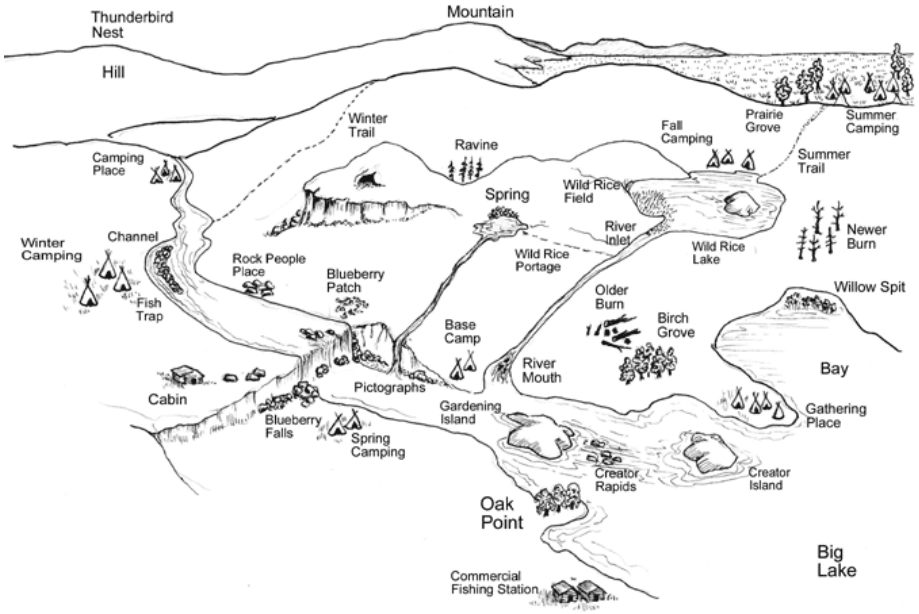
Making Maps that Make A Difference

A Citizens' Guide to Making and Using Maps for Advocacy Work



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“Learning as you journey: Anishinaabe perception of social-ecological environments and adaptive learning” Conservation Ecology 8(1):5

Table of Contents

The purpose of this guide is to introduce the power and process of mapping for communities facing destructive development projects. Mapping refers to any process that visually displays information at its location. The perspective could be looking directly down at farm areas, at a vertical slice along a riverbed, or at an angle to the landscape as if flying overhead. Each perspective communicates a different feel and understanding of the data represented. The common factor between them, however, is that they all highlight a particular aspect of the community or region and illustrate this aspect in a way that transcends language.

This guide is organized by the basic questions one would ask in any investigation: who, what, when, why, where, and how. These basic investigative queries are reorganized to address mapping your community and surrounding landscape.

We begin with **why** and illustrate the significance of incorporating mapping into a campaign. Next, we discuss **how** to create maps by collecting data and generating basic maps. After that, we provide some ideas of **what** information a community might map. Next, we discuss the basics of **where** that information or data should be mapped, that is, at what scale it should be mapped. Our last investigative question is **who** supplies the data, or what sources can be utilized to get spatial information.

We finish the guide with information about utilizing maps in a campaign. There are checklists and ideas about how to incorporate these powerful visuals into a political or social movement. This guide is intended to spark creative thinking about how maps are used in communities facing large development projects.

Chapter 1

Why Map

This chapter outlines some of the reasons how mapping products and processes can make your campaign more effective.

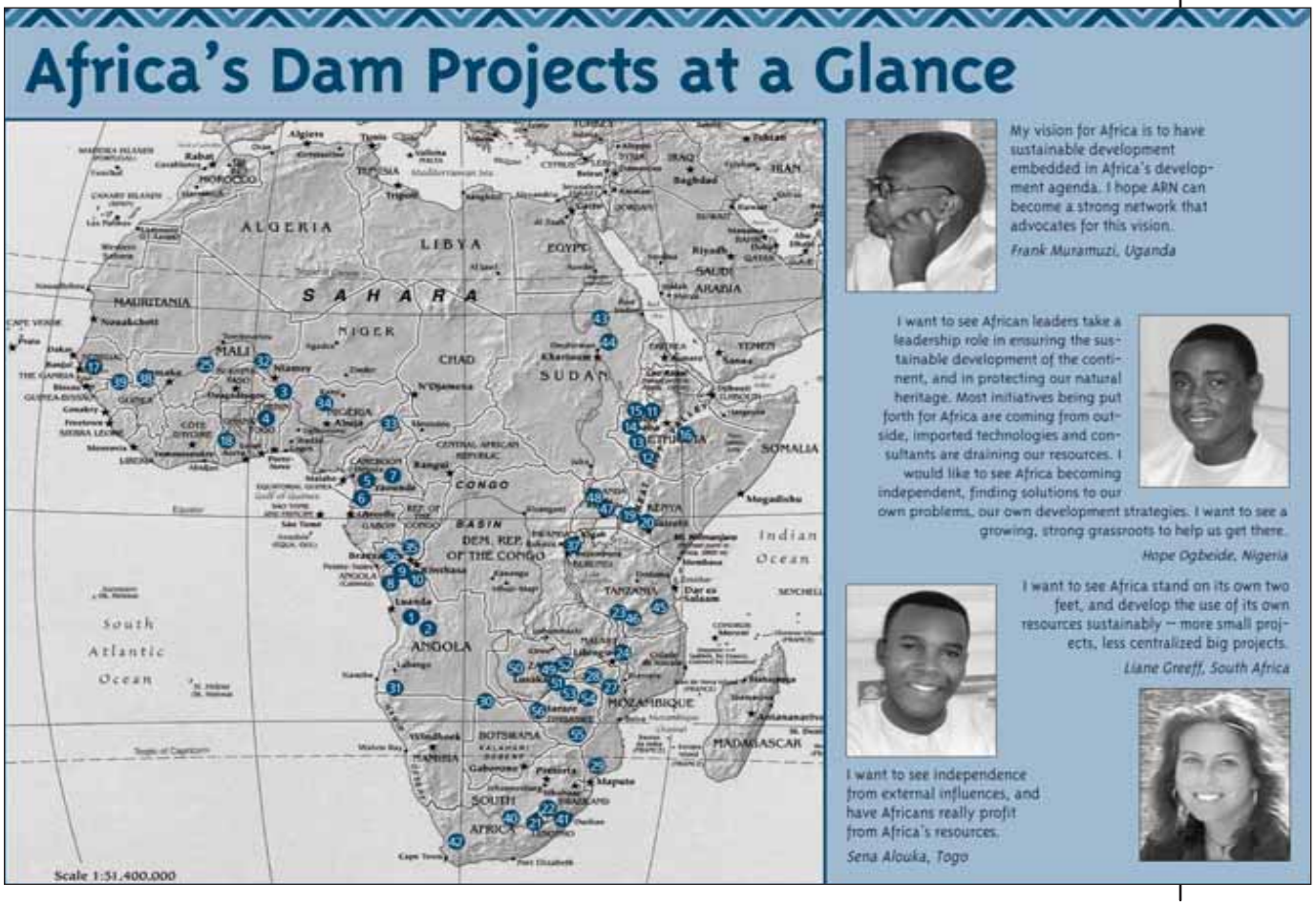


Figure 1. This map was created for a special edition of "World Rivers Review" that focused on Africa. It shows all dams now planned for the continent, with a vision by members of African Rivers Network on a more positive future for Africa's rivers.

What are the Benefits of Mapping for your Campaign?

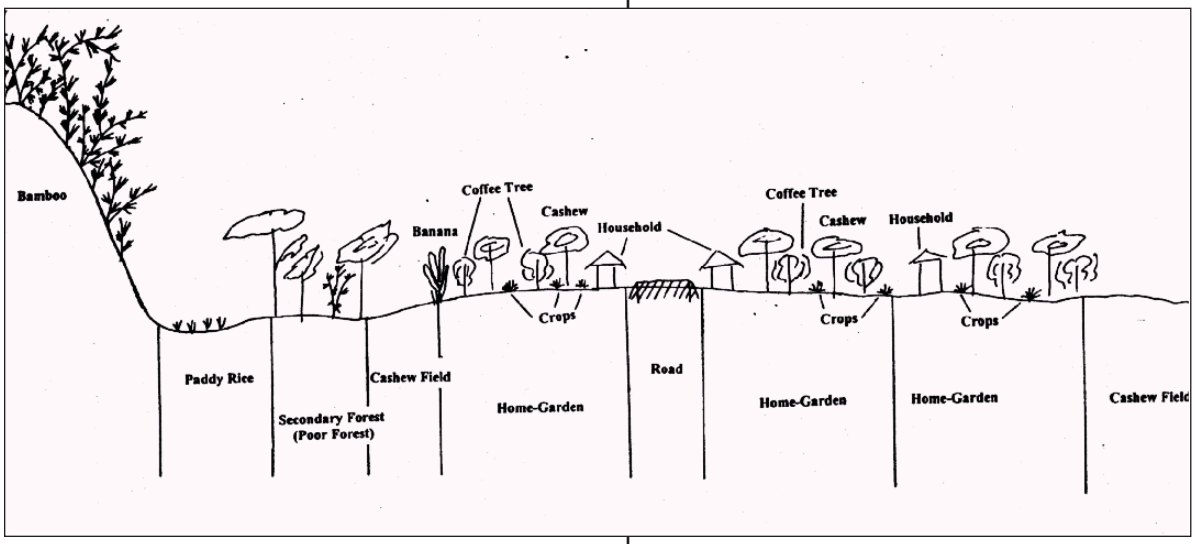


Figure 2. The image above is a transect of Lech Dong Hamlet, Dak Lak Province in Vietnam. This was created for a project investigating participatory methods for sustainable watershed rehabilitation and management. Other maps created in this project are later further in this manual.

Maps indicate importance. If a group has taken the time to produce a map, then the information presented on that map must be important! If you want your information to gain visibility, mapping is a very persuasive means to that end.

Maps make the invisible visible. They can communicate information that before mapping may have been unknown, even to the local community. Mapping can give a better understanding about how a landscape is truly used, thus giving added visibility, and therefore weight, to issues that officials or promoters of development projects may have previously ignored. This can serve to energize environmental or social justice groups to join efforts to protect a place from poorly planned development schemes, raise questions about officials' claims about proposed projects, and inspire citizens.

Maps communicate across languages, cultures, educational levels, disciplines, and professions. Because maps are visual, they can reach previously uninvolved groups or individuals and help to unify stakeholders with similar goals. Maps can facilitate discussion between local citizens, professional planners/ developers, government officials, scientists, activists and the international community at large.

Maps can help to organize your thoughts and priorities. The process of making a map can help your community clarify important issues to raise with officials and prioritize goals for advocacy work.

How Maps Provide These Benefits

Creating a map illustrates your unique landscape. Mapping your landscape moves away from generalizations and towards site specific conditions. Each region is unique, and it is important to show what is special about your particular community. What is used there and what will be lost? Listing your resources still keeps them at a formal distance, whereas with mapping, it becomes real. People can imagine being there.

Perhaps the floodplain in your community has many gravel bars that have been adapted for community uses, such as boat construction, festivals, seasonal markets or food preparation. Mapping these activities clarifies the use of local resources within this particular landscape rather than relying on generalizations and vague facts.

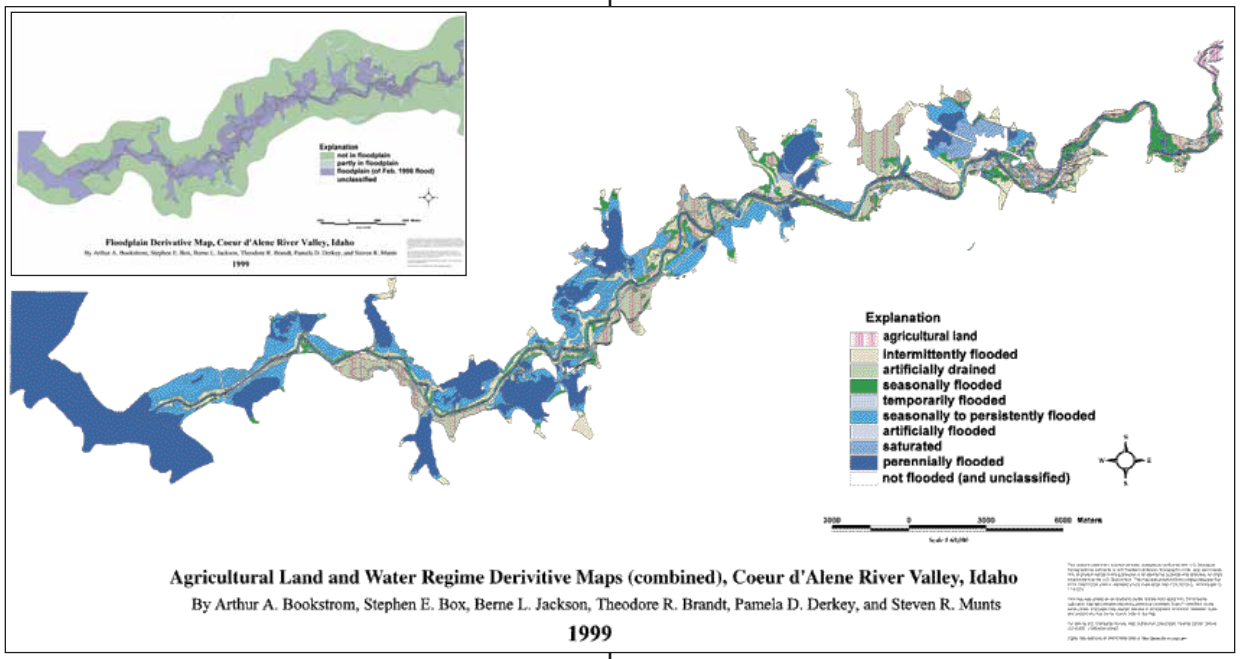


Figure 3. The small map above shows the estimated 100- and 500-year floodplains for a river in the US. This kind of information might be used to show the natural river's floodplain and the various uses the floodplain now supports. It could be used to raise questions with dam proponents about how a proposed dam could reduce floodplain-based livelihoods.

