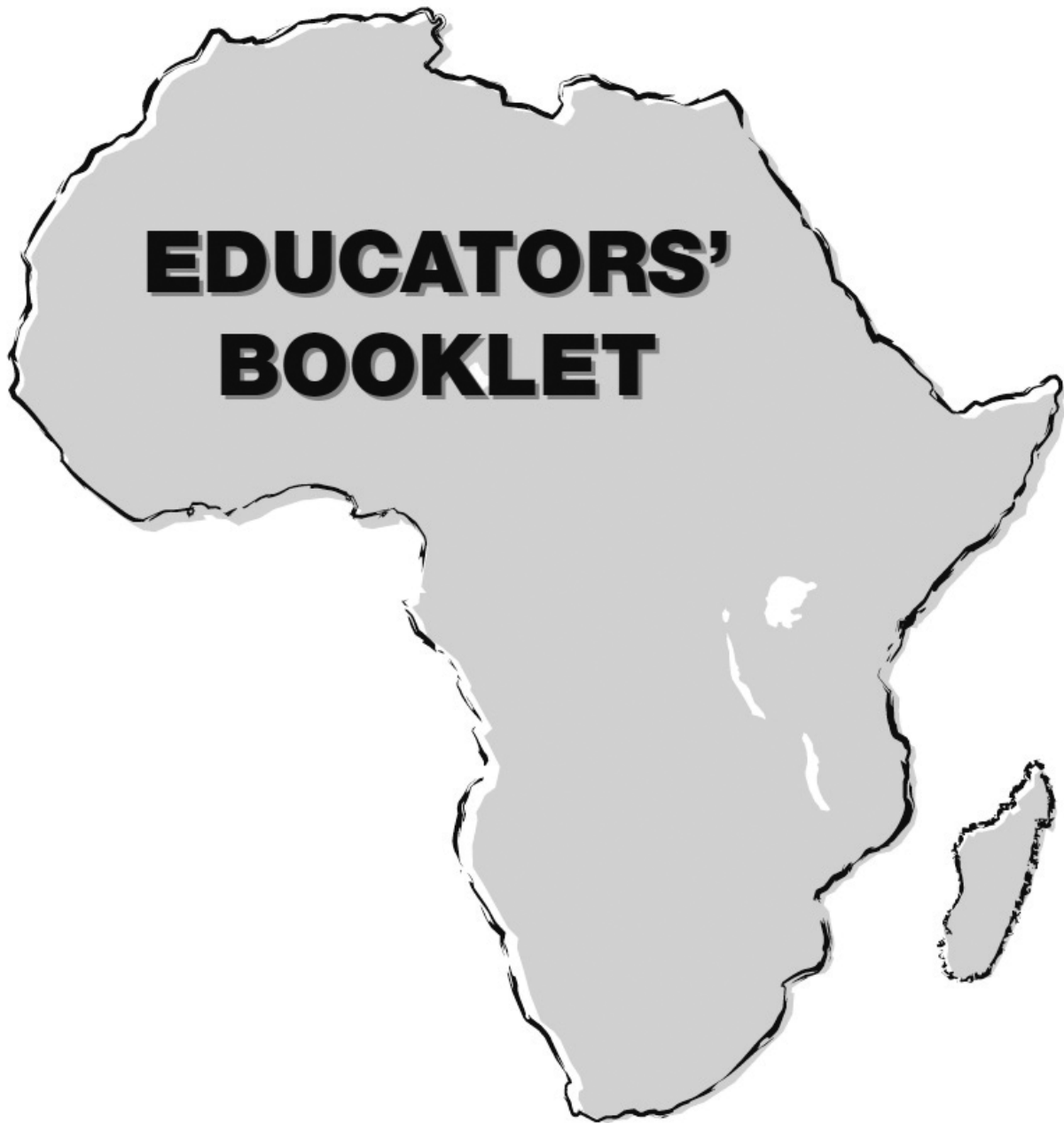


PACE

www.paceproject.net



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DISCLAIMER

The compilers of the PACE resources have made every effort to ensure the accuracy and currency of the information presented. The authors disclaim any liability, loss, injury or damage incurred as a consequence, directly or indirectly, of the use and application of the contents of the PACE Resource Pack.



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What is PACE?

PACE stands for Pan African Conservation Education. Somebody somewhere has found a solution! The idea behind the PACE project is to help spread simple solutions to environmental problems between communities in Africa. From fuel-saving stoves to rainwater-harvesting, compost making to forest product certification, the PACE project aims to share vital information about practical ways in which people are addressing environmental problems.

PACE has produced a resource pack for schools, environmental education centres and community-based organizations covering 7 topics: Living with Wildlife, Water, Soil, Forests, Energy, Living by the Ocean and Urban Living. The full contents of the PACE resource pack (film, book and CD-ROM) can be found at the end of this booklet. This Educators' Booklet gives ideas for using the resources in different situations.

How were the PACE resources developed?

The PACE project research team focused on finding people who are developing and sharing straightforward solutions to common environmental problems around Africa. You will meet these people in the PACE films, and read about them in the book *Africa Our Home*, and find out more using the PACE Action Sheets and Directory.

The PACE resources were prepared using information provided by organisations with relevant expertise and knowledge, and were reviewed by experts from the fields concerned.

PACE on the Internet

If you have access to the Internet, visit the PACE website at www.paceproject.net. There you will find more resources and a link to a **facebook** page for sharing news about environmental education and useful environmental problem-solving techniques.

