress, Bangkok, Thailand
By mid June 2004	Preparation of first evaluation draft report
By late June	Develop a draft forward-looking appraisal and a project strategy
By Mid July 2004	Preparation of agreed final draft of the evaluation and forward-looking appraisal reports

Outputs

- An inception report including an evaluation framework and questionnaire.
- Draft report of end-of-project evaluation and forward-looking project strategy for Phase II of the Water Education Project.
- Final report of end-of-project evaluation and forward-looking project strategy for Phase II of the Water Education Project.

C Curriculum Vitae

Norman Clark is Vice-Chancellor of Kabarak University, Nakuru, Kenya. Previously he was Professor of Environmental Studies and Director of the Graduate School of Environmental Studies at the University of Strathclyde, Glasgow, UK. He is a development economist specialising in science, technology and environmental policy issues with particular relevance to Third World problems, a field in which he has published extensively. He has lived and worked in many countries with particular concentration on Kenya, Nigeria and India. Previously he held academic posts at the Universities of Glasgow and Sussex. While at Sussex he acted as the Founding Director of Graduate Studies at the Science Policy Research Unit (SPRU) where he worked for some 15 years and now holds the post of Honorary Professor. He has also acted as Founding Director of the Technology Planning and Development Unit, University of Ife, Nigeria; Visiting Professor, Institute for Advanced Studies, University of Sao Paulo, Brazil; and Director of the Capacity Development Programme at the African Centre for Technology Studies (ACTS), Nairobi, Kenya. In addition to normal academic activities he has had some 30 years experience as an adviser and consultant to governments, international agencies and NGOs including the World Bank, UNCTAD, IDRC, DFID, ITDG, CGIAR, UNU and UNDP. He has acted also as an adviser to the UK House of Commons Select Committee on Overseas Development on ODA's [now DFID's] Special Units (i.e. TPI, COPR, LRDC etc.). He is currently acting as an adviser to the NEPAD Secretariat (Pretoria), UNU/INTECH (Maastricht), The UN Millennium Development Goals Project (New York) and the Finland Academy of Sciences (Helsinki).

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UN-Habitat (2004) *Water-Related Environmental Education Draft Progress Report July–December 2003.*

E List of People/Groups Contacted During Evaluation

1. UN-HABITAT

- Kalyan Ray, Chief, Water, Sanitation and Infrastructure Branch.
- Andre Dzikus, Human Settlements Officer, Water, Sanitation and Infrastructure Branch
- Eric Moukoro, Water for African Cities Programme, Focal Point for West Africa
- Pireh Otieno, National Project Officer, Water for Cities Programme

2. Ethiopia

2.1 Addis Ababa Education Bureau

- Z Kebede, Head
- Workiye Tegeon Deputy Head
- Trivalem Ayaew Head, Curriculum Development
- Hailu Dinka, Senior Research Expert
- Wubit Addisu, Head TOT Group
- Aynalem Abebe, Expert

2.2 Addis Ababa Water Authority

- Abebe Bellete, Technical Deputy General Manager
- Azeb Asnake, Head Research and Water Demand' Management

2.3. Addis Ababa Pilot Schools

- Kokebe Tsebah Primary School
- Dejasmach Wondarid Elementary School
- Kechene Debre Selam Primary School

3. Senegal

3.1 Ministere de L'Education

- Abdourahim Gaye, Co-ordinateur Nationale, Secretaire Technique Permanent du Comite National de Pilotage
- Anta Ndiaye Diop, Zone Director, Manguier School Group
- Mamadoe Diop, Deputy School Inspector, Manguier School Group

3.2 Pilot Schools

- Manguier School Group
- Quebemere School

3.3 Water Utility

- Frederic Renaut, Directeur Général de Senegalese des Eaux (SDE)

3.4 Dakar Workshop

- Dr Victor Kanu, TAISSE

- Dr R Marantz, Principal, Scarsdale Public Schools, New York.
- Dhanasagaran Naike, TAISSE
- Faustin Klaye, TAISSE
- Emmanuel Acquaye, Ghana Educational Service, Accra, Ghana
- Mme Veronique Bakoyoko, Ministry of Education, Abidjan, Ivory Coast

4. Zambia

4.1 Curriculum Development Centre (CDC), Ministry of Education

- Mrs M Mwembe Director CDC
- Mrs G Nayambi, VBWE Co-ordinator CDC
- J Muyangana, Principal Education Officer CDC

4.2 Pilot Schools

- Chipata Basic School
- Nansanga Basic School
- Chimawa Basic School (Ndola)

4.3 TAISSE (Ndola)

- Mrs Genoveva Kanu TAISSE

5. Kenya Schools

5.1 Kenya Institute of Education (KIE)

- Gabriel M Muita, Director
- James Ngumy, Programme Co-ordinator, Marketing and Consultancy
- Mary Munyi, Trainer

5.2 City Education Department

- A Nyoro, Deputy Chief Adviser

5.3 Pilot Schools (Visited)

- Moi Forces Academy

6. Kenya Education Informal Sector

6.1 Kenya Freedom from Hunger Council (KFHC) (lead organisation)

- Michael Ojiambo, General Secretary
- Edwin Odeny, VBWSE Project Co-ordinator

6.2 Intermediate Technology Development Group-East Africa (ITDG-EA)

- Peter Mwananlani

  Maji na Ufanisi (MNU)

- M Macharya

6.4 Earth Care Africa (ECAF)

- W Ochola

6.5 St John's Community Centre (SJCC)

- R Sanguna
- J Muttin

6.6 Africa Water Network (AWN).

- S Ibrahim

7. SEAMEO-UNESCO Educational Congress

- Dr Art-Ong Jumsai na Ayudhya, Institute of Sathya Sai Education, Bangkok
- Dr Kulwant Singh, UN--HABITAT
- Dr A S Sadiman, Director, SEAMEO Secretariat, Bangkok.
- Ms Silverina Padayachee TAISSE
- Christopher Drake UNESCO
- Dr Henry Kaluba, Commonwealth Secretariat.

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