The large map illustrates site-specific conditions showing areas that are currently used for agriculture as well as other activities along the course of the river.

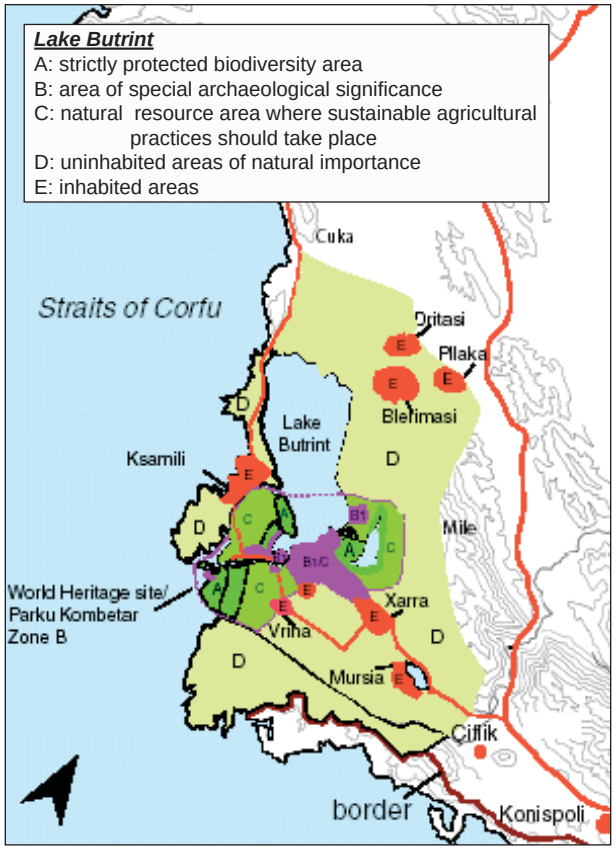


Figure 4. This map collated diverse information to make the case for Ramsar site protection for a wetlands and surrounding areas in Albania.

Maps can collate diverse information into one system. This visual layering or collation of losses could better communicate the true net impact of a project and call attention to the potential cumulative losses a project poses. Mapping this information can also shine a light on gaps in project proponents' data analysis, and builds a case for more complete impact studies.

Official use of documents such as environmental impact assessments can complicate the debate or skip over important aspects of a project's impacts. What often gets lost in official analysis of the impacts of river development projects are the kinds of losses that are particularly important to local communities or the cumulative effect of the various impacts. A map is an excellent way to collect all of these impacts into one visual tool for discussion.

You could use a map to show additional layers of impacts, such as dramatic increases in mosquito habitat, isolation of communities from each other, loss of productive agricultural zones, and loss of natural areas and materials used by the community.

Maps can illustrate patterns and help identify associations. If one is able to view the landscape from the perspective of a bird, many relationships become clear. For example, trade routes mapped in combination with hunting and fishing grounds for different groups can show heavier use than what was previously estimated.

Also, the collection of activities that occur at the water's edge can be mapped on one frame. This can show the diversity of uses that one river bank supports, thus increasing its importance in an environmental assessment process. It could also be useful to show on a separate layer how far people who will be resettled for a dam on that river would have to travel to do the same activities.

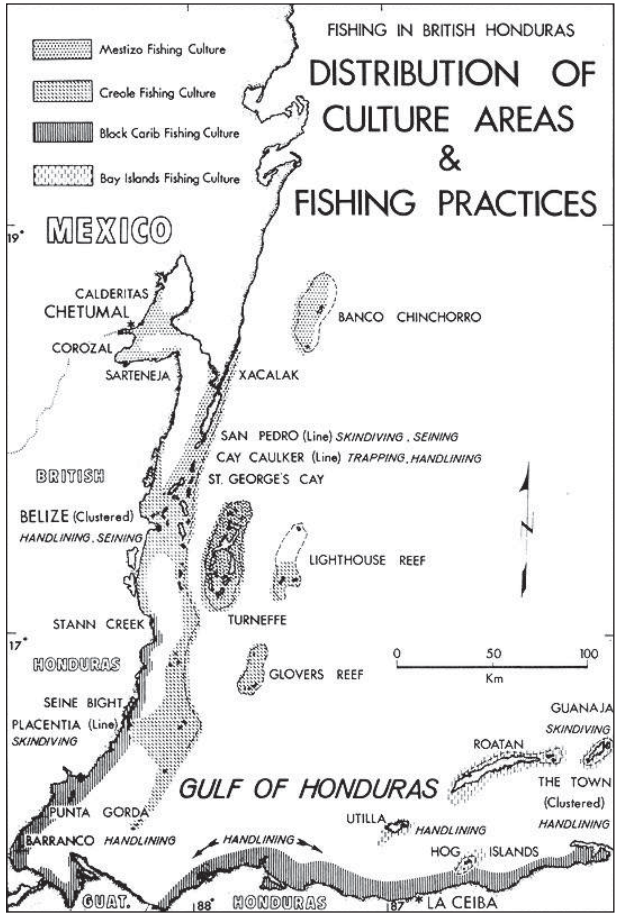


Figure 5. This map illustrates aspects of the cultural geography of fishing found along the western coast of the Caribbean Sea. The emphasis here is on the spatial distributions of fishing practices used by different people.

This map gives an example of a cluster of activity, highlighting patterns and intensity of use, that might otherwise be overlooked if not visually displayed.

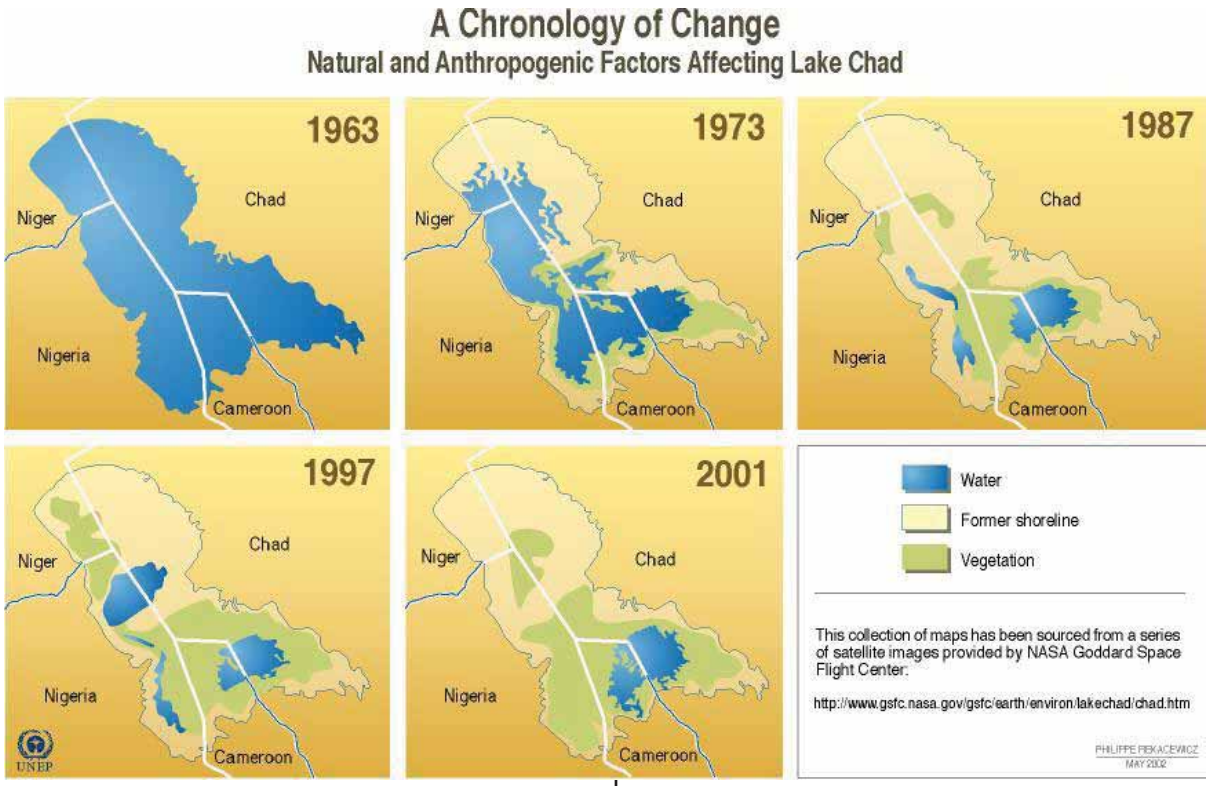


Figure 6. The example above shows the depletion of Lake Chad due to human activites. Climatic changes and high demands for agricultural water are responsible for the lake's shrinkage. This series was created by drawing over a series of satellite images.

The maps above demonstrate that the visual story of change is more dramatic than a discussion of numbers of acres or hectares lost.

Maps can illustrate change over time. Often, cumulative impacts are only understood by combining historical progression and projected changes. Illustrating these changes in maps bring to life the real conversions happening in your community and their consequences.

For example, repeated damming of rivers can lead to great losses in productive wetlands downstream. Showing the decline of these wetlands both historically and with projected estimates communicates much more clearly the cumulative effects of repeated development along the river. Mapping can facilitate loss calculations and communicate those losses persuasively.

Or perhaps your community has been affected by repeated flooding caused by poor management of upstream dams. Mapping the losses and changes to the community from the flooding could help you build a case for compensation or changes to dam management practices

Maps can illustrate proposed futures versus alternate futures. The impact of large-scale development projects may appear to be reasonable in reports. However, when illustrated on a map, the scale of the impact may be seen to be much greater than what has been conveyed in press releases, articles and other official reports. Visually comparing this projected future to alternate scenarios can be very persuasive in your campaign.

It is also important to think of alternative futures if the development project were to be stopped. What are some potential future scenarios for your landscape? Should it remain as it is? Should it change in some other way? Mapping these alternative scenarios is one way to help your community understand, define and prioritize its goals.

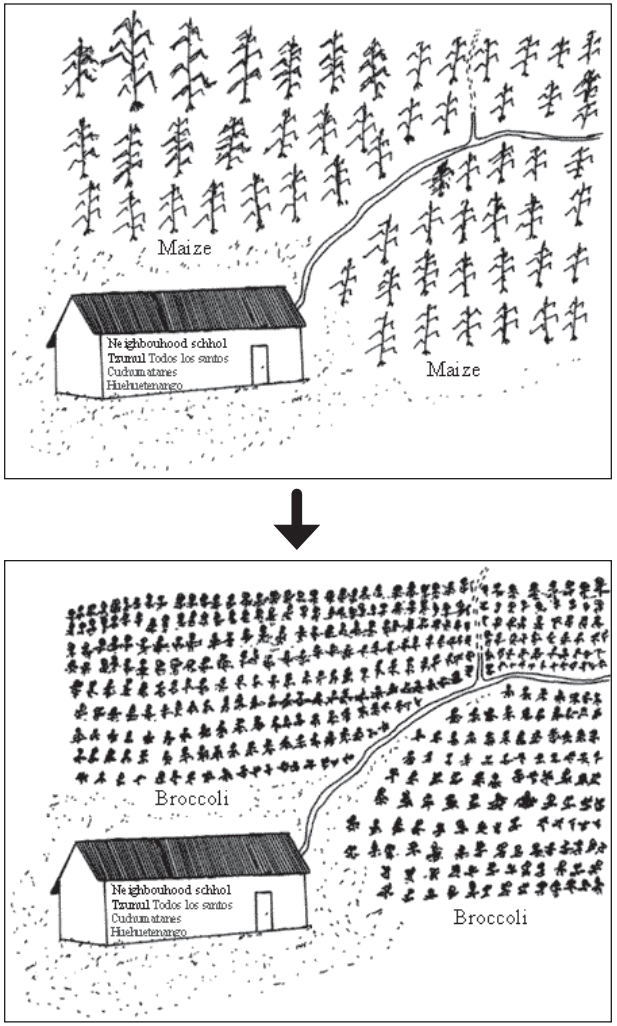


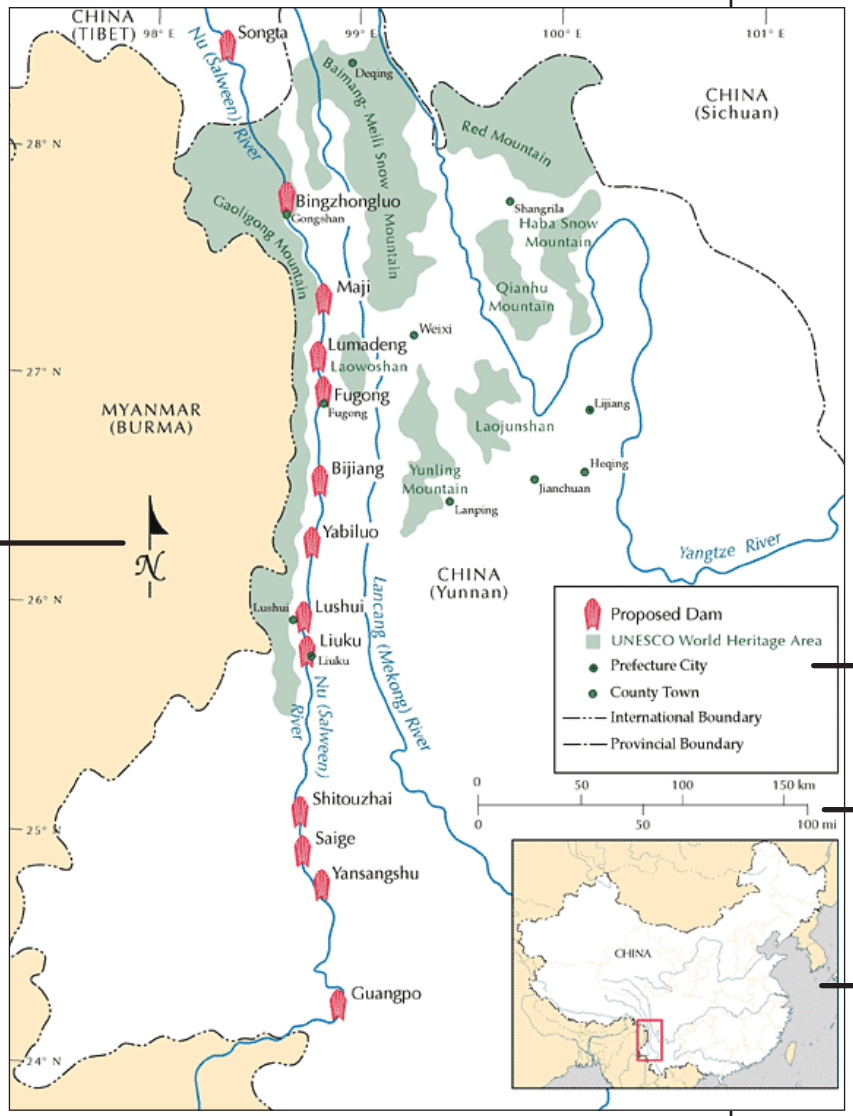
Figure 7. The above two maps were created by men in Tzunul, Guatemala. The top shows their perception of the current crops and the bottom illustrates the future that they expect: the total displacement of maize with commercial crops of broccoli (requiring the purchase of maize for eating).