Using the PACE Resources

You can use the PACE resources in any way you like. However, there are two main ways in which we hope they will be useful:

- 1. Using the PACE resources in education and awareness-raising**
- 2. Using the PACE resources to put ideas into practice**

1. Using the PACE resources in education and awareness-raising

The PACE resources can be used in part or in full in the classroom or with the wider community. They could be used as source material for education programmes or as the basis for written articles or campaign literature, adapted to include local issues and perspectives as you see fit. You will find some adaptation ideas on the next page. Whatever way you use the PACE resources, please credit PACE and the sources listed in the acknowledgements section of the Action Sheets.

ADAPTING THE PACE RESOURCES – THE POSSIBILITIES ARE ENDLESS

Make it more locally relevant...

- Substitute local species of plants and animals and local cultivation techniques
- Include stories on local environmental issues, controversies, and people
- Include artwork or photographs to reflect local cultures and environments

Communicate!

- Make it easier to understand by shortening sentences, simplifying grammar, and substituting simpler words
- Introduce new words and tell readers what to look for prior to their reading
- Eliminate idiomatic language and scientific jargon
- Translate into the language of the readers

Make it more active, for use in a group!

- Divide material into parts and assign small groups to make presentations
- Introduce material with questions to be answered through reading or listening
- Turn the material into a discovery or problem-solving lesson

Fit it into the learning curriculum...

- Convert environmental data into mathematical problems
- Assign students measurement and data collection tasks and analyse data in class
- Use environmental topics to teach processes
- Analyse the curriculum to find connections to the topic area
- Add reading or writing exercises as pre-work or post-work to environmental education demonstrations or activities

Give it a broader perspective...

- Have learners listen to, read, or discuss materials from different perspectives (e.g. the community, women, extension agents, farmers, children).
- Have learners research and write about the same problem from different perspectives

Cut down on hand-outs...

- Present the same materials in a different way
- Substitute with simpler, locally available materials
- Use one written copy rather than hand-outs and
- Read aloud
- Dictate the main points
- Outline the main points on a blackboard for students to copy
- Have students work in groups to share limited copies

Use it with people who can't read or write...

- Transform written ideas into simple pictures.
- Add more visual aids and demonstrations to the material
- Modify the material for use on radio, or other mass media, if these are important channels of information in your community
- Convert the material into stories, songs, puppet shows, and other forms of popular entertainment to convey environmental messages

SOURCE: Judee Blohm and Jamie Watts, Adapting Environmental Education Materials, U.S. Peace Corps, Washington, D.C. USA. (February, 1999) reproduced from OUTREACH/TVE Education Packs

PACE resources in schools

As many national curricula already recognize, environmental education can be integrated into the teaching of many different subjects – an efficient and effective way to teach environmental awareness. You will find suggestions for teaching activities in Action Sheet 1, and at the end of each chapter of the book *Africa Our Home*. In general, the Action Sheets on the yellow CD-ROM contain more detailed information than the films and the books, and will therefore be more appropriate for secondary school children or adults. An example lesson plan, written by a language teacher, has been printed on page 4. We look forward to hearing more ideas from you!

The table on pages 6 - 10 gives ideas for using the PACE materials in different school subjects. Of course, the formal curriculum will be different in each country, as will the languages of teaching and learning, so teachers may need to adapt the PACE activities and topics to suit different age groups and reflect local environmental issues. The Box on Adapting the PACE Resources on page 2 may be a helpful starting point.

SHARING IDEAS BETWEEN TEACHERS Some organizations have chosen to share the PACE resources with other educational professionals at local and regional workshops. In seven of Uganda's districts, the Jane Goodall Institute ran a series of workshops for primary school teacher trainers. The aim of the workshops was to increase the quantity and quality of environmental education taught in primary schools. Each workshop lasted 4 days, and aimed not only to communicate knowledge on environmental issues but also to investigate alternative teaching methods such as activity-based lessons and cooperative learning. Activity-based lessons are a very effective way of learning, especially for science subjects, and so these sorts of teaching methods were introduced to participants by using them at the workshop itself. At the beginning of the topic-based sessions, the PACE films on energy, water and wildlife were shown, followed by a discussion. The films share real life examples of African communities taking action to conserve the environment, and show how people can benefit from taking action. Participants then went on to develop activity-based lesson plans. In future JGI plans to incorporate ideas for lessons from the PACE book *Africa Our Home* and the PACE Action Sheets in their workshops.

The PACE resources can be used with or without viewing the films:

Without the films: You could use one of the ideas in the table below as part of your usual lessons (e.g. choose a reading from *Africa Our Home*, or one of the Action Sheets, and/or do one of the suggested activities).

With the films: You could choose one short film to watch at the beginning of the lesson, using a reading from the book and/or a suggested activity or discussion to complete the lesson.

Please send us your ideas!

