The Green Belt Movement Watershed Workshop

January 14th &15th, 2011

Green Belt

Movement Logo

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"I have been trying to convince others in government and in the community that we need to stop cutting or cultivating crops in our indigenous forests. When the forests are cleared, rivers and streams dry up, biodiversity is lost, and rainfall becomes erratic. This threatens farmers' livelihoods and has negative impacts on other species as habitats are lost."

Wangari Maathai

"I keep telling people, let us not cut trees irresponsibly... especially the forested mountains. Because if you destroy the forests, the rivers will stop flowing and the rains will become irregular and the crops will fail and you will die of hunger and starvation. Now the problem is, people don't make those linkages."

Wangari Maathai

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Workshop Purpose and Objectives

Purpose: Advance a better understanding of a watershed approach to help sharpen a vision and strategic approach for GBM.

Objectives:

- To provide GBM with a deeper understanding of watersheds and watershed approach to environmental conservation.

- To assist GBM with development of a step-by-step procedure for applying a watershed approach.

Ancillary Benefits of Workshop

- Develop the capacity within GBM to implement a watershed approach.

- Questions to ask and justification to help prioritize watershed work.

- Next programmatic/informational steps to advance watershed approach for GBM.

- Stimulate greater awareness of GBM's collective work across the organization.

- Chance to meet, catch-up, and connect with peers.

Introduction to Watersheds and Watershed Approach: Part 1

In order to provide a comprehensive yet simplistic overview of watersheds, Dr. Whelchel conducted a 45 minute lecture at the beginning of the 1st day. The principal purpose of the lecture was to provide the 32 workshop participants with a base of knowledge that would be reinforced throughout the 1st day. The **guiding questions for the lecture** included the following:

1) What is a watershed? Watertower to watershed(s)?

2) What is watershed management – "watershed approach"?

3) Why is this approach to conservation important?

4) How is it helpful for GBM's work? What can it help to achieve?

Working definitions for a watershed were provided including:

- A region or area of land where all of the water on it ultimately drains to a particular watercourse or body of water.

- If you track a drop of water that falls anywhere on the watershed, it will flow out through the same watercourse eventually.

- A watershed can be defined as a geographic area of land in which precipitation drains to a common point on a stream, river, pond, lake or other body of water.

- Draw a line along the ridgetops connecting the highest elevation points surrounding the lake or stream.

Key conceptual principals of watersheds were emphasized during the lecture including:

- Watersheds represent a mixture of uses and needs from ecosystems to livelihoods.

- Watersheds are comprised of not only the wet (rivers, streams, lakes, wetlands), but also the dry (hills, mountains, indigenous forests, cultivated lands).

- Uses and needs within watersheds are connected and dependent upon one another regardless of where they occur within a watershed.

- Three principal zones or divisions within a watershed or river system;
  - Headwaters (steep, fast moving water)
  - Transfer Zone (low elevation streams merge, gentler slopes)
  - Deposition Zone (lower elevation, slow moving, broad valleys)

- Watertowers are comprised of watersheds

- Each watershed is unique and different from other watersheds even though they might flow from the same watertower.

- Watershed planning requires identifying nature's benefits to help guide reforestation efforts. Some of the life support services provided by watersheds include water filtration, water storage, climate regulation, nutrient cycling, disease regulation, flood control, and therefore improved livelihoods and biodiversity.

Examples from TNC's Connecticut River program were used to demonstrate the prioritization process using the Eight Mile River. This process resulted in the identification of priority target areas that could show measurable results. A fraction of the Connecticut River Watershed where identified for interventions because this is the most effective point to make the biggest difference over the shortest period of time.

The lecture also provided **several compelling reasons to incorporate and advance a watershed approach** including:

- ✓ **It is the Gold Standard**: Used across the globe where water is major issue - to coordinate and develop collaborative plans & actions.

- ✓ **Maximize Impacts of Actions**: Trees planted using a Watershed Approach will be planted in a strategic locations that will maximize the benefits derived from each tree within that watershed.

- ✓ **Fund Raising**: May attract more funding if we begin talking the same "watershed language" as other major environmental conservation actors.

- ✓ **Fosters Sense of Responsibility and Pride**: Integrates economic growth/stability with environmental concerns by connecting people through water.

- ✓ Builds a sense of community, **help reduce conflicts**, increase commitment to the actions and **improve the likelihood of success** for environmental programs.

In addition, the concepts behind and the implementation of **a watershed approach compliments and fits well with GBM's mission**.