Chapter 2

How to Map

This chapter is organized into three sections summarizing some basic map construction topics. The first illustrates some **basic map elements** that should generally always be used when making a map that you want to publish or use in a professional setting. Next, the chapter outlines some ideas for **data collection**. This section is split into two sub-sections: low-tech and high-tech. Your methods will depend on the resources available to your campaign and the results you are looking for. Lastly, there is a discussion of **map construction**, such as layout and theme selection. None of these sections are exhaustive, but should offer a start for your mapping work.

Basic Map Elements



Title
Describes the map's theme or purpose.

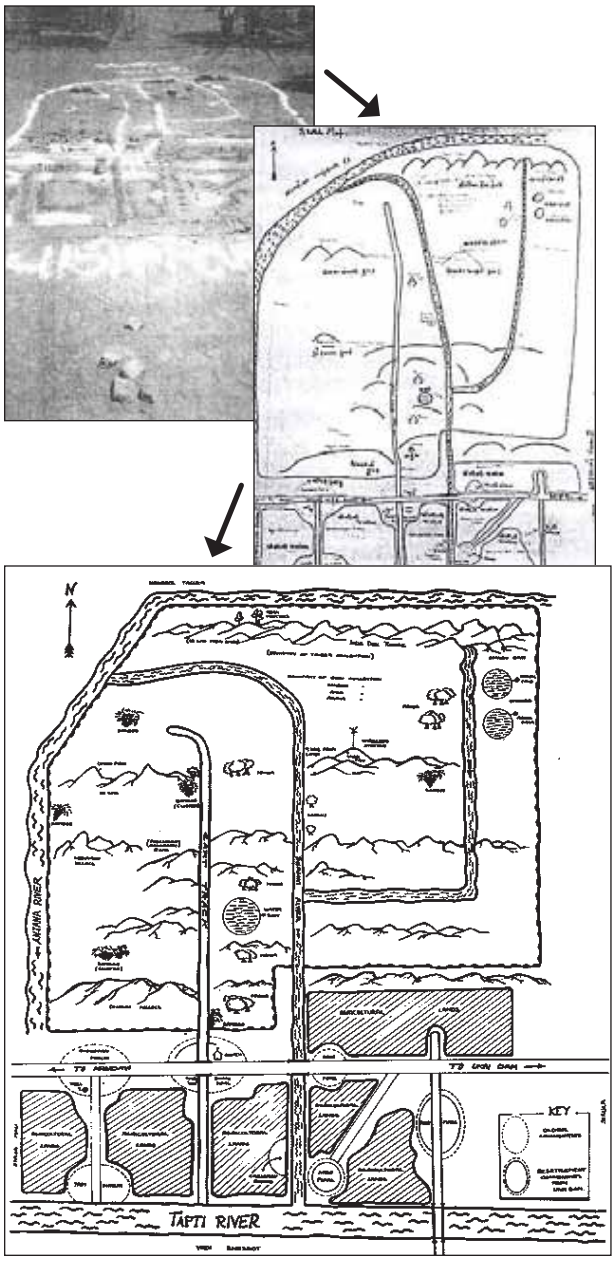
North Arrow
This can either be a traditional north arrow or some other reference system, such as geographic coordinates at the edge of the map.

Legend
Also called a key. This is necessary for map interpretation if you are using symbols.

Scale Bar
Make sure that the units are appropriate for the region you are working in.

Inset or Reference Map
Gives geographical context to the themed map. This can also help relate maps of different scales in your map series.

Figure 8. This image is a great example of a simple, yet very readable map. Notice the red color used for the dams - red is a color that attracts the eye and calls attention to that element. Use it purposefully.



Data Collection: Low-Tech

A great place to start is with some markers and blank paper. Sketching out the landscape with some landmarks as reference points is a simple and easy way to start mapping your information. Ask local citizens to show you on paper where they travel, wash their clothes, gather water, fish, or grow vegetables. Your map does not need to be artistic to be clear. Use symbols that are easily understood like stick figures for people and wavy lines for movement.

Even better is to have some paper base maps that your group members can draw directly on. In this way, your landmarks and scale are consistent between individual maps, and disagreements about the locations of specific places can be discussed and settled on using predefined landmarks and a constrained scale. The result may be easier for the mapping coordinator to use in the field.

A number of different themes can serve as base maps: transport and roads, topography, political boundaries, river courses, or whatever you have access to. Make sure you have a number of copies so that many people can add their knowledge to your mapping "database". Plan to have more copies that you think you will need. If other community members become curious about your process, you want to be able to include them and their ideas as well.

You may not have enough paper or base maps to pass out to community mappers. You can also use sidewalks and chalk, or dirt and sticks to draw the various themes. You can document these maps for later use with a camera. You can also draw the sidewalk/ground maps on paper as they are created. The important part of this process is getting the local knowledge spatialized and recorded, so don't forget extra rolls of film, or memory for your digital camera.

Figure 9. The series of maps to the left were created in a Participatory Rural Appraisal exercise in Gujarat, India. The purpose of the ground map (top image) was to gather information from the local community about the vegetation and other natural resources in the area. The ground-map was transferred to paper, which was then taken on a walking tour of the landscape to verify locations. All of the data gathered was then delivered to an artist who created the final map seen at the bottom.

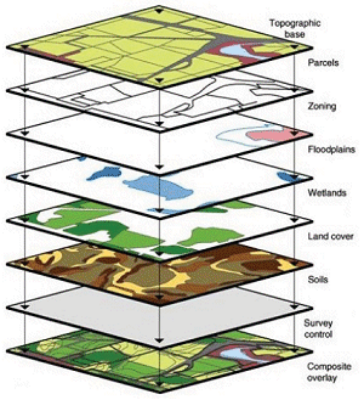
Data Collection: High-Tech

If your group has access to Global Positioning System (GPS) units, these can be extremely useful in mapping travel routes, boundaries, archaeological sites and many other themes. They are particularly useful when base maps are hard to find, or mapping locations are far from distinguishing landmarks. When choosing a unit, pick one that is user-friendly. Some units can be very confusing (even to experts!) when out in the field, or when trying to download the data from the GPS unit into a computer for displaying.

A growing trend is the installation of GPS technology in cellular phones. Some regions already have businesses that will track your cell phone and give you a table of your locations for a fee. This may not be an option in your community currently, but keep it in mind. You may not be able to record specific points, but it can be a very user-friendly way to map boundaries of areas (just carrying the phone as you walk or drive along the path you want to map is enough). It is also likely a much more affordable option than purchasing a single-use GPS unit.

To accompany these tools, a personal computer will be a necessary component to access your data collected on the GPS units. While Internet access is not necessary in some cases, it may be the only way to download your cellular phone tracking data. It also allows you to connect to online sources of data. There are many sources of free satellite imagery now and using the Internet is the most common way to find it.

For groups who have access to more technological expertise, using a Geographic Information System (GIS) can be a powerful way to organize, process and display your data. There are free-ware versions available for download, or less expensive and user-friendly commercial products like Google earth/maps.



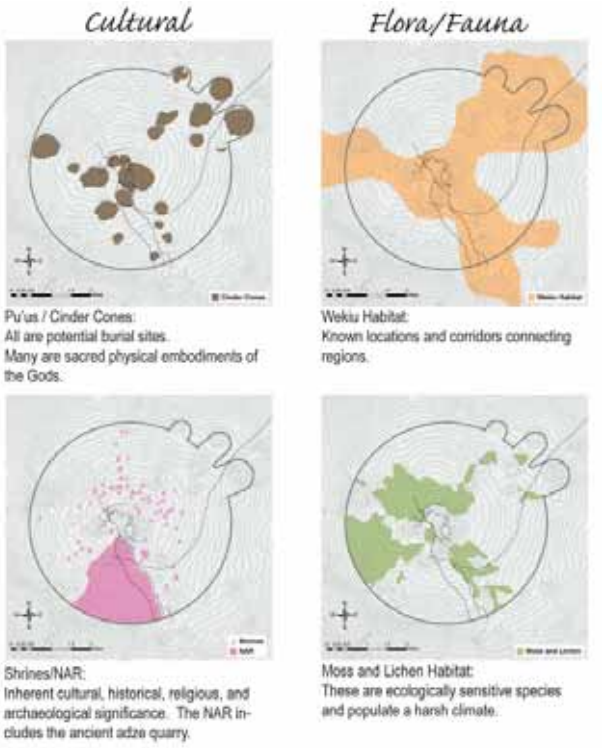


Figure 10. The example above is a subset of maps taken from a study of the conflicting uses and resources at the summit of Mauna Kea, Hawaii. The data collected was displayed in a series using the same background, scale and boundary to highlight the specific themes. The themes were further organized into categories seen above as "cultural" and "flora/fauna". Additional themes in the study were "viewsheds" and "infrastucture" (incorporating slope and distance to existing roads).

Map Construction

Design a Template. Pick a background to use in all maps at a particular scale. Additionally, it is very helpful if that background can also apply to maps at larger and smaller scales. Use the same style north arrow, legend, and so on. The reader can more easily pick out the objects that change on maps in a series if the base information does not change. This helps to highlight the specific theme of the map.

Consciously choose your colors to represent the objects on the map. Convention can be good – blue for water is an example. Also, keep colors consistent through a series of maps. This way, readers can orient themselves more quickly and can understand relationships between themes represented on different maps. Make it easy to read your maps!

If you are producing a series of maps, it can be very helpful to have a common orienting feature on all maps in the series. For example, a political boundary can remain on the maps to help orient the reader to relative positions of new thematic information. It is important to keep the symbol chosen for that common theme the same for all maps in the series.

Determine the most appropriate scale or scales to clearly illustrate your maps. Keep the scale consistent throughout a map series, as well as the orientation (north direction) and the placement of the geographic features in the map boundary. Again, this helps readers understand the thematic differences and not get distracted with orienting themselves again.

Maps tell a story, just like an essay – except that they are visual in nature. You should treat the preparation of your maps in the same way you would if organizing a press release or written report. The map should have a theme which defines its purpose. Your map is making an argument. Plan your map around the themes that are important to your campaign and this will help to organize your data presentation.

Organize your layers (specific subjects) into themes (groups of subjects). For example, layers showing a community's areas for washing, cooking, and worship can be grouped into a "daily activities" theme.

Limit the number of themes or layers that you show on an individual map to avoid clutter and confusion. Simple maps can be much more powerful than all-inclusive maps because the reader of the map will understand your argument quickly. Too much information can be overwhelming and will reduce the power of your map. However, if your goal is to show cumulative effects with a collection of layers or themes, this can be powerful too. In this case, you will need to be more careful about colors and patterns to ensure readability.

Do not be afraid to show contrasting themes on one map. For example, showing current community activities and important areas, and a line showing the rise in water level from a proposed dam intersecting those areas, will make the loss of a way of life more immediate and real for the audience of your map.

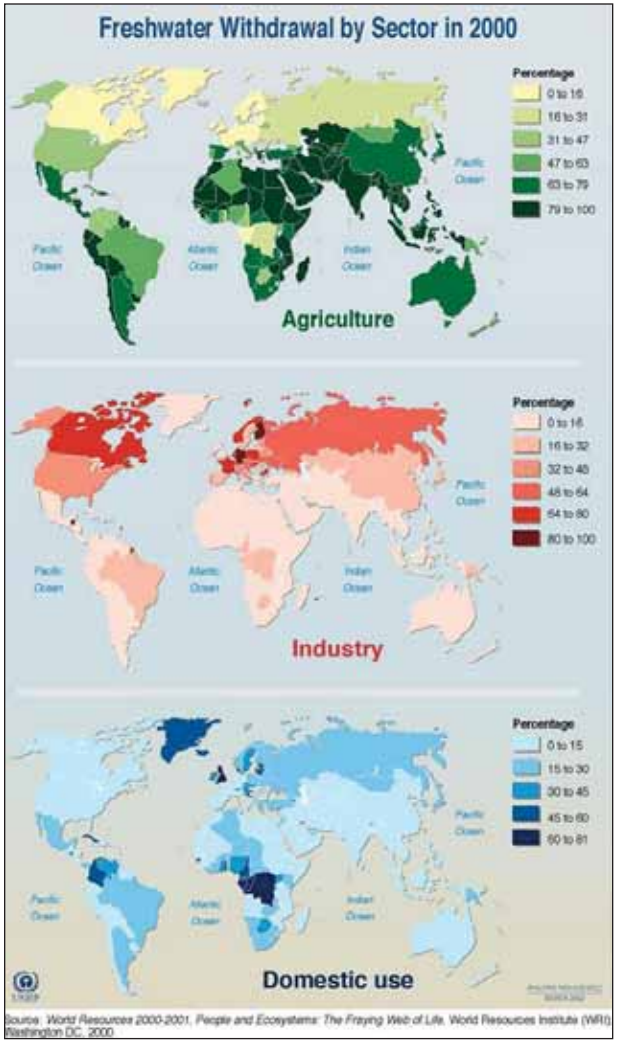


Figure 11. The themes on the series above are clearly illustrated with different colors, but the same background, scale and elements. It is easy for a reader to understand the story of the difference in freshwater use across the planet.