The Living Values Education program is a partnership amongst educators around the world, supported by UNESCO, and part of a global movement for a culture of peace and non-violence. People in over 60 countries listed universal values that would be present in a better world – such as co-operation, freedom, happiness, honesty, humility, love, peace, respect, responsibility, simplicity, tolerance and unity. The Living Values Education Program develops these 12 values to fulfil the potential of the individual and create harmonious, effective communities. If a lack of these values is hindering your community's efforts towards sustainable development, and you would like to find out more about this program, contact Living Values Education

Email: lv@livingvalues.net, Website: www.livingvalues.net

ENVIRONMENTAL ISSUES IN THE LANGUAGE CLASSROOM

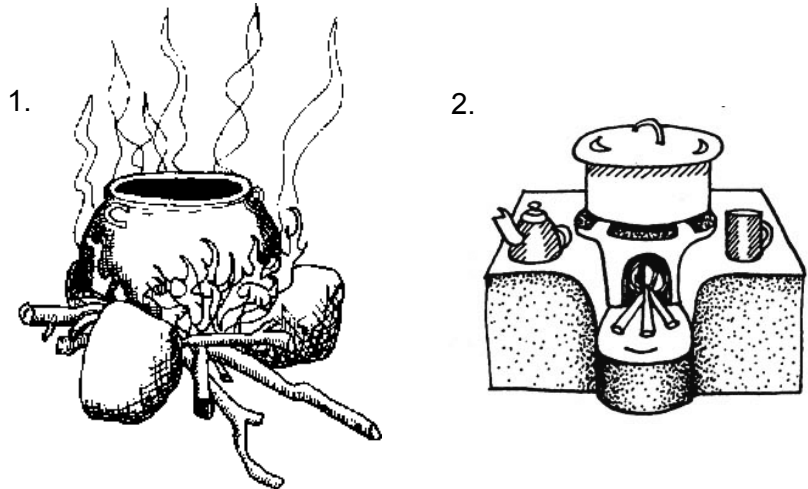
English as a Second Language Lesson Plan: Fuel Efficient Stoves

By Florence Acworth, Language Teacher from Cameroon

Level: For students in the last classes of secondary school, high school students and adults.

Rationale: Learning ways to use less fuel and make less smoke, and generally promote a healthy environment when cooking at home, at school or at work places.

Starter Activity 1: Picture talk (10 mins)



Look at these pictures with your partner

- What do you see?
- Which materials have been used to make the cooking instrument in picture 2?
- Which method is less harmful to the environment?
- Which method uses more firewood?
- Which method produces a lot of smoke?
- Which method would an environmentalist advise people to use?

Discuss these questions with your partner

- Have you ever heard of the Upesi stoves?
- Are fuel efficient stoves used in your region?

Main Activity: Read the PACE Action Sheet excerpt on the following page before answering the following questions. (40 mins)

Comprehension Questions

- What is an improved stove?
- In your opinion, can improved stoves be called fuel-efficient stoves? Why?
- The Upesi stove is an example of an improved stove found in Kenya. Could you provide a name of an improved stove used in your country or region?
- Name two principles used in improved stove designs.
- What are the advantages of using improved/fuel efficient stoves, over the use of the three-stone fireplace? Name four.

Vocabulary: Match the items in column A with those in Column B

Column A	Column B
1. An improved cooking instrument	a) clay
2. Firewood	b) trees
3. Smoke	c) Upesi stove
4. Material to produce Upesi stove	d) charcoal
5. Chop down	e) pollution

Reading comprehension

Fuel Efficient Stoves (Extract from PACE Action Sheet No. 57)

An improved stove is a cooking stove which has been specially designed to use less fuel, cook food more quickly and produce less smoke. One example of an improved stove is the Upesi Stove found in Kenya, East Africa. This stove uses half as much fuel and cooks food more quickly, but it still produces smoke. The Rocket Stove is another amazing design that produces even less smoke. There may be no smoke without fire, but there can be fire with less smoke! With an improved stove, your kitchen will be healthier, more comfortable and easier to keep clean. Using less fuel can save you time and money, and reduce impacts of fuel collection on the local environment. Switching from charcoal to wood from a sustainable source can reduce deforestation. A well-designed stove will also help cook food and boil water more quickly.

Stove designers learnt some important design principles from people who cook on traditional three-stone fireplaces. Expert cooks know exactly how to set the fire to burn hot enough to avoid making a lot of smoke, how to feed wood into the fire to avoid using more fuel than necessary, and how to place the pot to get the most heat from the fire. Stove designers use these lessons to design better stoves, creating easier, safer and faster ways to cook with fire.

Overall, fuel-efficient stoves are better than the three-stone fireplace as they **burn fiercer**, making less smoke. They **burn wisely**, as only the tips of wood are burnt, thus they burn hotter and again make less smoke and use less fuel/wood. These stoves **cook more efficiently**, as they are designed to deliver energy straight to the cooking pot and lastly, they encourage users to **go local**. Local manufacturers help stove designers to find ways to use easily available materials like clay. The use of the new stoves also seems to change social dynamics. An increasing number of husbands are spending more time in the kitchen, talking with their wives and discussing family issues. Children are also able to spend more time in the kitchen with their mothers simply because the kitchen is cleaner, the air is fresh and the kitchen is safe.

Fuel consumption habits have also changed since the introduction of the Upesi. With the Upesi Stove waste from maize crops and leaves that have fallen from trees can be used as fuel; not only wood as the three-stone fire-place required. This brings about a positive effect to the environment too, as fewer trees are chopped down for firewood. At the economic level, users of the Upesi stove also find life easier. The money saved from buying a lot of firewood helps them to pay school fees and provide better food and clothing for their families.