"The mission of the Green Belt Movement is to mobilize community consciousness for self-determination, equity, improved livelihoods and security, and environmental conservation. "

Watertower to Watershed Instructional Exercise:

The participants broke into 4 groups comprised of approximately 7-8 members. The groups were asked to engage in an instructional exercise designed to visually reinforce the concepts presented during the preceding lecture and force a constructive verbalization of the leap from watertowers to watersheds (Appendix A: 1st Breakout Sheet). The first step in the exercise was to collectively list 5 reasons why watersheds are important as provided below.

Group #1: Watersheds…

1. Support nutrient and biogeophysical cycles;
2. Capture, regulate, and supply water;
3. Important in micro-climate regulation;
4. Provide habitat for biodiversity;
5. Support human livelihoods and economic development.

Group #2: Watersheds…

1. Improve livelihoods by providing quality water which can be used in agriculture and health improvements;
2. Enable biodiversity to survive;
3. Can help to prioritize our work and describe GBM's work in more scientific terms;
4. Can help with climate control;
5. Support development and determine settlement areas, water supply and effect development planning.

Group #3: Watersheds…

1. Provide water;
2. Regulate climate;
3. Conserve biodiversity;
4. Control floods;
5. Control sedimentation.

Group #4: Watersheds…

1. Provide water to communities and the entire ecosystem;
2. Provide habitats for wild animals;
3. Life-support to domesticated animals and human beings;
4. Sustain hydrologic cycles;
5. Source of hydropower.

Each group then constructed a watertower diorama with multiple watersheds. The dioramas were made using large sheets of paper. The groups were asked to draw the river systems within the watersheds, spray with dyed water to simulate watershed drainage, and describe the watersheds within the watertower dioramas (shape, length, slope, other features).

Group #1: Watershed(s) descriptions…

"very steep gradient at the headwaters which started high altitude with waterfalls; short transitional zone with extensive wetlands where underground seepage takes place; finally there is a lake just a short distance from the wetlands where deposition takes place. No trees. Our watertower had 11 watersheds."

Group #2: Watershed(s) descriptions…

"triangular and sloping gradient with multiple rivers; the ridges are steep and sharp; headwaters are steep with long transitional zones; there were 6 watersheds in our watertower."

Group #3: Watershed(s) descriptions…

"Sloping areas have less vegetation and water runs very fast; erosion is higher on the sloping lands and sedimentation is greatest in the lower shallow lakes; working closer to the lake needed; less sloping areas need more vegetation; working on the higher regions is more necessary; there is a likelihood of more lakes on the less sloping areas."

Group #4: Watershed(s) descriptions…

"the gradient is very steep at the headwaters and lowers towards the deposition zone; 12 km long with a V-shaped valley; few streams that drain to 5 swamps; snow at the top is a source of water for the rivers; 2 major rivers

and 6 major tributaries and one major lake; meandering river towards the depositional zone."

Each group reported out to all participants on their experience and findings. Additional discussion by staff are captured in Appendix B.

Watersheds of Kenya

The help strength the concepts of watersheds presented in the morning lecture and the watertower to watershed links provided by the instructional exercise, a session on the watersheds of Kenya was conducted. The purpose of the presentation was to;

- Reinforce what watersheds look like within and across the watertowers
  - Geopolitical vs. ecological boundaries
  - Differences between upper and lower watersheds
  - Current extend of forested land cover type

- Define the initial mapping steps and importance of GIS to a watershed approach
  - Step-by-step procedure requires GIS

- Highlight the types of consideration required in a watershed approach

This session was conducted as a live sequential compilation of GIS layers that captured and involved the participants. This was the first exposure for the majority of the participants to the watershed boundaries and associated features within their respective watertowers. The sequence of additive GIS layers were presented as follows;

Familiar boundaries to the participants:

- ✓ Global map of watertower boundaries
- ✓ Geopolitical boundaries (provinces, constituencies)
- ✓ Towns/cities and roads

Less familiar boundaries and attributes:
- ✓ Watershed boundaries and hydrography (rivers, streams, lakes)
- ✓ Forested land cover

Introduction of additional watershed layers/attributes for Aberdares
- ✓ Position of gazzetted forests within and across watersheds
- ✓ Existing forest cover within and across watersheds
- ✓ Position of forested areas in relation to rivers and streams

- ✓ Past and present GBM community networks
  - ○ Nurseries and planting areas
  - ○ Position within and across watersheds

Watersheds of Kenyan Breakout Discussion

The "watersheds of Kenya" presentation was followed by a breakout discussion with four small groups each focused on one or a combination of watertowers; MT. Kenya (Group#1), Aberdares (Group #2), Mau Forest Complex (Group #3), and Mt. Elgon/Cherangani Hills (Group #4). Each group was provided with a series of guiding questions (Appendix A: 2nd Breakout Sheet) and a large format map of their respective focal watertower. The GIS layers included on the watertower maps included watershed boundaries, forest cover (Aberdares and Mt. Kenya only), hydrography (rivers, streams, lakes, etc...), and GBM communities, nurseries, and planting areas.