Chapter 3

What to Map

This chapter is designed to give you ideas for information you can use on a map, or themes to represent. Some basic layers that might be useful for communities facing river-development projects include topography (elevation), hydrology (the river's flow patterns), and current land uses. Others will depend on the individual nature of the landscape, the people, the animals, the politics and the outcomes desired.

What is included here represents only a few ideas. The next step is to brainstorm with your community before starting a mapping project. Be creative! Most patterns can be represented spatially.

The organization of this chapter is divided into three sections: Cyclical Systems, Natural Systems, and Social Systems. There is no absolute threshold between these three and there is obvious overlap. However, it can help to organize a process to define thematic categories in the beginning and then compare their relationships as a mapping project proceeds.

Natural Systems: Water

The path of a river is a basic map to start with. It may also be important to show the historical paths the river has taken. This can better define the geography occupied by the river as well as the dynamic nature of the stream path and the adaptability of any people using the river bank lands.

The high-flow mark (flood zone) may also be very useful to map. This can show the areas of land receiving periodic soil deposits, which can influence agricultural productivity. In addition, low-flow may be as important to show since this will be affected by any dam projects upstream (or maybe there already are dams upstream thta have influenced the low-flow mark). Downstream communities that rely on the river year-round may be energized to speak out against a dam if they can see how the shift from low-flow to no-flow will affect their livelihoods. This is the kind of information that is not usually brought to light in official project documents.

Lastly, off-flow water bodies such as ox-bow lakes, springs, wetlands and the like may be important to highlight. They can be important ecological resources to animals and local citizens.

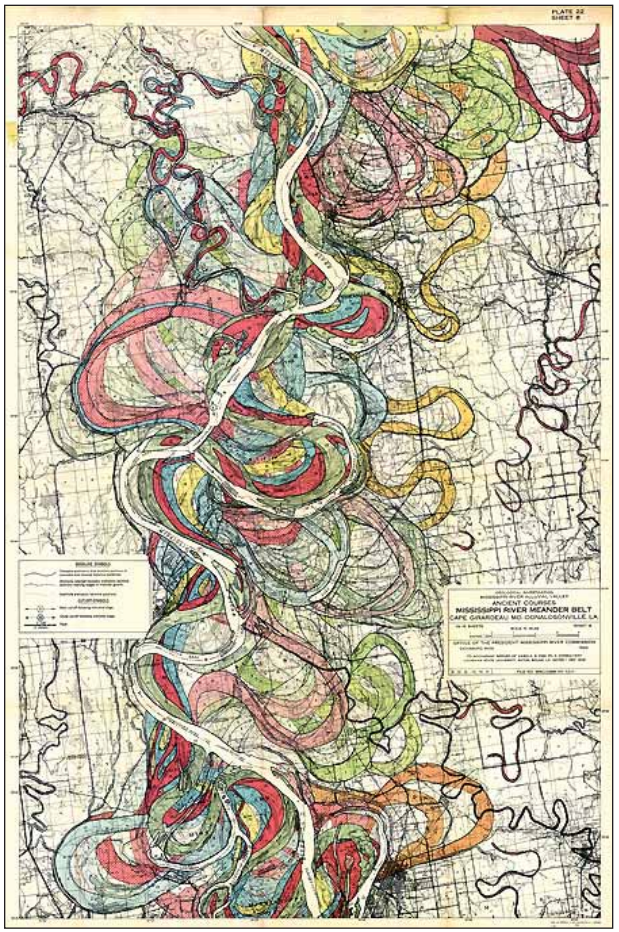


Figure 12. The map shown above illustrates the historical meanderings of the Mississippi River. This can be important to show the net area covered by the natural river and the historical adaptability of people living along its banks.

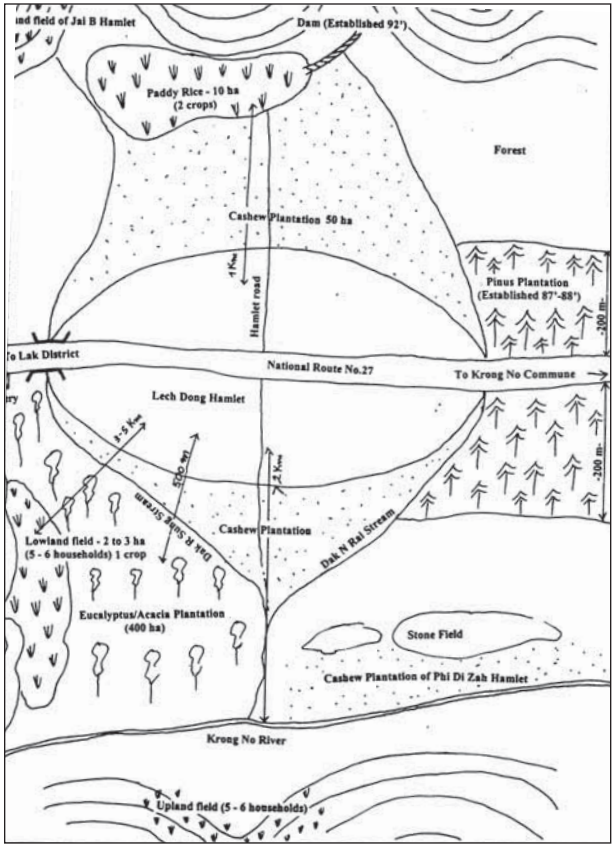


Figure 13. The above shows a resource map created by a men's focus group in Dak Lak Province, Vietnam. Mapping both the resources that a community uses as well as regional or national resources can be very persuasive in highlighting the value of the current ecological system.

Natural Systems: Plants

Vegetation is another basic theme that could be included in your map series. There are a number of different ways that vegetation can be classified.

There may be types of vegetation that are important to the local culture that would be important to map. For example, location and types of medicinal plants in the landscape, and sources of firewood for the community are two critical types of vegetation. What about wild vegetables? Basket-making and thatching materials? Are there some special vegetated areas that serve as unique resources for wild animals?

If you know of plants that are becoming quite rare, it is important to map the areas where they are still found. If there are any endangered species that may be affected by a large development project, mapping them can help call attention to the Environmental Impact Assessment process. This might require finding experts to determine which species are endangered and where their habitat is.

Natural Systems: Animals

Similar to the vegetation series, are there any rare or endangered animals in your region? Where have they been sighted? Do they have migratory patterns? Showing how a development project would reduce animals' ability to migrate or the size and shape of their habitat is important. Are there areas with dangerous animals? Would a dam reduce the protective buffer between your community and the specific territory? The map to the right (*Figure 14*) shows a reservoir created by a hypothetical dam. The thick, black lines along the shore indicate areas that may serve as new potential habitat for mosquitos or snails, both of which can host disease-causing vectors. Understanding the change in ecology is necessary to projecting potential health hazards.

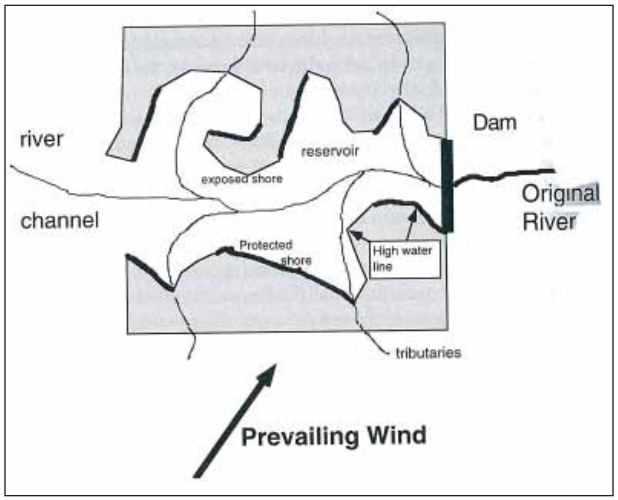


Figure 14.

Have community members record where their hunting grounds are, or if there are special fishing locations. Connect these to larger migration patterns to illustrate the regional pathways that could be threatened by a large development project.

Map migration patterns that span not only seasons, but also decades or longer. These cycles are typically not included in Environmental Impact Assessments, but can show potentially devastating losses if they are altered.

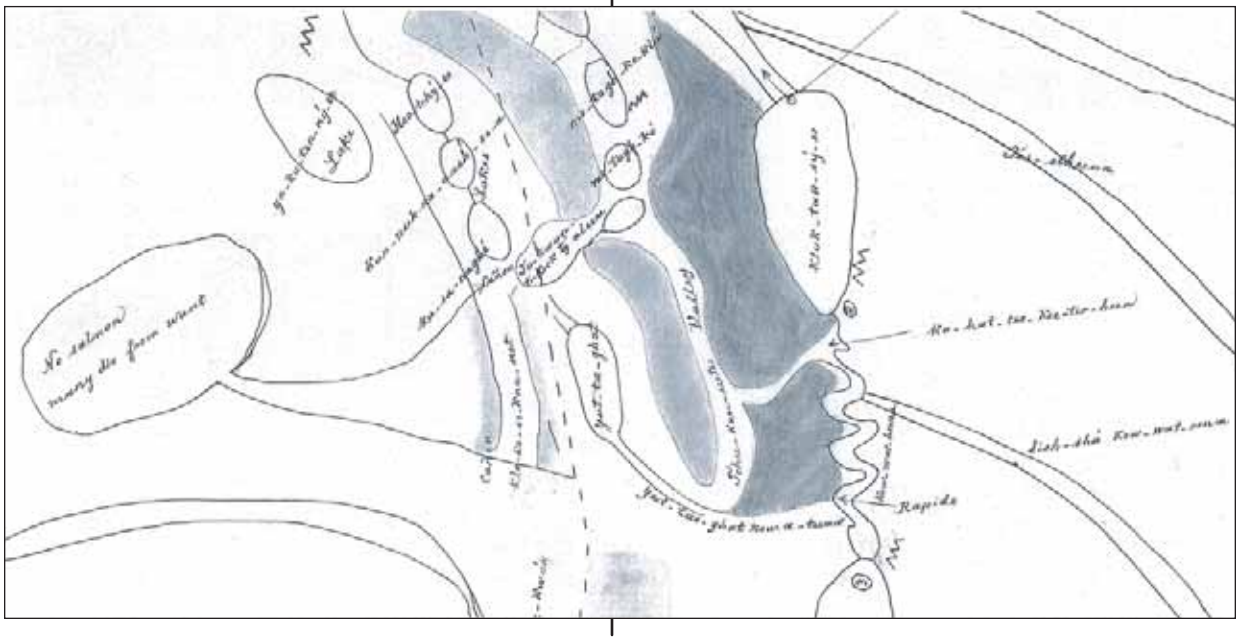


Figure 15. Detail from a map showing native place names and information about salmon by Kohklux, a leader of the Chilkat Indians in Southern Alaska, 1869.

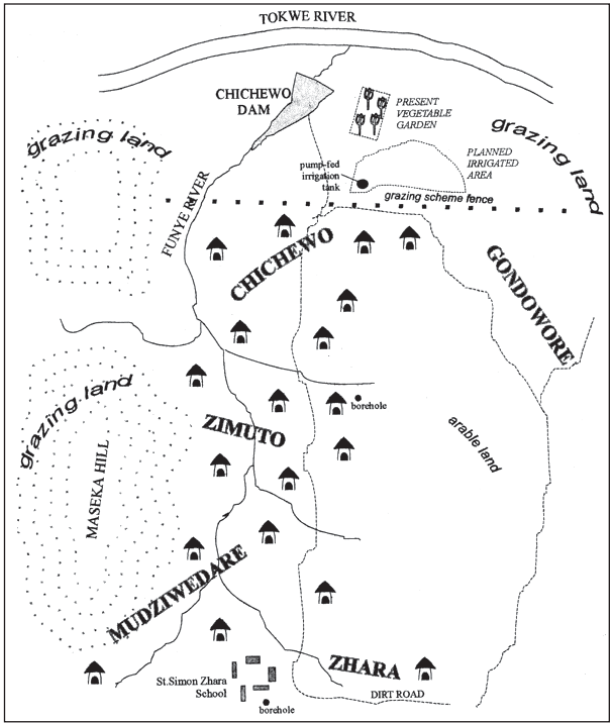


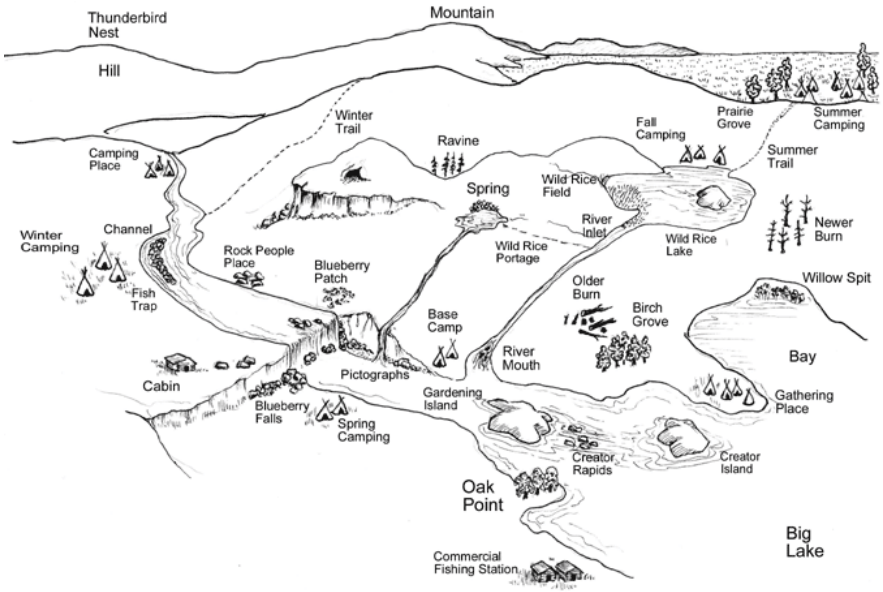
Figure 16. The above map of the region near Chichewo Dam in Zimbabwe, gives a clear understanding of the placement and distances of homes, agricultural areas and other resources.