Plenary Activity: Further comprehension questions (10 mins)

- 1) Read the comprehension text again and fill the blank spaces with the words in the box.

toxic emissions, fuel-efficiency, health hazard, waste, pollution
--

- A) Women and children in developing countries are exposed every day to from cooking smoke.
- B) A clean cook-stove like the Upesi stove is designed to optimizewhen cooking meals.
- C) Improved stoves are designed to reduce when cooking food.
- D) Exposure to a lot of cooking smoke is a serious
- E) With the Upesi Stove from maize crops and leaves that have fallen from trees can be used as fuel and not only wood

USING PACE RESOURCES IN DIFFERENT SCHOOL SUBJECTS (Book = Africa Our Home; LWW = Living with Wildlife)					
SUBJECT	Topic	Films	Readings / Further information	Activities	
BIOLOGY	Animal biology: The Senses			Blindfold and Smell Trails Book: LWW pp.36-37 Learn about the different senses and the ways in which other animals interact with the environment. Bat Echolocation Game Book: LWW pp.38	
	Ecosystems	LIVING WITH WILDLIFE Intro SOIL: Natural Pest Control LIVING BY THE OCEAN	Living Cathedrals: Book LWW p. 32 The Mopane Tree: Book FORESTS pp. 110-111 Soil Ecosystems: Book SOIL pp. 88-89 The Ocean: Book pp.152-157	Food chains and webs: Action Sheet 1: For Teachers pp. 13-15: The inter-relationship of living things Environmental Trails, Animal Tracks, Animals and their habitats Action Sheet 1: For Teachers pp.20-24	
	Plant Biology	SOIL: Green Manure (Nitrogen-fixing plants)	Photosynthesis and Transpiration: Book FORESTS pp.108-109 Action Sheet 36: Planting Nitrogen-fixing trees		
	Human Biology/Health	WATER: Making Water Safe to Drink WATER: A Community Spring WATER: Ecosan Toilets	Dirty Water and the Risk of Disease: Book WATER pp. 54-57 Action Sheet 10: Health Problems from Unsafe Water Action Sheet 23: Making Water Safe	Make a Tippy-Tappy hand-washer in: Action Sheet 27: Wash Your Hands The Clean Water Board Game in: Action Sheet 1: For teachers p. 27	
	Improving soil quality	SOIL: Compost and Mulch SOIL: Green Manure	Feeding the Soil: Book SOIL p.78	Biodegradable materials (primary level) Does it rot or not? Book: SOIL p.96 This is an experiment to see which materials biodegrade (break down) naturally when buried in the soil. It could be used in combination with a reading or film to introduce the idea of composting organic waste and using it to improve soil.	
	Soil erosion	SOIL: Conservation Farming	Erosion Alert: Book SOIL pp.72-73	A Model Farm Book: SOIL p.98 An experiment to investigate the factors leading to soil erosion on farms. The following readings and films have further information on soil erosion and techniques used to reduce it.	
	Soil erosion (cont.)		Sheltering the Soil: Book SOIL pp.80-83 Action Sheet 30: Conservation Agriculture Action Sheet 42: Saving Soil and Water on Sloping Land		
	ECOLOGY / AGRICULTURAL SCIENCE				

<p>ECOLOGY / AGRICULTURAL SCIENCE (cont.)</p>	<p>Climate and weather</p>	<p>WATER: Harvesting Water at Home WATER: Harvesting Water on the Farm</p>	<p>Why does it rain where it rains? Book: WATER p.46-47 Seasonal rainfall in Africa: A graph Book: WATER p. 64 Action Sheet 13: Rainwater Harvesting</p>	<p>Measuring rainfall: Making a simple rain gauge. Book: WATER p.62 Rainwater Harvesting Investigation Book: WATER p.63</p>
<p>PHYSICS/ CHEMISTRY</p>	<p>Energy and Combustion</p>	<p>ENERGY: Fuel efficient stoves</p>	<p>Action Sheet 58: Fuel Savers Action Sheet 62: Improved stoves (Using the principles of combustion to design better stoves)</p>	<p>Fuelwood experiment: How does log size, moisture content and type of wood affect how fuelwood burns? Book: ENERGY pp. 147-149</p>
<p>PHYSICS/ CHEMISTRY</p>	<p>Global Climate Change and the Greenhouse Effect</p>	<p>ENERGY: Introduction</p>	<p>Global Climate Change: Book: ENERGY pp. 142-143</p>	
<p>PHYSICS/ CHEMISTRY</p>	<p>Energy Efficiency and Conservation</p>		<p>Save the world! Book: ENERGY pp. 144-146</p>	
<p>PHYSICS/ CHEMISTRY</p>	<p>Renewable and Non-renewable Energy Sources</p>	<p>ENERGY: Solar Energy ENERGY: Water Energy ENERGY: Biogas</p>	<p>Ways to access energy Book pp.132-137 Action Sheet 66: Biogas Action Sheet 64: Solar Water Heating</p>	<p>Action Sheet 65: Build your own solar water heater (Advanced)</p>
<p>GEOGRAPHY, HUMANITIES, ECONOMICS, MODERN STUDIES</p>	<p>Water Resources</p>	<p>WATER: Introduction</p>	<p>Fair Water Use Book: WATER p. 44-51 More detailed: Action Sheet 10: Health Problems from a Lack of Water Action Sheet 12: Developing a plan for Community Water Security Action Sheets 13-22: Methods for improving access to water</p>	<p>Use the case studies and information in the resource pack to start an investigation of water resources in your country or area. Rugusu Roleplay: Working together to improve the water supply Book: WATER p.64 (p. 56) Film: WATER A Community Spring More detailed background information if required: Action Sheets 9-12, 19</p>
<p>GEOGRAPHY, HUMANITIES, ECONOMICS, MODERN STUDIES</p>	<p>Agricultural resources</p>	<p>SOIL: Conservation Farming SOIL: Trees and Farming FORESTS: Land regeneration</p>	<p>Erosion Alert Book: SOIL pp.72-73 Sheltering the Soil Book: SOIL pp.80-83 Action Sheet 30: Conservation Agriculture Action Sheet 42: Saving Soil and Water on Sloping Land</p>	<p>Investigate soil erosion and techniques used to manage soil erosion in your local area. Agroforestry: Trees on farms - Investigation and exhibition Book: SOIL p.97; Films: SOIL Agroforestry, SOIL Trees and Farming, FORESTS Land regeneration Action Sheets 35-38, 50-56</p>

