HALFWAY THE PATH TO 2015 the Millennium Development Goals (MDGs) as agreed upon by over 180 governments in the Millennium Summit in September 2000, are still far from reality. Especially Sub-Saharan Africa lags behind the rest of the developing world on most of the MDGs, especially those that are related to health.

Progress so far has shown us that there are some major challenges that need to be overcome on our way to 2015. Although a multi-sectoral, broad approach is required, we believe that energy can contribute to reaching the MDGs. An energy mindset in project and policy planning can help to address health issues in a successful way. This training manual will help you develop an energy mindset – or E-mindset – so as to make energy considerations part of your natural thinking about health interventions.

<table>
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<tr>
<th>Information about Module 1</th>
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<tbody>
<tr>
<td><strong>Time needed:</strong></td>
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<tr>
<td>15 minutes</td>
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<tr>
<td><strong>Learning goals:</strong></td>
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<tr>
<td>After studying this module, participants should be able to:</td>
</tr>
<tr>
<td>- Explain what is meant with energy in this manual;</td>
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<tr>
<td>- Name the 8 Millennium Development Goals.</td>
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**CHAPTER 1.1**

**What do we mean by energy?**

The word ‘energy’ is often used interchangeable with ‘electricity’ or with ‘power’. Energy, however, is a much broader concept. Humans use energy in everything they do; every action they make. In this manual when we use the word ‘energy’ we refer to an extensive list of services that provide the possibility to perform certain tasks. Energy, in this sense, can be defined as the ability or capacity to do work. Work, in this definition, are all the things we need or want to do in our daily lives, such as cooking, lightning, driving a car, etc.

Energy includes fuels such as petroleum products (kerosene, petrol, diesel) and biomass (firewood, charcoal, agricultural wastes, dung), power (electricity) which can be from a number of sources (fossil fuel based or renewable) and animate forms of energy, particularly human metabolic energy. In Sub-Saharan Africa metabolic energy is the form of energy most used by most women and children and it’s closely related to health issues.
An important source of energy for people in Sub-Saharan Africa is Biomass. In the developing world, over 2.4 billion people still rely on traditional biomass fuels for a large part of their energy needs. This heavy reliance on biomass fuels is directly related to various health issues as well as poverty, environmental degradation and other pressing development issues.

To understand the complete scope of the concept of energy requires a lot of training. In dealing with health issues in Sub-Saharan Africa it is important to realize that energy is much more than just electricity.

**CHAPTER 1.2**

**The Millennium Development Goals**

In September 2000 almost all countries in the world took on a significant challenge to improve the development of our world and the lives of billions. Over 180 governments signed the Millennium Development Goals and agreed to dedicate their efforts to achieve the 8 goals by 2015. These goals are:

1. Eradicate extreme hunger and poverty
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

The issue ‘health’ is very important in the MDGs. Not only are three goals directly related to health, but all the other goals have direct linkages to health, some of which play a crucial role in achieving the goal.

Energy is not a specific goal in the MDGs. However, energy is closely related to each of the 8 goals and is of significant importance in our activities to achieve the MDGs. Appropriate use of energy services determines our success on the road to a better world in 2015.

Energy’s role to achieve the MDGs is increasingly recognised by the international community. Different authors, such as Modi, McDade, Lallement and Saghir (2006) from the World Bank address energy’s role in successfully addressing the MDGs.
For example, the goal of halving poverty by 2015 will not be reached without energy to increase production, incomes and education, create jobs and reduce the daily struggle involved in simple survival. Halving hunger will not come about without energy for more productive growing, harvesting, processing, preserving and marketing of food. Improving health and reducing death rates will not happen without energy for the refrigeration needed for clinics, hospitals and vaccination campaigns. The world’s greatest child killer, acute respiratory infection, will not be tackled without dealing with smoke from cooking fires in the home. Children will not study at night without light in their homes. Water will not be pumped or cleansed without energy.

CHAPTER 1.3

Glossary

| Energy | The ability or capacity to do work. Energy includes fuels such as petroleum products (kerosene, petrol, diesel) and biomass (firewood, charcoal, agricultural wastes, dung), power (electricity) which can be from a number of sources (fossil fuel based or renewable) and animate forms of energy, particularly human metabolic energy. |
| Energy chain | All the activities, such as obtaining, transforming and distributing energy, that are needed to provide energy at the end-user level. |
| Energy efficiency | All action that reduces energy requirements without reducing the end-user benefits. |
| Energy services | The desired and useful products, processes or services that result from the use of energy. For example: illumination, comfortable indoor climate, refrigerated storage, transportation, appropriate heat for cooking. |
| Renewable energy | Energy obtained from sources that replenish themselves within a short period of time. |
| Gender | A concept related to the tasks, roles, obligations and privileges in public and private life of women and men as well as the relationships between them. “Gender” is not the same as “sex”. The latter is determined by biology, whereas the former is shaped by society. Gender varies with context and is dynamic. |
| Gender sensitive | The awareness of the differences between the two sexes and the ability to act according to the different needs and expectations and to predict the different outcomes of an intervention on both sexes. |
| Health | A dynamic state of complete physical, mental, spiritual and social wellbeing and not merely the absence of disease or infirmity. |
| Hunger | The painful sensation caused by a recurrent and involuntary lack of access to food. Hunger is a physical experience, prompted by an immediate need for energy. |
| Millennium Development Goals | A set of 8 development goals for 2015 that is approved by over 180 governments worldwide to be the core of development. The goals include major development issues such as hunger, poverty, health, education, women’s rights and sanitation. |
HEALTH IS A KEY ISSUE in the Millennium Development Goals. Not only are three goals directed at health issues, all other goals have direct linkages with the health sector.