Figure 17. The map to the right is an example of a cultural landscape created by interviews with Anishinaabe elders in Northwestern Ontario, Canada. During site visits and transect walks, themes such as specific plant communities, plant use, habitat descriptions, and landscape vocabulary emerged. The purpose of the walks, interviews and mapping was to understand the breadth and continuity of community culture.

Social Systems: Land Divisions and Activities

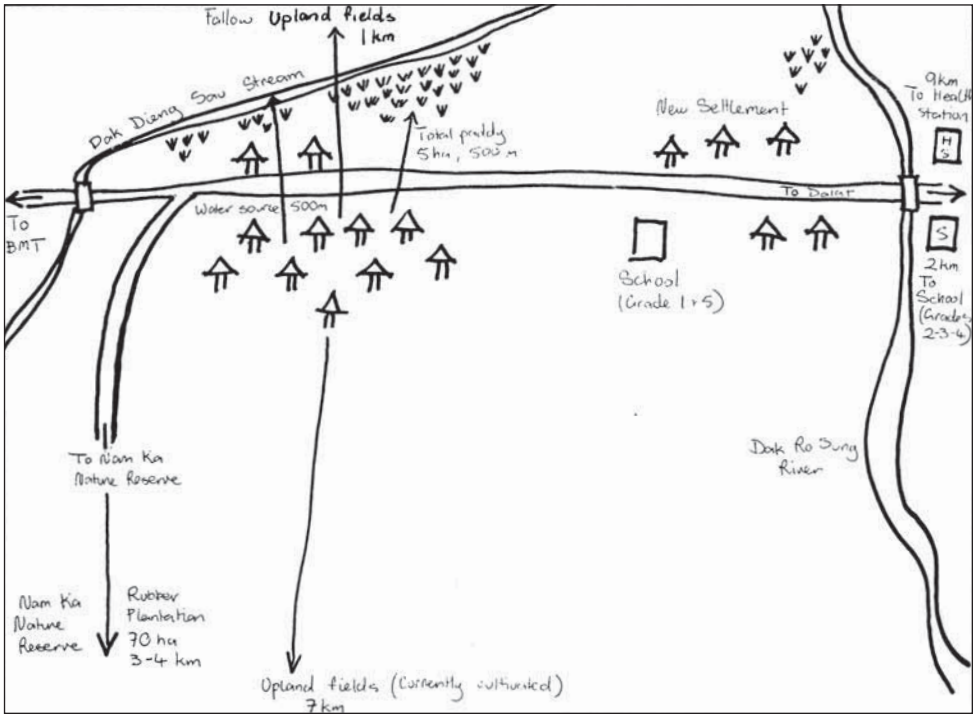
Any kind of social or political boundary can be mapped in this category. Official designations are a great place to start, such as national, state, province or city boundaries. Land use or ownership are also helpful subjects to include in your map series. The local citizens may want to define tribal territories or other social boundaries. It may also be important to map the density of persons in the region.

Of particular importance to include in your mapping work is a collection of daily activities. Show on your maps where the local citizens hunt, farm, harvest, wash, cook, celebrate, worship, go to school, govern, gather, bury the dead, and travel. Highlight sacred cultural areas, or travel routes to visit health clinics or gather water or firewood. It is important to document all of these activities to understand the impact of a proposed project on the local or indigenous groups.



Social Systems: Relationships

Social relationships that depend on a spatial connections are important to map. If neighboring settlements are connected through family ties, travel connections should be mapped to better understand the potential for connections to be broken because of a large development project. Record travel routes to other resources, as well such as markets and health clinics. If travel takes place on the river, be sure to map that route. Changes in the flow of the river could have a large impact on the ability to navigate the river after development.



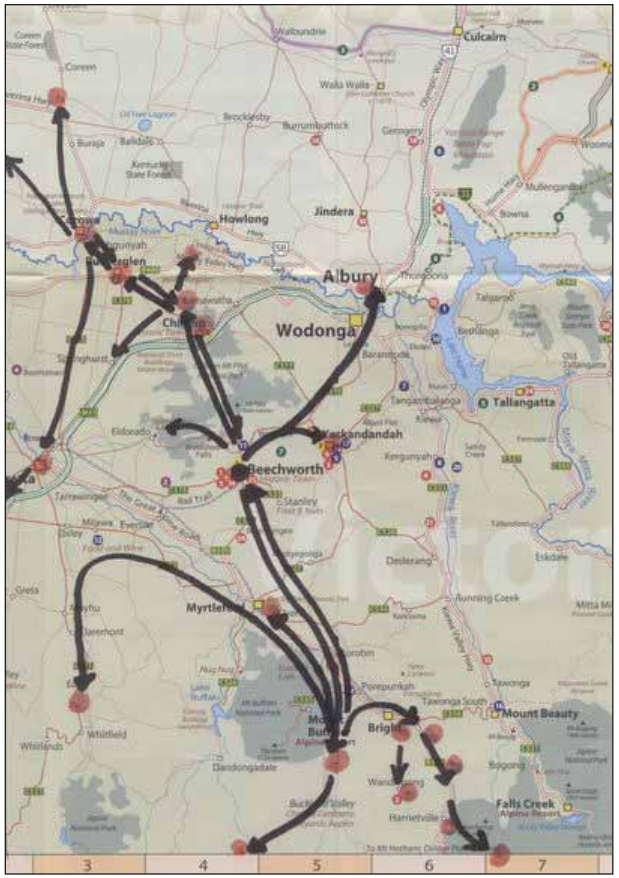


Figure 18. The example above shows migration patterns of Chinese in Northwest Victoria, Australia between 1852 and 1910. This map is included here to illustrate the ease of making a map by using a commercial regional map and a set of pens.

Figure 19. The map to the left shows the direction and distances to the resources important for one group of local citizens. Mapping this out will help to identify potential broken connections.

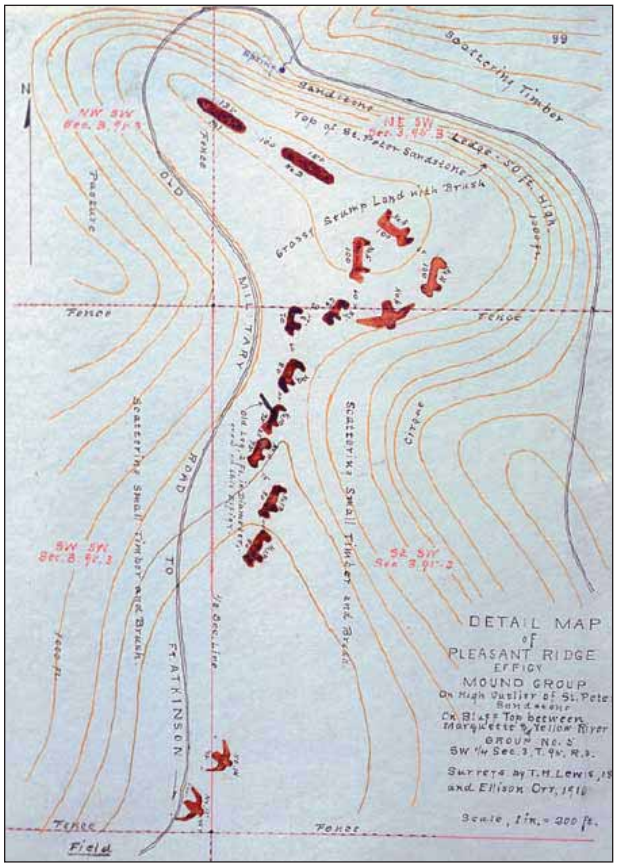


Figure 20. The above map was created in the mid-1930's as part of a survey of mounds in the eastern United States. It was incorporated into a list of all the mound forms known in the two counties. The summary was the first attempt to treat Iowa mounds as a distinct entity, listing 21 complexes in total. Illustrating the geographic scope of historical sites is an important step towards understanding the impact of a development project.

Social Systems: Historical or Archaeological Sites

If your area has any important cultural, historical or archaeological sites, make sure that they appear on a map. Often, these are mentioned in scientific papers, but are not actually drawn. They can easily be overlooked or ignored in an impact assessment if the time has not been taken to show where they exist visually.

Are there areas in your region that have historical significance? Local groups may have oral histories describing significant events that are associated with the landscape. These should be recorded and spatialized. There are historical preservation groups that could be involved in your campaign if the information is drawn to their attention.

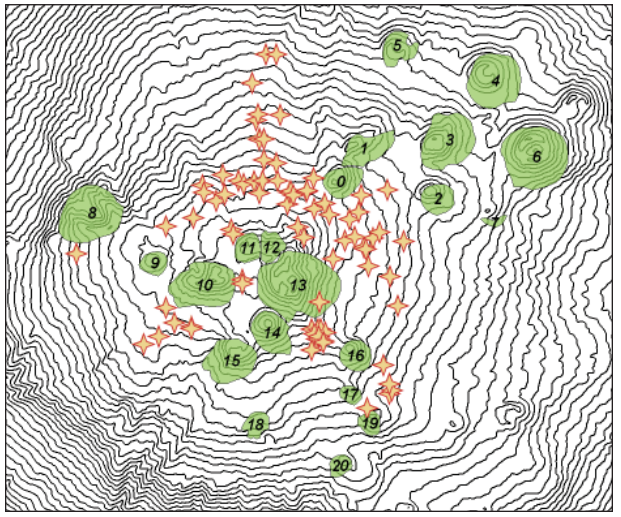
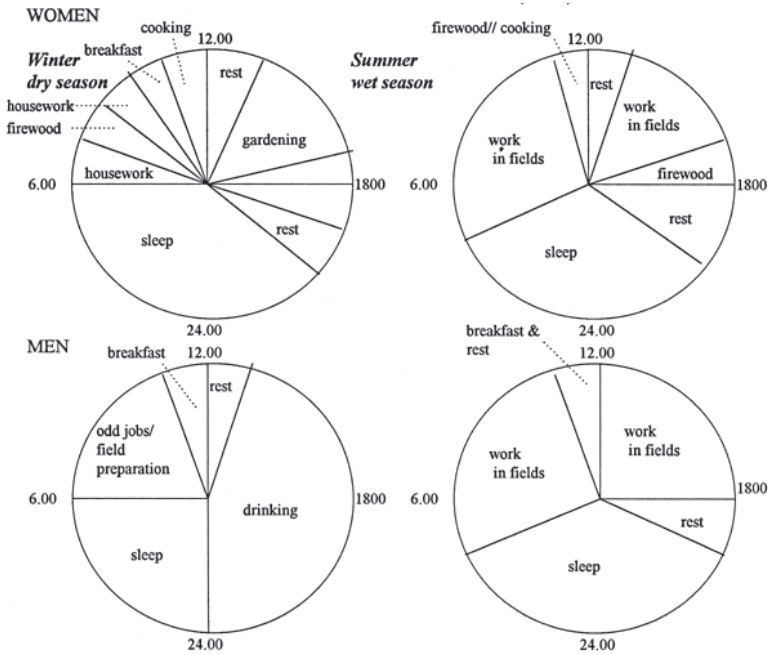


Figure 21. The map to the right shows a collection of archaeological data and ancient sacred practices on the summit of Mauna Kea, Hawaii. The yellow stars mark historical burial sites and the green polygons highlight sacred natural strutures, which are associated with gods. At the time, there was a proposed development at this site and none of this information had been included in the Environmental Impact Assessment. Since that time, the proposed development has been cancelled (due to a number of efforts by local citizens).

Mapping Changes Over Time: Seasons and Cycles

Seasonality is important when mapping. For example, the harvesting season will have different characteristics on the landscape than will the planting season. Animals (and people, for that matter) may migrate at different times of the year as well.

There may be cycles that are longer than one year and these will be important to capture. For example, perhaps droughts have occurred every 10 years or so; this will be reflected in the flow-level of the river.



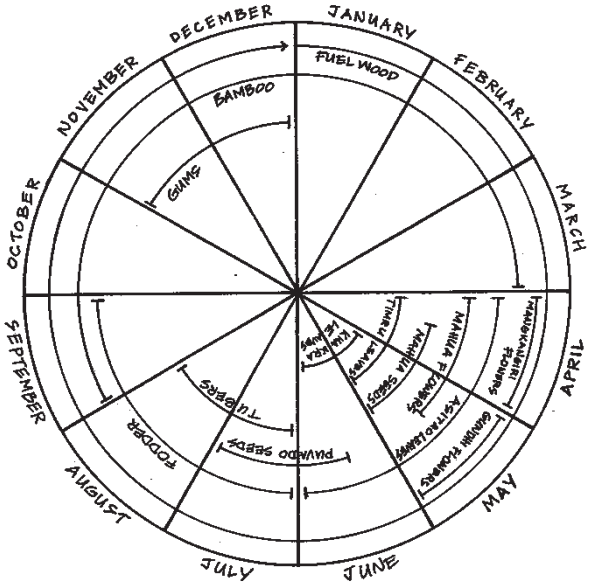


Figure 22. A helpful compliment to mapping – whether in the process of making maps or in presenting them – is a calendar or series of charts showing the seasonal changes. The above calendar describes the seasonal flows of forest products. Local communities can indicate peak demand periods for different types of forest products like firewood, food, and raw materials and correlate that to water flow or animal movements.

Figure 23. To the left is another example of time mapping to understand daily activities in Dzinavene Village, Zimbabwe. The next step would be to locate where all of these activities take place in the community.

Chapter 4

Where to Map

This chapter discusses scale, or where the geographic boundaries on your maps should lie. In addition, this chapter outlines some additional scales, perspectives and styles of mapping that can be very effective in social and political campaigns.