<p>GEOGRAPHY, HUMANITIES, ECONOMICS, MODERN STUDIES (cont.)</p>	<p>Forest Resources</p>	<p>FILMS: FORESTS: Micro-credit and alternative tree products FORESTS: Good Woods</p>	<p>FORESTS Chapter Book FORESTS pp. 100-127 Africa's Amazing Plant Diversity Africa Our Home FORESTS pp. 104-105 Action Sheet 47: Managing Forest Resources Action Sheet 48: Forest Product Certification</p>	<p>Use the case studies in the book and film to start an investigation of forest resources in your country or region. Are they being used sustainably? The Sustainability Game – A game and discussion in which everyone learns about the idea of sustainable use of resources Book FORESTS Activity p.124-126</p>
	<p>Wildlife</p>	<p>LIVING WITH WILDLIFE: All films from this section</p>	<p>LIVING WITH WILDLIFE Chapter Book LWW pp. 10-39 Action Sheet 2: Human Wildlife Conflict Action Sheet 3: Monitoring Human Wildlife Conflict Action Sheet 4: Reducing crop-raiding by elephants Action Sheet 6: Protecting against primates Action Sheet 7: Protecting livestock from predators</p>	<p>Living with Wildlife Discussion and Display Read excerpts from Chapter 1 in Africa Our Home View films on Living with Wildlife For more detailed information on human wildlife conflict, look at Action Sheets 2 – 7. Classroom discussion: Ask your students about their own experiences of wildlife: Make a classroom display about local wildlife, and the costs and benefits of living with wildlife in your country.</p>
	<p>Marine Resources</p>	<p>LIVING BY THE OCEAN</p>	<p>LIVING BY THE OCEAN Chapter Book LBTO pp.150-175 Action Sheets 70 and 71: Sustainable Use of Marine Resources</p>	<p>Investigate marine resources in your country or region. Alternative Visions of Coastal Development: The Heart of Redness by Zakes Mda Book LBTO Activity pp.172-175</p>
	<p>Human population growth and cities</p>	<p>URBAN: Urban Greening URBAN: Ecosan Toilets</p>	<p>Book: URBAN LIVING pp.176-179 Action Sheet 79: Sanitation in the City Action Sheet 26: Building Toilets</p>	<p>Environmental Statistics Using environmental data to teach basic statistical skills for geography (drawing graphs, calculating averages and percentages) Action Sheet 1: For teachers pp.16-17</p>
	<p>Using the local environment as a teaching aid</p>			<p>Discovery Table: Collect and display features from your local environment Action Sheet 1: For teachers p.20 Environmental Trail: Make a trail visiting local examples of the topics covered in your lessons (e.g. soil erosion, types of land-use) Action Sheet 1: For teachers p.20</p>

BUSINESS STUDIES	Ecotourism	WILDLIFE: Ecotourism	Ecotourism - Book LWW: pp. 26-31	Sustainable Business? Case studies from the PACE resources could be used to start an investigation into the way wildlife and plants are used in business in your country or local area. Are they being used sustainably?
	Wood carving	FORESTS: Good Woods	Good wood - Book FORESTS p. 118 Action Sheet 48: Where is it from? Forest Product Certification	
	Agroforestry	FORESTS: Trees and Business FORESTS: Microcredit and Alternative Tree Products	Action Sheet 51: Neem	
	Wood Smoke and Our Health	ENERGY: Fuel-efficient Stoves ENERGY: Smoke Hoods ENERGY: Solar Energy	Ideas for Cough Free Cooking Book URBAN LIVING p.138-141 Action Sheet 57: Reducing kitchen smoke Action Sheet 58: Fuel Savers Action Sheet 60: Solar Cooking Action Sheet 62: Improved Stoves	Make a poster based on info from PACE Action Sheet 59: Make a fireless haybox cooker Action Sheet 60-61: Make your own solar cooker
	Water and Health Dirty Water and the Risk of Disease	WATER: Making Water Safe to Drink WATER: A Community Spring WATER: Ecosan Toilets	Dirty Water: Book WATER pp. 54-57 Action Sheet 10: Health Problems from Unsafe Water Action Sheet 12: Developing a plan for Community Water Security Action Sheet 23-25: Making Water Safe Action Sheet 26: Building Toilets	Make a poster based on info from PACE Make a Tippy-Tappy hand-washer Action Sheet 27: Wash Your Hands The Clean Water Board Game Action Sheet 1: For teachers p.27
	Water Pollution		Pollution in rivers/lakes - Book WATER p. 53 Marine pollution - Book WATER p. 160-161	Organise a clean-up Fish Life – Make up a play or story about a fish who lives in a polluted river Book: WATER p.62
	Growing Food - Caring for the Soil	SOIL: Compost and Mulch SOIL: Green Manure SOIL: Permaculture WATER: Harvesting Water on the Farm	Book SOIL Chapter 3 pp.66-99 Action Sheets 30-45: Sustainable Agriculture techniques Action Sheet 76: Growing vegetables in the city Action Sheet 78: Permaculture	Create a vegetable garden Research permaculture in your country The Model Farm - Book SOIL p. 98
	Healthy Eating		Book: SOILS pp. 92-95	Hold a healthy picnic
	SCHOOL/ COMMUNITY PROJECTS			
	HEALTH			
PSHE				
LIFE SKILLS				
CONSUMER STUDIES				
HOME ECONOMICS				
CITIZENSHIP				