The questions were designed to further engage and drive the discovery of the small groups around the position and linkage of watersheds within the watertowers. At least one member of each team had specific knowledge of the watertower and associated watersheds. The questions also initiated the discussion of ranking and eventual prioritization of one watershed over another and the goals and objectives that drive GBM's current investment in specific watersheds. The guiding questions included:

1. What do the watersheds look like in your watertower? Describe them...
2. What are the important watersheds and for what reason?
   a. Supply of water for Nairobi or other large population centers
   b. Greatest amount of political interest and attention
   c. Largest indigenous forest – greatest deforestation rate...
3. Where are the important places to reforest within the watersheds?
4. Which watersheds have an existing GBM community network? Which do not?
5. Where are the opportunities/feasible places to plant?

Working in an interactive fashion assembled around the data provided on the large format maps, each of the groups developed responses to the guiding questions above.

Group #1: Responses for Mt. Kenya...

1. "they are well distributed – going in all directions."

2. "the watersheds are more on the wind-ward side than on the leeward side."
3. "the important watershed; the eastern watersheds that drain into River Tana because of the habitat provisioning supplying water to the lower parts of semi-arid east, and support agriculture and factories." "the western watersheds supply water to the semi-arid areas of the western parts; supply water to hotels, flower farms, and game parks; have the greater political influence then the eastern side because of its high potential, many economic activities and large indigenous forests." The largest indigenous forests are on the eastern side."
4. "both the eastern and western side have GBM networks."
5. "the important places to reforest are on the upper side of the watersheds."

Group #2: Responses for Aberdares…
1. "Most of the watersheds are concentrated around the indigenous forests. We have watersheds and sub-watersheds in the South Lands part of the Aberdares watertower, the western slope and the eastern slope."
2.
   a. "The important watersheds include the watersheds associated with the Ndakaini dam which supplies Nairobi with water; another important watershed are those that supply Sasumua Dam including South Kinangop watershed."
   b. The greatest amount of political interest and attention is focused on the areas with PELIS programs on the eastern and western Kamae Forest and Gita Forest.
   c. The indigenous forests with the greatest deforestation rate are the Gita forest especially along Kipipri Hills where GBM has a bio-carbon site."
3. "All the watersheds have an existing GBM community network."
4. "At the headwaters where degradation has taken place would be ideal places to reforest."
5. "Feasible areas to plant include areas where shamba systems and forest fires have cleared the land."

Group #3: Mau Forest Complex…
1. "44 sub-watersheds in the Mau Forest Complex; the Eastern Mau and the Maasai Mau are expansive as compared to the Western Mau; Maasai

Mau watershed is the largest and the forest is still intact in the north as opposed to the south."

2. "the important watersheds; Eastern Mau feeds Lake Nakura and is an important forest attraction, supports farming activities, and Lake Naivasha." "the Maasai Mau is the source of water for several maasai mara game reserves, farming, and Lake Nakura." "the Western Mau supports hydro-electric power generation."
3. 'most important watersheds to reforest include the Western Mau and the Maasai Mau.'
4. "no GBM activities in Western Mau."
5. "Eastern Mau."

Group #4: Cherangani Hills and Mt. Elgon
Cherangani Hills

1. "there are 9 watersheds that all radiate from a range of hills; watersheds are steep with valleys."
2. "the most important watersheds are in the western part because most tributaries flow into River Nzoia (the main river) and finally into Lake Victoria."
3. "the same watershed has all the GBM activities in this area; Tree planting is happening in Kabolet Forest; another area of priority might be Kapcherop due to the severe lack of vegetation."

Question #4 and #5 not completed by Group.

Mt. Elgon

1. "all rivers radiate from the hilltop (north western side); there seems to be 7 watersheds."
2. "the important watersheds based on the density of rivers includes the south eastern tip of the forest."
3. "GBM's activities are in Kaptama Division."
4. "Kaboyuop Forest is important to reforest."
5. "Bananteka Forest."