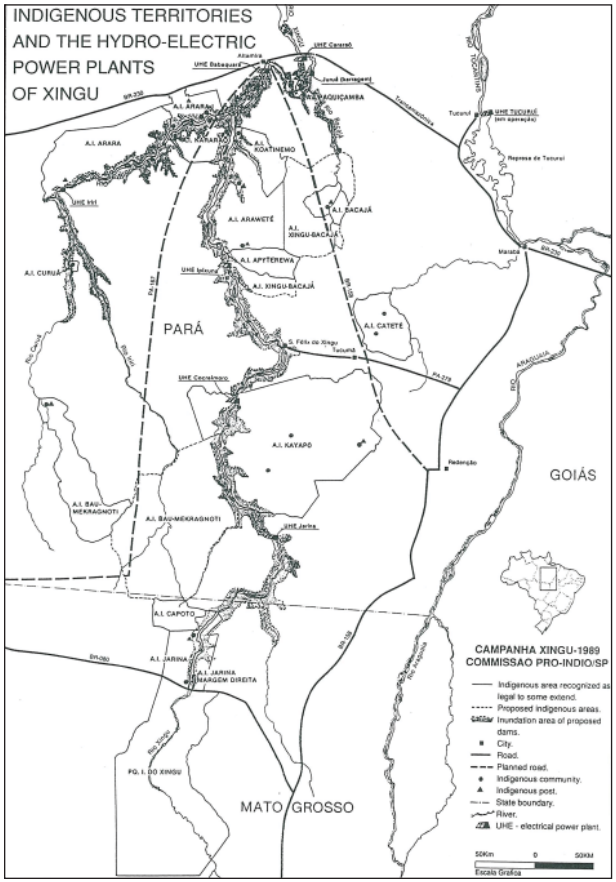
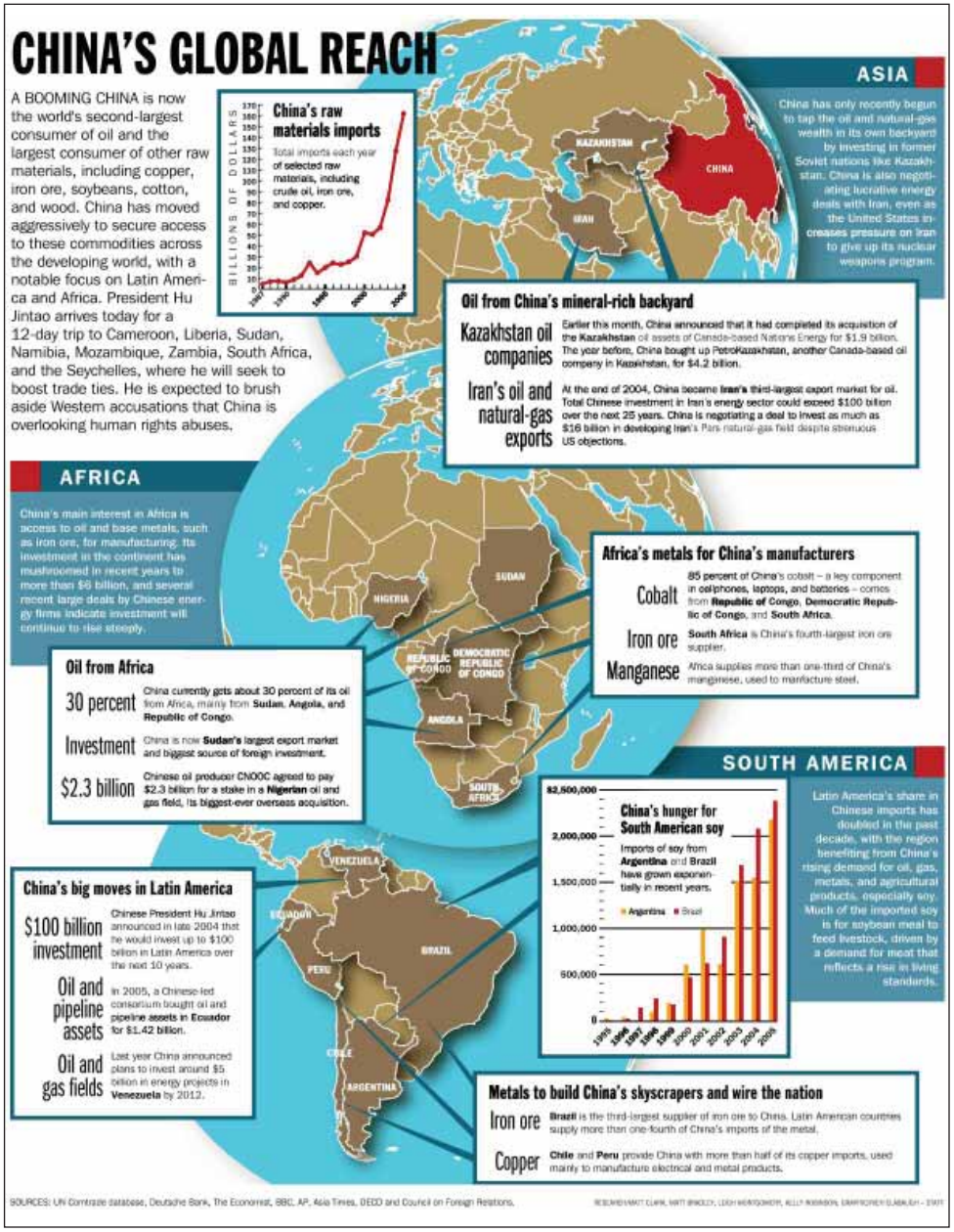


Figure 24. This map shows the territories of the many indigenous peoples who would be affected by the development of dams in the Xingu Basin in Brazil's Amazon region.



Global Scale

Mapping at the global scale can show important contexts and patterns of development, control, and interests that extend far beyond the borders of your community.

Figure 25. This map uses a lot of text to tell a complex big-picture story about China's impacts on the rest of the world. Note how the use of text was made more "graphic" by use of different fonts, colors, sizes, and the use of key graphs.

Continental Scale

Similar to the global scale, the continental scale can illustrate the contextual influences that are affecting a project proposal.

In addition, the continental scale is important to show the natural resources that span national boundaries which cannot be seen in enough detail at the global scale. This can help to unite the nations that share an interest in shared natural systems such as rivers, forests, wetlands and the like.

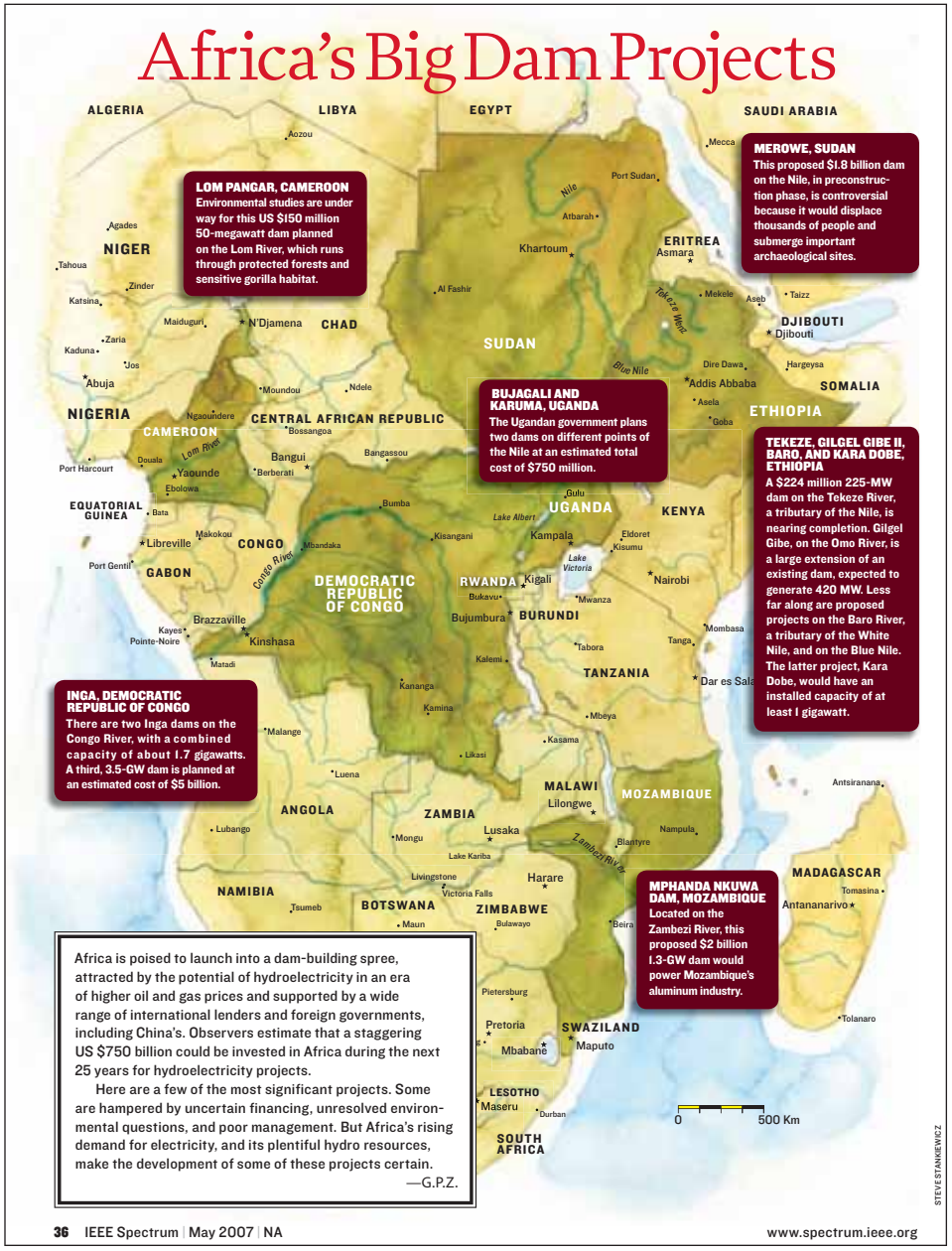
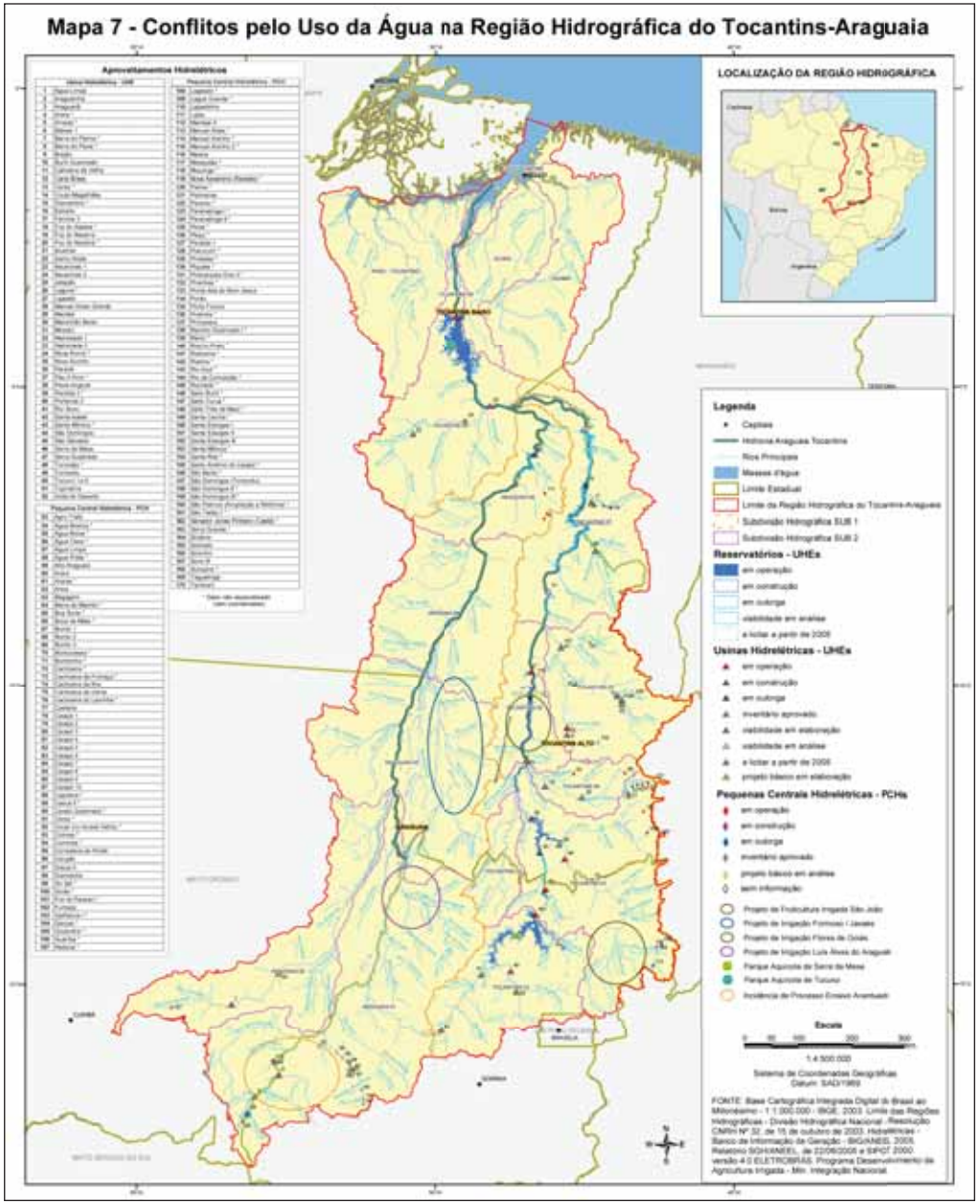


Figure 26. This map illustrated an article on the virtues of microhydro for meeting Africa's energy needs. Note that a number of the statistics and costs are wrong (too low) – always check your facts before publishing!



Regional Scale

This scale, coupled with the local scale, is most often prioritized when mapping projects. The regional scale shows both upstream and downstream impacts. It can also illustrate the interconnectedness of systems and make it real for distant, but potentially impacted citizens.

It is generally at this scale that travel routes, political boundaries, migration patterns and similar layers are most powerful. For example, if a non-displaced community can see that their only access to medical clinic services and supplies will be cut off after the installation of the project, the pool of stakeholders in your campaign will grow. It is the regional scale that can illuminate these connections.