SCHOOL AND COMMUNITY PROJECTS	Chemicals in the Home		Book: URBAN LIVING pp. 184-185 Action Sheet 80: Cleaning Chemicals	
	Smoking		Book: URBAN LIVING pp. 186-187	Book: ENERGY p. 149
HEALTH PSHE LIFE SKILLS	Reduce, re-use, recycle	URBAN: Recycling Rubbish URBAN: Recycling Paper URBAN: Recycling Plastic Bags	Re-use, Re-use, Recycle Book: URBAN LIVING Chapter 7 pp.176-191 Action Sheet 72: Reduce, Reuse, Recycle Action Sheet 74: Papier mache The Life Story of Plastic Bag Book: URBAN LIVING pp.180-183 Action Sheet 75: The Plastic Bag Problem Consumerism Book: URBAN LIVING p. 184-187	An Environmental Audit of your school Conduct a school project to analyse the efficiency with which your school uses energy, water, food Book: URBAN LIVING pp.188-191 An Environmental Quiz: Action Sheet 1: For Teachers p.25-26 Organise an Environment Day at your school Action Sheet 1: For Teachers p.29
		URBAN: Urban greening SOIL: Agroforestry Any of the FORESTS film	Plant a tree - Book: FORESTS: pp. 120-123 Action Sheet 49: Tree planting Action Sheet 50: Multipurpose trees Action Sheet 35: Agroforestry	Set up a community tree nursery or tree-planting project
CONSUMER STUDIES	Save forests; Plant trees		Comprehension, Sentence Construction, Grammar and Conversation topics: All of the PACE resources can be used as material in language classes, as an opportunity to practice reading about and discussing interesting topics. See: Action Sheet 1: For Teachers p.1 for ideas	
			Anagrams, Crosswords and Wordsearches: Ideas for environmentally themed language puzzles can be found in: Action Sheet 1: For Teachers p. 3-9	
HOME ECONOMICS			Creative Writing Animal Poetry: Write a poem from the perspective of your chosen animal Book: LIVING WITH WILDLIFE p. 39 Fish Life Story - Book WATER p.62 Outdoor poetry: Action Sheet 1: For teachers p. 18 Using descriptive words: Action Sheet 1: For teachers p. 18	
			Communication Skills: Investigate! Communicate! Agroforestry investigation and exhibition Book: SOIL p. 97 Further information in films: Agroforestry (SOIL), Trees and Farming, Land regeneration (FORESTS) and Action Sheets 35-38, 50-56 Using environmental data to teach basic statistics (drawing graphs, calculating averages and percentages) Action Sheet 1: For teachers p.16-17 Rainwater Harvesting Investigation (Book WATER: p.63) The Sustainability Game: Counting and keeping records to monitor natural resource use (Book: FORESTS p.124)	
LANGUAGES			We Are - Make a mural or collage illustrating We Are by Niji Osundare (Book INTRODUCTION p.8-9) Leaf collage - Collect lots of different leaves. Stick them onto card to make a collage Pollution poster - Make a 'Stop Pollution' poster. Collect bits of rubbish and stick them on a piece of card with a slogan Environmental posters - Encourage children to produce environmental poster based on an issue examined in a lesson (e.g. Forests, Wildlife) Fish Life - Make up a play or story about a fish who lives in a polluted river (Book: WATER p.62) Poetry Reading - Perform one of the poems by Niji Osundare (Book p. 8-9, 127) Alternative Visions of Coastal Development - Perform the excerpt from The Heart of Redness as a play (Book LIVING BY THE OCEAN p. 172-175)	
MATHS				
ART				
DRAMA				

2. Using the PACE resources to put ideas into practice

Many of the techniques covered in the PACE Action Sheet cover techniques that schools and environmental education centres can use in special projects (eg. tree planting, energy efficient cooking, improved sanitation, rainwater harvesting) and promote in the wider community.

The PACE resources (and in particular the Action Sheets) may be useful as a starting point for project development. However, information cannot change the world - only people can do that, and people everywhere live in different environments with different constraints and opportunities. Before starting out with a new technique or project, talk to others and get local advice if it is available. Set things up so people can learn from your mistakes. One way to do this is to conduct experiments in which different techniques are compared with a "control" in which no changes to usual practice are made. Measuring the results of these experiments against specific objectives will enable you to work out what works well where you live.