Introduction to Watersheds and Watershed Approach: Part 2

In order to provide a comprehensive yet simplistic overview of a watershed approach, Dr. Whelchel conducted a 45 minute lecture at the beginning of the 2nd day. The principal purpose of the lecture was to build on the base of knowledge gained during the 1st day by provided the tools to develop a procedure to advance a watershed approach for GBM. The **guiding topics/questions for the lecture** included the following:

1. Threats that drive purpose for a watershed approach.

2. What are the steps to realizing <u>a</u> watershed approach?

3. Approach results in greater conservation and livelihood outcomes.

Key components of lecture:

Key issues and threats that drive and direct a watershed approach include;

- Population needs & pressure
    - Food, fuel, and water
- Direct use of public forest in the upper watersheds
    - Charcoal production
    - Logging of indigenous forests
    - Conversion to plantations
    - Livestock grazing
    - Settled encroachments & PELIS
- Energy production (Hydro)
- Political focus/Constituent's needs

Important attributes of various watertowers…

Mount Kenya (Source: Mt. Kenya East Pilot Project)

- Mt Kenya water contributes close to 49% of the flow of Tana River;
- Tana River supports 50% of the hydropower generated in Kenya; irrigated agriculture; fisheries; livestock production and biodiversity conservation in the lower Tana;
- Strategic to Kenya's economic development and life support;

- Lost due to degradation within the upper and middle watersheds of the river.

Mau Forest Complex (Source: BBC 9/29/2009)

- Mau forest is the largest in Kenya - the size of the Aberdares and Mount Kenya combined;
- 10 million people depend on its rivers;
- They feed six lakes - Victoria, Turkana, Natron, Nakuru, Baringo and Magadi;
- Plus eight wildlife reserves - including the Masai Mara, the Serengeti and Lake Nakuru;
- The rivers have potential for 518MW hydro electricity - 41% of Kenya's total;
- A quarter of its 400,000 hectares have been degraded.

Steps and Procedure for a Watershed Approach...

Two paths or levels of strategic engagement

1. Internal **Tool**: Use the watershed approach to sharpen impact of GBMs tree planting projects.
    - Purpose of GBM Watershed workshop.

2. External/stakeholder **Process**: Comprehensive approach to integrating multiple uses within a sustainable, longer-term solution.
    - Example: Eight Mile River, Connecticut, USA
    - Watershed Management Plan provided as example

External/Stakeholder Process...

1. Prioritize watersheds and issue/threat to be addressed
2. Indentify and convene broad array of stakeholders
3. Complete comprehensive watershed inventory
4. Develop S.M.A.R.T. objectives, strategies, tasks

5. Finalize Watershed Management Plan
6. Secure funding and implement Plan
7. Measure, Evaluate, Adapt

Internal Tool: Needed steps to inform a Watershed Approach framework for GBM...

- Assemble and generate maps of target areas <u>showing</u> the watersheds, rivers, forest cover, settlements, other uses, <u>trends</u>, etc.
  - o Capture input from watershed level staff
- Identify target Watertower(s) and associated Watersheds (e.g., Aberdares, Tana river watershed)
- Define the criteria that will be used to select the most strategic watersheds for GBM:
  - o Existing resource (forest cover, riparian cover)
  - o Trends (forest cover declines, pop. growth, poverty)
  - o Established/proven community networks
  - o Opportunities (transportation, access for monitoring)
  - o Advances organizational/watershed-based objectives
- Definition and agreement on vision and objectives
- State the S.M.A.R.T. objectives to be achieved (e.g., increase indigenous forest cover by 25% in priority watersheds of Aberdares in 10 years).
- Ranking of watersheds based on criteria
- Prioritize action within highly ranked watersheds
- Measure and track progress
- Adjust and adapt based on results – success and failures – and opportunities

Examples of S.M.A.R.T. Objectives to advance a watershed approach for GBM

- ✓ By 2020, increase indigenous forest cover by 5% within 2 high priority watersheds.
- ✓ By 2015, increase the annual income of 5 group by 10% through sustainable forestry in 3 priority watersheds.
- ✓ By 2015, convert 500 hectares of plantation to indigenous forest cover and secure permanent protection via legally binding agreement with KFS within 1 priority watershed.

Prioritize action within highly ranked watersheds…

Guiding Consideration for Identifying Planting Sites
- ✓ Position within Watershed
- ✓ Connected vs. Isolated
- ✓ Riparian Corridors & Steep Slopes
- ✓ Wetland Buffers
- ✓ Nature's Benefits

The Watershed Approach in action…

Central Questions for GBM: How would we want to plant our trees so that we get the greatest benefit from each tree?

- ✓ Reforest the headwater of the river.
- ✓ Restore riparian corridor forest (100m on each side of river or stream).
- ✓ Connect with existing forest cover.

Aberdares Pilot Watershed Project:

The session was designed to provide the participants with a practical example of how the work in the Aberdares can be interpreted in the context of a watershed approach. The session centered on a presentation by the project officer for GBM's Aberdares work and currently available GIS data utilized during the 1st day. The items discussed included the identification of criteria to use to identify prioritize watersheds across a watertower.