Figure 27. The map here illustrates the regional context and pattern of conflicts over water resources. Without showing this regional pattern, groups with individual conflicts are isolated. By illuminating the regional pattern, it is possible to grow individual campaigns into a larger, stronger movement.

Local Scale

The local scale shows site-specific "reality". This is the scale where you can map important daily activities, sacred spaces, and sources of water, food and firewood. These themes are also mapped at the regional scale, but the local scale can sometimes be more easily understood by local communities and therefore can make it more real for locally impacted residents.

The local scale is where you are able to zoom in to the details of individual lives. As well, this is often the scale to use when mapping with the community. That is, when gathering the information from the local citizens, you need a scale that represents enough detail to make the maps understandable. Local scale provides this level of detail.

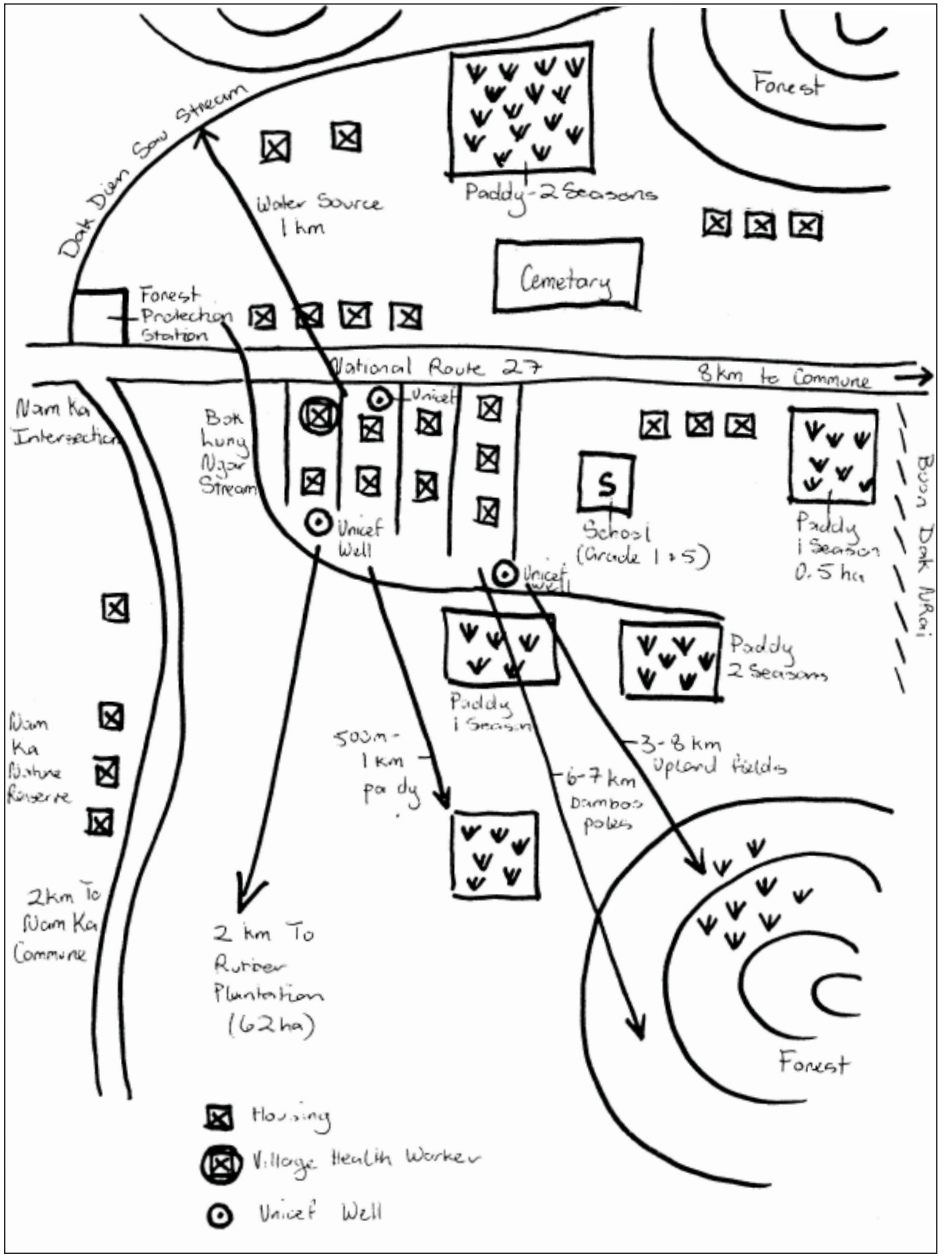


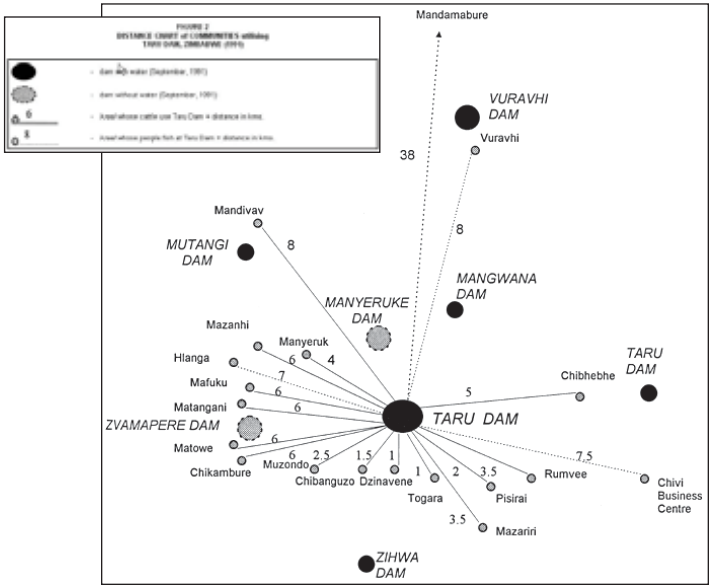
Figure 28. The map to the right was created by a men's focus group in the Dak Lak Province in Vietnam. It represents both the community and mobility options for residents. Working at the local scale, but referencing locations at the regional scale will tie your maps together.

Fine or Zoom Scale

Zooming into a finer scale of map can highlight important details that are easily lost at smaller-scale maps, such as historically important buildings, individual gardens, or ceremonial areas. Particularly when paired with a section like the image to the right (*Figure 29*), fine scale maps bring the community's landscape to life and makes it personal.

Distance Mapping

Mapping the distance from a resource to the communities that use it, or the distances from the community to the resources accessed can define the geographic scope of uses in the region. This kind of map is often best done "schematically," without using a detailed base map. The result of distance mapping is an uncluttered view of the scale of activity in a particular area.



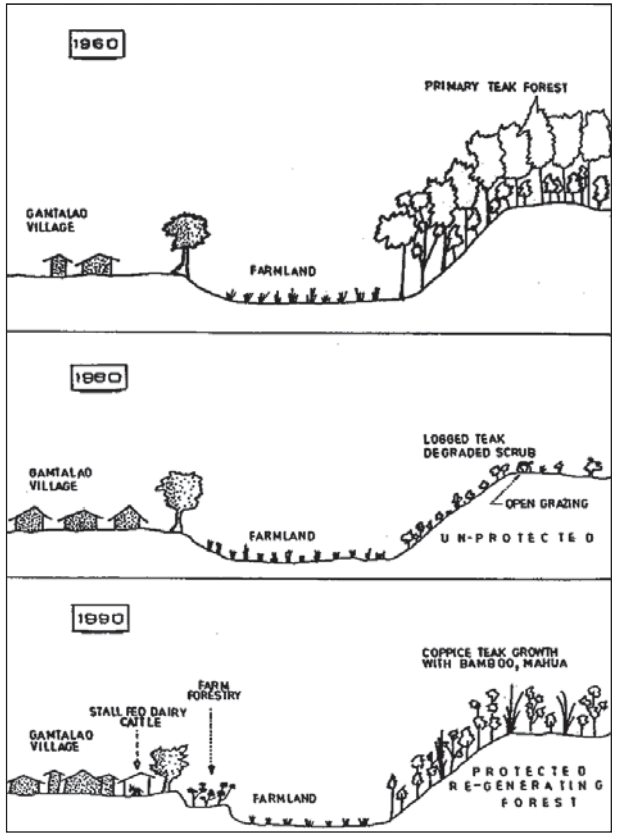


Figure 29. The above historical transect is another example created in a Participatory Rural Appraisal exercise in Gamtalao, India. Local elders were asked to start with the existing conditions of their community and then recall, over the past 50 years, what changes had occurred.

Figure 30. It may be helpful to map distances like in the example to the left. A map like this one simplifies the information into levels of significance and the direction and distance to those resources. This can simplify discussions and analysis.

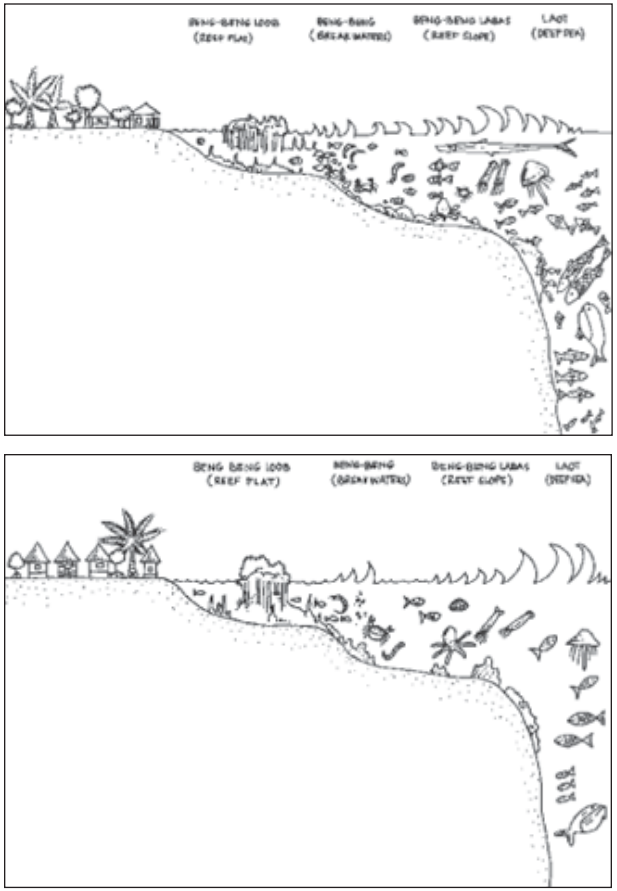


Figure 31. The above "Perceptual Transects" show past and present conditions. In this case coastal communities are often severely impacted by upstream damming, erosion, water pollution and flooding, over which they have no control. The maps above illustrate the changes over time due to changes in the rivers that feed the coastline.

Sections and Transects

Showing a transect or a section through the landscape can often better communicate the experience on the landscape. This a particularly useful method to show loss of communities and resources to flooding.

Combine time with your maps whenever possible and appropriate. Seasonal changes will affect your maps, as well as historical differences. These are expressed powerfully on sections and transects. Incorporate proposed futures into your distance or fine-scale maps. Use these to state your case!

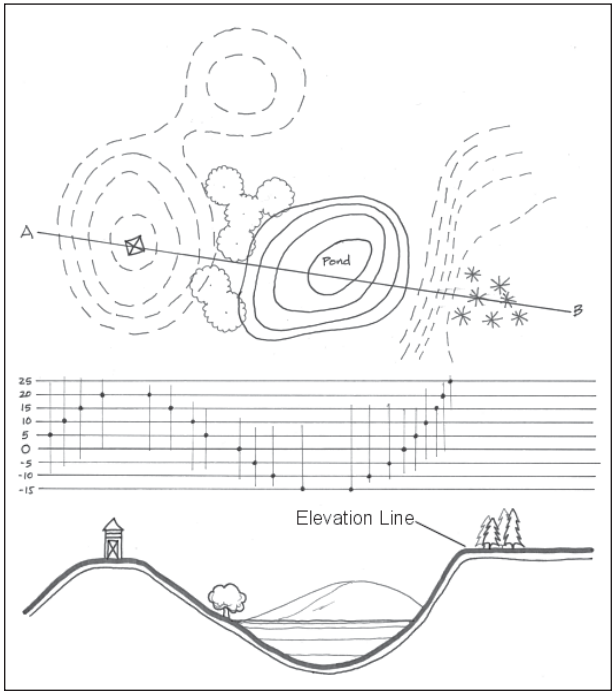


Figure 32. To the right is a diagram that shows how to create a simple section-view of the landscape. The top image is a topographic map with each line (and dashed line) representing an elevation value. The long, straight line is the cross-section that is then created below. The middle image shows the method for translating the topographic elevation lines into the section, with each horizontal line representing each of the elevation values. and the cross-marks at the points of intersection of the straight line in the top image.

Chapter 5

Who are Your Data Sources

This chapter makes some suggestions for types of organizations, individuals and disciplines that can be important sources of data. The map below is an example of an important issue related to development projects – renewable energy. However, the sources of this data will rely on expert knowledge. Thus, your mapping efforts may require help from people with local knowledge to government officials, to students and academic researchers, and scientists.

Figure 33. Renewable energy potential in the State of California.

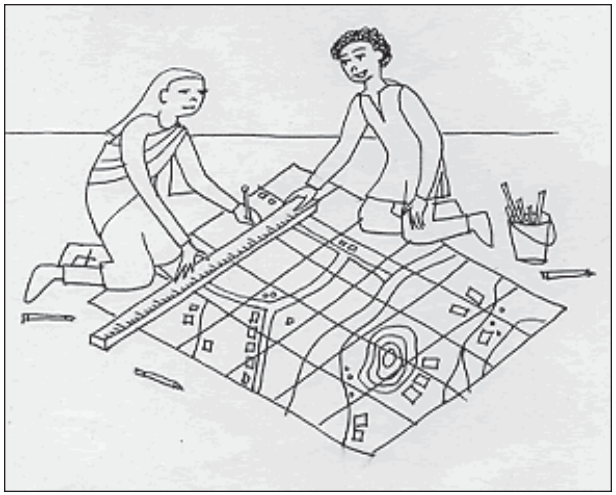


Figure 34.