Organisations often advise that it is wise to start small, and recognise exactly what you are investing (e.g. time, money, energy) and what you stand to lose or gain (e.g. health, money, new skills). It is also important to find out about and understand any health and safety risks associated with new activities or techniques, and take precautions against them.

How to obtain further information on featured techniques: At the end of each Action Sheet there is a list of useful organizations. You can contact these organizations for more information on putting the ideas covered into practice. Their full addresses are listed in the PACE directory. Some of the organizations listed can give further information about grants and may be able to assist with project development. As well as contacts, each Action Sheet lists Internet websites, articles and books that could be useful sources of further information.

Using the Internet for research: The Internet is an amazing resource and keyword searches often come up with incredibly detailed information. However, it is always worth bearing in mind that the information you find on the Internet may not always have been rigorously reviewed. It is always wise to check your sources out carefully, and contact people for further information if need be.

Obtaining books and articles: Depending on where you live, you might find local resource centres and libraries where books can be consulted for free. Many of the books listed will be found at Practical Action resource centres in Zimbabwe and Kenya. International networks for water, sanitation (such as NETWAS), energy and health may also have resource centres in major cities. TALC and ITDG Publishing sell low-cost reference materials on these topics.

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A USEFUL BOOK (available from TALC)

Building the Capacity of Local Groups by I. Carter, 2001, TEARFUND;
Aims to increase confidence among group members, so they can successfully manage change.

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- Planting trees and vegetables; **Food Garden Foundation, Food and Trees for Africa, SESHO - Soweto Epilepsy Self Help Organisation**, South Africa
- Weaving plastic bags; **So Afr Eco Women's Group**, South Africa
- Ecological sanitation for cities; **EEPCO Environmental Engineering and Pollution Control Organisation**, Tanzania
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PACE CONTACTS DIRECTORY OF USEFUL ORGANISATIONS

Glossary of Environmental Terms

Agriculture: The science or occupation of cultivating land and rearing livestock; farming; husbandry

Animals: Living things that can feel and move about; e.g. human beings, flies, dogs, birds, fish, and snakes.

Animal Tracks: The imprints left behind in soil, snow, mud or other ground surfaces that an animal walks across.

Biodiversity: Sometimes used to mean 'all life on earth', biodiversity is a contraction of the term "Biological diversity". It refers the variability among living organisms in terrestrial, marine and freshwater ecosystems and of the ecological complexes of which they are part. It includes diversity within species, between species and of ecosystems.

Biogas: Biogas typically refers to a gas produced by the breakdown of organic matter in the absence of oxygen. It can be burnt to provide light and heat, and is a renewable source of energy like solar and wind energy.

Climate: Long-term general weather conditions of a place or area; conditions of rainfall, temperature, wind, etc.

Climate change: Climate change is a significant and lasting change in statistical distribution of weather patterns over periods ranging from decades to millions of years. Human industrial development has caused levels of greenhouse gases in the atmosphere to increase. This is will cause human-induced climate change or 'global warming' over the next century.

Coastal Development: The concentration of human settlements, infrastructures and economic activities along coasts.

Compost: Prepared mixture, especially of rotted organic matter, manure, etc. used to improve soil quality for gardening and growing food.

Conservation: Preservation; prevention of loss, waste, damage, etc.

Conservation Agriculture: A concept for resource-saving agricultural crop production that strives to achieve acceptable profits, together with high sustained production levels while conserving the environment (FAO 2007).

Ecosan Toilets: Ecological sanitation, also known as ecosan/eco-san, are terms coined to describe a form of sanitation that usually involves urine diversion and the recycling of water and nutrients contained within human wastes into the local environment. The use of Ecosan toilets facilitates this process.

Ecosystems: A community of living organisms (plants, animals, microbes) in conjunction with the non-living components of the environment (things like air, water, and mineral soil) interacting as a system.

Energy: Energy is the ability of a physical system to do work. If something is moving, producing light, making a sound, growing or heating up, energy is what is making that happen.

Energy Efficiency: The goal to reduce the amount of energy required to produce products and services. For example, insulating a home allows a building to use less energy for heating and cooling.

Erosion: Erosion is the general name for the processes that break down rocks (weathering), and the processes that carry away the breakdown (transportation).

Forest: (Large area of) land covered with trees (and often undergrowth).

Forests Product Certification: The process by which a wood or timber product gets a certificate indicating it comes from sustainably managed forests.

Forest Resources: Refers to the benefits which humans harvest or gain from forests. These include timber, water, wildlife, recreation, medicinal forest products, forage for livestock, and biological diversity.

Fossil fuels: The fossil fuels - coal, gas and oil - are the remains of forests and swamps that covered the Earth millions of years ago. They are now being mined to provide fuel for cars, factories and electricity-generating power stations.

Fuel Saving Stoves: These are fuel-efficient stoves that make homes safer and protect the environment. They use up to two-thirds less fuel than traditional stoves, prevent deforestation and free up the time taken to collect wood.

Green House Effect: The greenhouse effect is the process by which thermal radiation from a planet's surface is absorbed by gases in the planet's atmosphere and is re-radiated in all directions. Since part of this re-radiation is back towards the surface and the lower atmosphere, it results in an elevation of the average surface temperature above what would be in the absence of the gases. Burning fossil fuels and cutting down trees causes higher concentrations of greenhouse gases in the atmosphere.

Green Manure: In agriculture, green manure refers to crops which have been uprooted and dug into the soil. The dying plants add nutrients and organic matter to the soil (e.g. nitrogen fixing crops).