Watershed Goals and Objectives Breakout Discussion:

The "Aberdares Pilot Watershed" presentation and exercise was followed by a breakout discussion with four small groups each focused on one or a combination of watertowers including; MT. Kenya (Group #1), Aberdares (Group #2), Mau Forest Complex (Group #3), and Mt. Elgon/Cherangani Hills (Group #4). Each group was provided with a series of guiding questions (Appendix A: 3rd Breakout Sheet) and a large format map of their respective focal watertower. The GIS layers included on the watertower maps included watershed boundaries, forest cover (Aberdares and Mt. Kenya only), hydrography (rivers, streams, lakes, etc…), and GBM communities, nurseries, and planting areas.

The questions advanced further the discussion of ranking and eventual prioritization of one watershed over another and the goals and objectives that drive GBM's current investment in specific watersheds. At least one member of each team had specific knowledge of the watertower and associated watersheds. The guiding questions include:

1. Where is GBM working within the watertowers? And why?
    a. Aberdares, Mt. Kenya, Mau, Elgon, and Cherangani
2. Which watersheds are most important to GBM? And why?
    a. Use Aberdares as an example
3. What currently guides the decisions to start and continue working in an area?
4. Generally, what are the goals/objectives of existing projects?

a. Ecological significance? Indigenous forest health? Water/food provisioning?
5. What are some reasonable goals and objectives for watershed(s)?
6. Who are the partners that will need to be included to realize these goals/objectives?
   a. Not just the communities…

Working in an interactive fashion assembled around the data provided on the large format maps each of the groups developed responses to the guiding questions. Due to time constraints, the groups were tasked with answering questions 2, 3, and 4 only. Some groups did provide answers to the other questions as indicated below.

Group #1: Responses for Mt. Kenya…

2. "the most important watersheds to GBM along the eastern edge of Mt. Kenya are a) Thuchi, b) Mutonga, and c) Narumoru. The rivers of importance within these watersheds include a) Kathita, b) Mara, c) Mariara, d) Thingithu, e) Iraru, f) Kithino, g) Mutonga, h) Nithi, i) Manyaga, j) Kamanyaga, k) Thochi, and l) Tungu. Along the western edge the important watersheds include the Shirimon and Narumoru that feed the Shirimon, Nanyuki, and Narumoru Rivers." "these watersheds are important because they support tea and coffee factories, irrigation schemes, and hydro-electric power generation in the east and because they support agriculture, horticulture, pastoralists, and game ranches in the west."
3. "the current guide for decision making is the need to maintain the potential of lower catchment areas to eliminate resource conflicts. In addition, the desire to reduce forest pressure and encroachment and climate change mitigation guide decisions for existing work in the current watersheds."
4. "the general goal is to conserve ecological functions and improve community livelihood." "the objective is to 1) rehabilitate forest degraded areas, 2) improve community livelihood, and 3) community empowerment.
5. "reasonable goals for watersheds include 1) create alternative source of livelihoods for riparian and catchment communities, 2) restoration and maintenance of watersheds, and 3) empower watershed communities to have capacity to manage the resources."

6. "partners to share the load include communities, KFS, NEMA, KWS, Ministry of Agriculture, KTDA, WARMA, Local CBOs, CFAs, and localized NGO's."

Group #2: Responses for Aberdares…

2. Not addressed by group
3. "what currently guides decisions to commit to an area include 1) environmental conservation and improving local livelihoods, 2) needs assessments (interest and need), and 3) organizational capacity including existing groups."
4. "goals and objectives: restore hydrological functions, restore biodiversity, and improve livelihood."
5. Not addressed by group
6. "other partners to include: Ministry of Agriculture, KFS, Administration – chiefs, CFAs."

Group #3: Responses from Mau Forest Complex…

1. Not addressed by group
2. "the most important watersheds are eastern Mau because it feeds Lake Nakura (tourism), improves livelihoods, helps geothermal, and biodiversity considerations." "another important watershed in the Maasai Mau because it supports the Mara River, Masai Mara game reserves, pastorial communities, Ewaso Njiro and the lakes (breeding for flamingos)."
3. "the principal guides for decisions include 1) the amount of funding, 2) impact made on previous projects, 3) ecologically threatened regions, 4) livelihoods of people/improve livelihoods, and 5) political climate."
4. "the goals and objectives include ecological significance, support hydrology (water systems), increase indigenous forest cover, improve livelihood of the communities."
5. "livelihood improvements, increased biodiversity, increased forest cover, increased discharge of water to our rivers, and change attitudes of people towards conservation."
6. "partners: GOK, donor community, other NGOs."