The best source for much of your data are **community members**. The people who live in the landscape will know it much more intimately than any other group and will be much better able to describe the social, cultural and natural resources that are under threat. Interviewing citizens or collecting oral histories can be good ways of gathering information. However, it can be more effective to organize a mapping workshop wherein the community members actively create their maps. Much more information can be solicited if citizens have the freedom to express themselves outside of your framework. In addition, mapping workshops can be excellent ways to bring people together for a common cause.

When beginning a map series, there are a few sources that can often provide base-map information. For example, **government offices** will sometimes have topographic maps of the region. Topo maps are a very good place to start. If there are any nearby **colleges** or **universities**, they may have a map library or a department that has gathered some basic mapping data for teaching or research. The **Internet** is also a great place to go for spatial information if you have access. The limiting factor is the connection you have to the Internet. There are a lot of maps and a very large amount of spatial data available for download, but the files can be quite large. NGOs (Non-Governmental Organizations) can have maps that they have made for other purposes and may be willing to share. Some private businesses may also have some interesting data about your region and may share it with your group.

You can create maps from information found in published papers, newspaper articles, books and reports. This can be time-intensive if the location is not exact enough in one source and it is necessary to cross reference. However, these sources will often have information that cannot be found elsewhere. For example, many archaeological resources are mentioned in scientific papers, but may not be mapped. Without explicitly showing their location, the archaeological site may not be included in the impact report process for a development project. There may be a history of parasitic-disease outbreaks in certain areas. This information may only be publicized in reports published for public health professionals. Spatializing these outbreaks can illustrate potential hazards for the people and animals in the region.

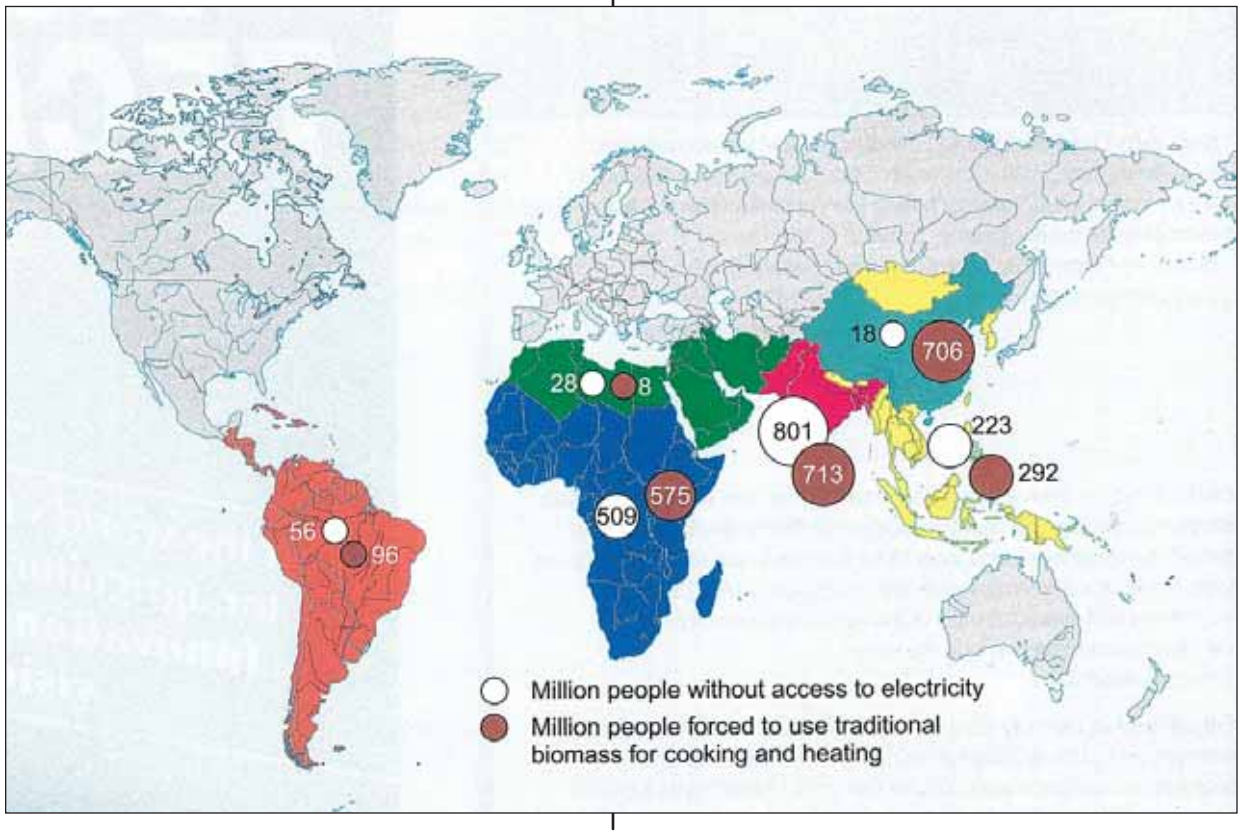


Figure 35. Regional distribution of the 1.63 billion people in the world without access to modern electrical services in 2006.

Chapter 6

Campaign Mapping

This chapter offers some ideas of how to incoporate mapping into your campaign. From initial scoping to publishing finished maps, mapping activities support your efforts. Incorporating mapping techniques and processes into your campaign can have multiple effects besides just making pretty images to accompany your signs or publications.

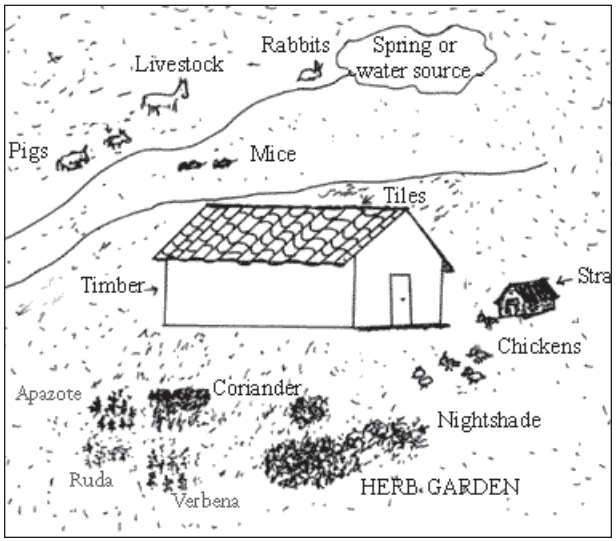


Figure 36.

The mapping process can be one way to organize the parties affected by a development proposal. Involving the community in collecting data, prioritizing important information, and making maps builds social capital. If the map-making event is publicized, likely there will be additional community members who will want to become involved. A mapping workshop can increase social interaction, cooperation and participation. It can also be a way to organize a PR campaign. For example, a group can organize a series of mapping workshops in a region. This serves two purposes: high-resolution data collection and publicity for your cause.

Publishing or publicizing your finished maps brings your issues to the table in new, fresh, visual ways. Map collections clearly communicate to decision-makers and other potential supporters. Maps can capture a complex story in a simple graphic that can be used at a scale big enough to reach large audiences. Present maps in response to Environmental Impact Assessments to show important information that was not collected and integrated into the evaluation process.

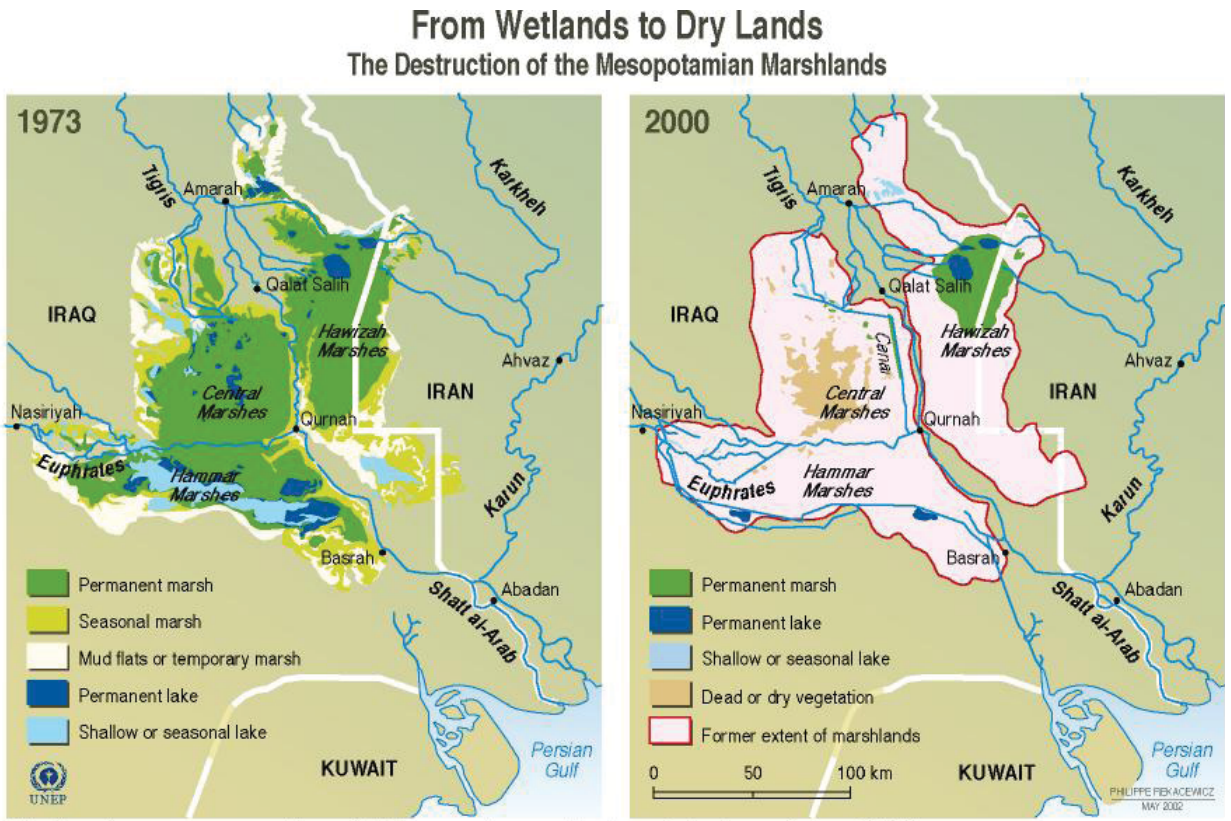


Figure 37. The map to the right is an excellent example of a persuasive public relations piece.

Checklist | *Community Mapping Workshops*

- ☐ Roll or Sheets of Paper (twice as much as you think you need)
- ☐ Markers, Chalk, Colored Pens or other writing utensils
- ☐ Base Maps - topography, political boundaries, hydrology
- ☐ Digital / Film Camera
- ☐ Batteries for Camera
- ☐ Film / Memory for Camera
- ☐ Notebook for Personal Notes
- ☐ Examples of Maps
- ☐ Compass
- ☐ Laptop or Personal Computer + Memory / Discs
- ☐ Powercords / Chargers
- ☐ GPS Units
- ☐ Food and Drinks for Participating Community

Making Maps for Publication — *Checklist*

All Map-able Data (pictures, notes, reports, sketches)	☐
Trace Paper	☐
Base Maps	☐
Markers, Pencils, Coloring Pencils	☐
Rulers, Scales, Calculators	☐
Laptop or Personal Computer + Memory / Discs	☐
Powercords / Chargers	☐
Internet Connection	☐
Printer and Paper	☐

Figures	Sources
Figure 1.	International Rivers
Figure 2.	CARE International in Vietnam, Report on Field Study, January - May 1997
Figure 3.	United States Geological Survey (USGS), Open FIle Report 99-548
Figure 4.	The Ramsar Convention on Wetlands, July 2003
Figure 5.	Alan K. Craig, Geography of Fishing in British Honduras and Adjacent Coastal Waters, 1966
Figure 6.	Philippe Rekacewicz, United Nations Environment Programme (UNEP), 2002
Figure 7.	Food and Agriculture Organization of the United Nations (FAO), 92-5-104784-7, 2002
Figure 8.	International Rivers
Figure 9.	Joint Forest Management National Support Group, Field Methods Manual, 1992
Figure 10.	Randi Adair, Freyja Knapp, Anne Martin, 2006
Figure 11.	*see Figure 6.*
Figure 12.	US Army Corps of Engineers, Fisk, 1944.
Figure 13.	*see Figure 2.*
Figure 14.	William Jobin, Dams and Disease, 1999
Figure 15.	Reprinted from “Coast and Ocean” magazine, Vol. 23, #2
Figure 16.	Food and Agriculture Organization of the United Nations (FAO), 92-5-103871-6, 1996
Figure 17.	“Conservation Ecology” 8(1):5
Figure 18.	Cora Trevarthen, “Journal of Chinese Australia” Issue #2, October 2006
Figure 19.	*see Figure 2.*
Figure 20.	Reprinted from National Park Service, Historic Resource Study, 2003
Figure 21.	*see Figure 10.*
Figure 22.	*see Figure 9.*
Figure 23.	*see Figure 16.*
Figure 24.	Commissao Pro-Indio, Campanha Xingu, 1989
Figure 25.	International Rivers
Figure 26.	IEEE Spectrum, May 2007
Figure 27.	Plano Nacional de Recursos Hidricos, juhlo de 2005
Figure 28.	*see Figure 2.*
Figure 29.	*see Figure 9.*
Figure 30.	*see Figure 16.*
Figure 31.	Ferrer, E. “Tagaporo: The Island Dwellers,” 1984
Figure 32.	Univerisity of Minnesota, Sustainable Urban Landscape Information Series, 2007
Figure 33.	Barbara Fichman, The National Energy Information Center, 2002
Figure 34.	UNICEF, “Children as Communty Researchers’,” 2001
Figure 35.	International Energy Agency
Figure 36.	*see Figure 7.*
Figure 37.	Hassan Partow, UNEP, 2001