Habitat: is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism or population normally lives. It includes physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food and the presence of predators.

Land Regeneration: The re-development of derelict, underused and neglected land to housing and/or green space (e.g. community woodlands or wildlife area).

Living Things: A living thing is any organism that displays all the characteristics of life. These include being able to grow and use energy.

Marine resources: Refers to the benefits which humans harvest or gain from the oceans and seas. These include fish, coral reefs, crabs, sharks, seaweed, but also things like recreation and spiritual inspiration. Conservation effort is required to protect these resources from human destruction by pollution and over fishing.

Mulch: A layer of material applied to the surface of an area of soil. Its purpose is any or all of the following: to conserve moisture; to improve the fertility and health of the soil, to reduce weed growth, and to enhance the visual appeal of the area.

Multipurpose Tree: Multipurpose trees are trees that are deliberately grown and managed for more than one output. They may supply food in the form of fruit, nuts, or leaves that can be used as vegetables, while at the same time supplying firewood, adding nitrogen to the soil, or supplying some other combination of multiple outputs.

Non-renewable Energy: Energy sources such as the fossil fuels - gas, coal and oil. Once used up, they cannot be replaced. (See **Renewable energy**)

Organic Waste: Organic waste, also known as biodegradable waste, is waste originating from plant or animal sources. It can be broken down by other living organisms easily and quickly.

Permaculture: Permaculture - a word based on the terms 'permanent agriculture' and 'permanent culture' - is a growing movement of people working together to create sustainable and self-sufficient food-producing ecosystems in which humans can lead healthy fulfilled lives. The core tenets of permaculture are care of the earth, care of the people, and fair sharing of the harvest.

Photosynthesis and Transpiration: Photosynthesis is the process used by plants and other organisms to convert light energy to chemical energy and store it in the form of plant sugars. In order to carry out photosynthesis a plant needs to open its stomata (pores found on leaf surface) to exchange gases. Inside the leaf, photosynthesis turns water and carbon dioxide into glucose. Opening the stomata, though, causes loss of water through evaporation, which causes water to be pulled up from the soil - the process known as transpiration.

Pollution: Contamination of the environment by intentional or accidental release of chemical or organic waste. Agricultural fertilizers cause water pollution when they wash off the land into rivers and lakes. Car engines, factories and smoky fires cause air pollution.

Rain Water Harvesting: The collection of rainwater for use in houses, gardens, for livestock, irrigation, etc.

Recycling: is a process to change materials (waste) into new products to prevent waste of potentially useful materials, reduce the consumption of fresh raw materials, reduce energy usage and reduce air and water pollution by reducing the need for waste disposal.

Renewable Energy: Renewable sources of energy are not used up in energy production. Renewable forms of energy production include solar (from the sun), biogas (from organic waste), and hydro power (from the movement of water in rivers and tides).

Soil: Soil is a natural substance found on the surface of the Earth. It consists of layers containing a variety of minerals mixed with organic matter. Soils are formed by erosion of rock and the breakdown of organic matter from plants and animals. They have different textures, colour, and constituents depending on where and how they formed.

Soil Ecosystem: Living soil is a thriving ecosystem which includes a huge variety of organisms. From plant roots and bacteria to millipedes and earthworms, soil creatures play an important role, changing soil composition and structure in many different ways.

Soil Erosion: When soil is washed away by water or blown away by the wind.

Solar Cooking: Using a solar cooker which makes use of direct sunlight to heat, cook or pasteurize food or drink.

Solar Energy: Radiant light and heat from the sun is harnessed using a range of evolving technologies such as solar heating, solar photovoltaic cells, solar thermal, and passive solar architecture.

Sustainability: The capacity to keep surviving and thriving into the future without damaging the environment or using up resources - long-term productivity and resilience to threats.

Sustainable Agriculture techniques: Sustainable approaches to agriculture that seek to protect the environment while producing food, forage, and energy crops by employing techniques that do not undermine the natural systems and resources that we depend on.

Urban Greening: Planting trees and providing green spaces for the physiological, sociological, and economic wellbeing of city dwellers.

Water Resources: Sources of water that are useful or potentially useful to households, industry, agriculture, recreation, wildlife conservation or ecosystem function.

Wildlife: Traditionally refers to non-domesticated vertebrates, but is often used to refer to all wild plants, animals and other organisms.

What you can do for us

We need feedback on the PACE resources: How useful is this material? How can we make it better? Are there special topics you need information about? Please let us know, and please send us material that you have developed based on the PACE project materials.

We also want to hear about the projects you are working on. Have the PACE educational materials inspired you to start up new initiatives? Was the information in the Action Sheets helpful? How can we improve them in future?



Tusk promotes the protection of wildlife and habitats, sustainable rural community development, environmental education programmes, responsible tourism and constructive wildlife research throughout Africa.

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THE PAN AFRICAN CONSERVATION EDUCATION PROJECT



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Somebody somewhere has found a solution! The idea behind the PACE project is to help spread simple solutions to environmental problems between communities. From fuel-saving stoves to rainwater-harvesting, compost making to forest product certification, the PACE project aims to share information about the environment and the very practical ways in which people are addressing common environmental problems. This booklet accompanies the PACE films, which are full of inspiring projects from around the continent, the book *Africa Our Home*, and a CD-ROM of detailed Action Sheets on all the techniques covered.