Group #4: Responses for Mt Elgon and Cherangani Hills

Mt. Elgon:

1. "the most important watershed is the south western part of Mt. Elgon (Kepteme Watershed) and the Kaboiywo Forest."
2. "many watersheds that provide source of water for Rokok, Merekis, Terem, Kibisi Rivers that serve the western province."
3. "decisions are guided by the need to restore and protect areas in and around water catchments in Aeon areas which covered south western part of Mt. Elgon."
4. "goals and objectives: ecological significance including 1) soil erosion protection (reducing sedimentation, landslides, etc...) and 2) restore and protect endemic species of flora and fauna (e.g., Elgon teak). In addition, the indigenous health of the forest and the improvement of livelihood (increased production of maize, onion and irish potatos)."
5. Not address by group
6. Not address by group

Cherangani Hills:

1. "the most important watershed in Nzoia watershed (western part of Cherangani Hills)."
2. "the Nzoia watershed – source of water for River Nzoia."
3. Not addressed by group
4. "goals and objectives: To restore and protect areas in and around water catchments in Aeon areas which covered western part of Cherangani Hills." "In addition, ecological significance in the form of soil erosion protection, flooding (reduction and control) downstream into Budalangi, restore and protect endemic species of flora and fauna (e.g., *Croton macrostachyus*, *Olea capensis*, sitatunga antelope, monkeys, birds and insects; indigenous health of forest in its undisturbed state; water and food provisioning; livelihoods entails livestock production and micro irrigation along streams for vegetable production and fish farming."
5. Not addressed by group
6. Not addressed by group

Watershed Approach Procedure Development Exercise:

This session used a participatory process to solicit initial individual responses, followed by small group summations, and finally collective consensus by the entire group on a final step-by-step procedure for applying a watershed approach (workshop objective #2). Based on the knowledge gained through a formal lecture and small group discussion, the participants were presented with the following question; "What are the steps needed to both integrate and implement a watershed approach for GBM?"

The question was presented to all participants who were then asked to write their two principal responses on small sticky notes and place them on the board in front of the training space. Several participants grouped similar responses into categories for which single titles were identified. Three groups then developed independent step-by-step procedures; each of which were placed vertically side-by side. All participants then worked through the similarities and differences of the three groups resulting in a single collectively identified final procedure.

The initially identified categories and individual responses are as follows:

Category: "Information – Identify Watershed"

- Indentify the watersheds within the watertowers
- Use GIS mapping to identify key rivers within the watershed
- Identify priority watertowers and watersheds
- Identification of suitable criteria for indentifying priority watersheds via a participatory approach
- Identify the most significant watersheds in each of the watertower – basing on number of rivers, population effects, and economic benefits; conduct baseline survey of watersheds
- Review existing projects to learn where GBM has used similar methodology and identify what we need to do in addition to focus on watersheds
- Target a watershed and plant trees around the head water region
- Look at the watertower and ascertain how many watersheds exist
- Come up with priority considerations of each of the priority watersheds

- Indentify the target population or community to be improved via priority watersheds
- Identify the need for the project, the watertower, and watershed
- Identify the river that drains from the watershed

Category: "Setting Goals and Objectives"

- Indentify the watersheds that GBM is currently working in and conduct a situational analysis (i.e., feasibility study)
- Develop SMART Objectives on the ones identified depending with the available resources
- Define GBM's strategy in terms of watershed approach – vision and objectives
- Identify the importance of the watershed to the communities living within and around it
- Develop project design documents basing on the findings of the baseline surveys

Category: "Prioritization of Project Areas"

- Rank the watersheds in terms of priority for rehabilitation
- Concentrate on a few watersheds in order to maximize the impact
- Take into consideration the watersheds in the area and their benefits to the communities
- Start implementation from the top towards the middle of priority watersheds

Category: "Budgeting and Resource Allocation" & CEE

- Project implementation is dependent on resource availability

Category: "Training and Community Consultations"

- Conduct capacity and awareness building in order to empower the community to be able to manage their resources is also creating a sense of ownership
- Promote a watershed approach in order to be able to garner resource support

- Participatory rehabilitation of degraded areas in order to restore then to their former glory
- Involve the adjacent communities in conservation and rehabilitation of a particular watershed
- Lias with other relevant stakeholders to take part in the implementation process
- Intervention measures such as capacity building, advocacy issues, should also go alongside the implementation process

Category: "Monitoring and Evaluation" & "Adaptive Management"

- Improved livelihood of communities in the watershed so they leave the closed canopy forest intact
- Rehabilitate the headwaters that have been degraded and whose river that originates from there serve a large number of people in terms of water for domestic livestock, agriculture and industrial among other uses
- Project implementation plan should be prepared based on the available resources
- Project implementation should follow a well defined set of objectives
- Plan an exit strategy for areas that do not perform as desired

The following table provides a step-by-step procedure list from each of the three groups and the final, collectively identified GBM step-by-step procedure for advancing a watershed approach.

Group #1	Group #2	Group #3	GBM
Information ID	Identification of watershed from the watertowers	Secure organizational consent	Organizational buy-in
Setting Goals & Objectives	Conduct situational analysis per watershed	Strategy for implementation & goals/objectives	Information (assemblage and analysis)
Prioritization of Watershed Project Area	Develop SMART objectives and key indicators	Indentify watersheds and review existing projects	Setting goals, objectives, strategies, and indicators
Budgeting/Resource Mobilization	Allocate resources*	Prioritization of project areas	Prioritizing watersheds
Baseline Studies	Project implementation plan	Pilot the approach	Budgeting
Training & Consultancy & GBM 10-Step	Conduct an impact assessment	Develop a template/design for developing projects with approach	Conduct baseline
Adaptive Management & Monitoring		Budget and resource allocation	Conduct a pilot^
Evaluation/Tracking Progress/Impact Assessment		Watershed implementation	M & E
		M & E with adaptative management	

*Resources entail financial, human, technical, mechanical, and time (e.g., PIP)
^Once pilot is complete replace step with "watershed project implementation"

Participant List:

Appendix A: Agenda and Breakout Sheets

GBM/TNC Watershed Workshop Agenda

1st Day: January 14th, 2011

9:00am – Welcome and Introductions

9:30am – Workshop Goal and Objectives

10:00am – Introduction to Watersheds and Integrated Watershed Approach – Part 1

11:00am – Watertower to Watershed Instructional Exercise (Small Group Breakout #1)

12:30pm – Lunch

1:45pm – Watersheds of Kenya

2:30pm – Watershed Discussion (Small Group Breakout #2)

3:30pm - Rest

3:45pm – Group Report Out from Breakout #2

4:30pm – Summarize Days Work

5:00pm – Retire for the Evening

2nd Day: January 15th, 2011

9:00am – Welcome, Comments, Goals and Objectives for Day #2

9:30am – Introduction to Watershed Approach - Part 2

10:30am – Aberdares Pilot Watershed Project

11:30am – Watershed Approach Discussion: Goals and Objectives (Small Group Breakout #3)

12:30pm – Lunch

1:30pm – Watershed Process Implementation

3:00pm – Next Steps for GBM's Watershed Approach

4:30pm – Summarize Workshop Work

5:00pm – Completion of GBM Watershed Workshop

GBM Watershed Workshop: <u>1st Breakout: Watertower to Watershed Instructional Exercise</u>

Step #1: Indentify note taker and reporter

Step #2: Take 10 minutes to write down 5 reasons why Watersheds are important - one list per breakout group.

1.

2.

3.

4.

5.

Step #3: Watertower to Watershed Instructional Exercise

Directions as follows:

1. Mash-up paper provided and tape corners to form uplift in middle – mimic watertowers;
2. Identify how many watersheds you think are present on your watertower;
3. Drawn lines where you think the rivers are located within your watersheds;
4. Select several adjoining watersheds and spray with water provided;
5. Describe the watersheds in your watertower
   a. Shape, length, slope, other features…

<u>Watershed Descriptions:</u>

GBM Watershed Workshop: 2nd Breakout: Kenyan Watersheds Discussion

Step #1: Indentify note taker and reporter

Step #2: Take 10 minutes to familiarize yourselves with the large watertower map in front of you and then proceed to use the following questions to guide your discovery. Please provide responses to each question.

Guiding questions for 2nd breakouts:

- What do the watersheds look like in your watertower? Describe them…
- What are the important watersheds and for what reason? Examples…
    - Supply of water for Nairobi or other large population centers
    - Greatest amount of political interest and attention
    - Largest indigenous forest – greatest deforestation rate…
    - Others!?!
- Which watersheds have an existing GBM community network? Which do not?
- Where are the important places to reforest within the watersheds?
- Where are the opportunities/feasible places to plant?

Feel free to draw on the maps provided…

Groups responses to Guiding Questions:

GBM Watershed Workshop: 3rd Breakout: Watertower/Watershed Work

Guiding questions to assist with setting priorities and indentifying objectives:

- Where is GBM working within the watertowers? And why?
  - Aberdares, Mt. Kenya, Mau, Elgon, and Cherangani

- Which watersheds are most important to GBM? And why?
  - Use Aberdares as an example

- What currently guides the decisions to start and continue working in an area?

- Generally, what are the goals/objectives of existing projects?
  - Ecological significance? Indigenous forest health? Water/food provisioning?

- What are some reasonable goals and objectives for watershed(s)?

- Who are the partners that will need to be included to realize these goals/objectives?
  - Not just the communities…

Please remember there is no right or wrong answer here - the goal is to gain a deeper understanding!

Appendix B: Open Discussion Notes/Reflections

Watertower to Watershed Instructional Exercise

- Staff began to reflect on their areas of work, making the linkages that the lakes are not rejuvenating itself but that our activities upper in the headwaters is influencing how the health of the river is....we must focus on the headwaters and ensure that our work in the transfer zone is not for not.

- Mathenge (Kajiado) said that if he is working hard in the transfer zone and someone is destroying the headwaters, then his work if for nothing.

- Caxton wondered whether the work GBM is doing in Elementaita, would be most effective if focus was on the Kariandusi hills (headwaters).

- Ezekiel mentioned that GBMs work in Eburu and Sururu forests has made a positive impact on the rejuvenation of rivers in the area. However it was noted that the credit seldom goes to GBM because we have not been able to make the connection between the work with do upstream and the gains on the water volume.

Introduction by Dr. Karanja - 2nd Day:

- Dealing with a watershed approach is about understanding the way we work and the ecosystem. We can link what happens upstream, midstream and downstream.

- The majority of the people who get the benefits of our work are in the mid and down- stream areas. That GBM will begin to speak in a different language.. he gave examples of Budalangi, Mt Kenya and Eburu where the officers could talk more intelligently about what they do beyond planting trees.

- On climate change, GBM is on the front line in the climate change discussions.   He focused on emphasizing that we need to transform the way we think about how we work. Not change the way we work.

Final Responses from Participants:

- Thanked Adam for his time. We thought it would be hard to understand. It was very clear that it was something we have been doing and now it is clearer. It will be easier to implement and to talk about it with others. It was an eye opener and we feel we can own it and run with it.
- I have learnt a lot in this approach. I have also realized that what I have been doing all along is along this line. I just did not know. I am only going back to upscale my work.
- Really appreciate the team and thank Adam for making this sink into our minds. We now have a direction. It is a revelation. I feel I now understand the approach much better. I am happy to see the team we have at GBM. We have wonderful ideas. We will work together to implement. I hope you will be available when we call you.
- No words to express my gratitude. Thanks.
- I want to say that this workshop was an eye-opener – broadened the outlook. We now look at what we do from a broad perspective. We have to look at things from the source. I want to thank TNC for making this possible and what we have come up with will be part of the system. I think we have introduced a new thing. We have now learnt something extra. It will help us do our projects better.
- Thank you Adam. You remind me of the biblical Adam. What I do in Mt Kenya and Mercy is on the other side there are links. Thank you.
- Thank you for this training. I thought I knew what watersheds were but what you took us through was an eye opener. I now realize I am working in a watershed something I never realized.
- Thank you. The workshop had helped me reorient my strategies to focus on important watersheds.
- I want to quote something that is happening. We are looking at vision 2030 for Kenya ; the countries development plan. Kenya should embark on conserving watersheds and reforesting … (from doc). Once we have resources available at the community level it reduces the gender inequalities. We have now taken a step towards achieving vision 2030 perhaps sooner.
- Thank you TNC and GBM management for continuously training us. We are now feeling like we are part of the organization. We can now connect between the hills and waters downstream. I am so happy.

- Before the workshop, most of us were asking what it is. We now know what it is and we know it is doable.
- I would like to thank you very much for the training. It was like a new approach but now we are experts and have some up with an approach. In future I hope we will see you back.
- All has been said, just to say Asante sana to Adam for the hard work and time he put into this initiative. For the last two years. I want to also thank Muta and Prof and all my colleagues here. It has been interesting and informative for those who have been involved for a while. I read so many books to be able to work with my colleagues because we were not experts. Thank you Adam for the guidance and information. Thank you again. We will keep coming back to you.
- For me is to say I am very happy because of the many discussions that started before I came to GBM have come to something. The hard work begins now as this has set a challenge for us. We need to rethink the way we work so we can see how we are contributing to forestry in Kenya and vision 2030. I am also really happy about the fact that people are reflecting on where they are working and how. I can say that if we continue this way Adam will see the difference when he next comes. For me I am happy about it all and we can't wait to get working on this and be able to take the organization in a direction where we can justify where we are working, how etc Our conversations with KFS will be more constructive and we will now be able to better negotiating with KWS putting together more compelling proposals.
- Thank you Adam for all the work. From a common perspective it was helpful to understand the language and the concept in a way that we can take the concept and be able to explain it.
- Stimulating, enjoyable and eye opening workshop. We have new set of tools. Knowledge is power. I love coming to work with you because it is stimulating. It informs our work and allows us to communicate better. Thank you all.
- "Andu nioge!...ngutire nyenje"