Progress towards the health-related MDGs and the health issues in other MDGs is especially slow in Sub-Saharan Africa and in some countries the situation has decreased since the start of the MDGs. The challenges that the region faces are enormous and immediate action is required to make sure the region catches up in development and does not become – literally – a graveyard of good intentions.

<table>
<thead>
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<tr>
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CHAPTER 2.1  The health-related MDGs

Health is represented in three of the eight Millennium Development Goals, and makes an acknowledged contribution to the achievement of all the other Goals, in particular those related to the eradication of extreme poverty and hunger (MDG1), education (MDG 2), and gender equality (MDG 3). In
Appendix A the relation between the MDGs and health is given. The challenges that the MDGs raise for the health sector are shown in Table 2.1.

**Table 2.1: Health in the MDGs.**

<table>
<thead>
<tr>
<th>MDG &amp; Target*</th>
<th>Challenge</th>
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<tbody>
<tr>
<td>MDG 1, target 2</td>
<td>Halve, between 1990 and 2015, the proportion of people who suffer from hunger</td>
</tr>
<tr>
<td>MDG 4, target 5</td>
<td>Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate</td>
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<tr>
<td>MDG 5, target 6</td>
<td>Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio</td>
</tr>
<tr>
<td>MDG 6, target 7</td>
<td>Have halted by 2015 and begun to reverse the spread of HIV/AIDS</td>
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<tr>
<td>MDG 6, target 8</td>
<td>Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases</td>
</tr>
<tr>
<td>MDG 7, target 10</td>
<td>Halve by 2015 the proportion of people without sustainable access to safe drinking-water and sanitation</td>
</tr>
<tr>
<td>MDG 7, target 11</td>
<td>By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers</td>
</tr>
<tr>
<td>MDG 8, target 17</td>
<td>In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries</td>
</tr>
</tbody>
</table>

* The 8 MDGs all have a set of targets that address different aspects of the goal. Although most MDGs are related to health in one way or another, not all targets are. In this table only the targets related to health are given. For example, target 1 of MDG 1 (halve the proportion of people who’s income is less than one dollar a day) has no direct health indicators and therefore is not included in this table. For a full overview of all MDGs and targets, see Appendix A.

In this manual we will primarily focus on improving the situation on these 8 targets with the use of energy interventions. Where possible linkages with the other MDGs are addressed and the Module 9 will focus on these linkages.

It’s important to acknowledge that meeting other MDGs, particularly those on gender empowerment, education, water, hunger, and income poverty, can have a powerful effect on the health and survival of all people, including women and children.

**Exercise 2.1: Health in the MDGs**

| Time needed: | 10 minutes |
| Group-size: | Individual |
| Result: | A list of priorities for addressing MDG targets related to health |

**Assignment**

**Step 1:** Look at Table 2.1. Can you see all linkages between the targets given and health? What is the relevance of each of the targets to health? (Use Appendix A for more background information)

**Step 2:** Chose, according to your current knowledge and experience, the three targets of which you think they should get a priority in development policies or projects. Write these three goals down in order of importance.

**Step 3:** Write down a short motivation for each of your choices.
CHAPTER 2.2 Worldwide challenges in the health sector

The 8 health-related targets in Table 2.1 encompass the most important health-related challenges the world faces nowadays. The present status of these targets – especially in poor regions such as sub-Saharan Africa – is at least worrisome, but can easily be called unacceptable.

This chapter will give an introductory overview of the challenges faced on these targets worldwide. In the next chapter we will look at the situation in the focus countries of this training in more detail.

Remember that although the targets are presented as independent issues in this chapter, they are far from unrelated. In fact, it will be hard to design successful policies or projects that only address one of the targets. For instance the problem of malaria cannot be adequately tackled without a focus on safe drinking water and sanitation.

2.2.1 Eradicate extreme hunger

Well-fed people are strong people: their resistance to diseases is good and they have enough energy to go and get medical help in case of an emergency. Unfortunately, worldwide over 850 million people – most of them in developing countries – suffer from acute hunger or daily under-nourishment.

Hunger is the painful sensation caused by a recurrent and involuntary lack of access to food. Hunger is a physical experience, prompted by an immediate need for energy. Acute hunger can lead to severe illness and eventually death. Under-nourishment means not having enough food to develop or function formally. Under-nourishment is a more hidden form of hunger with severe consequences for those who suffer from it. Under-nourishment can lead to severe suffering and early death. A period of under-nourishment can have a lasting impact on a human being's wellbeing even after the immediate threat of under-nourishment is taken away.

Apart from hunger or under-nourishment, worldwide over 2 billion people suffer from vitamin and mineral deficiencies. Deficiencies of iron, vitamin A and zinc are ranked among the World Health Organization's top 10 leading causes of death through disease in developing countries:
- **Iron deficiency** is the most prevalent form of malnutrition worldwide, affecting an estimated 1.7 billion people. In developing countries 40-60 % of all children suffer from iron deficiency.

- **Vitamin A deficiency** weakens the immune systems of a large proportion of under-fives in poor countries, increasing their vulnerability to disease. Over 140 million children under five are affected by vitamin A deficiency.

- **Iodine deficiency** affects 780 million people worldwide. According to UN research, some 20 million children are born mentally impaired because their mothers did not consume enough iodine.

- **Zinc deficiency** contributes to growth failure and weakened immunity in young children. It is linked to a higher risk of diarrhoea and pneumonia, resulting in some 800,000 deaths per year.

(source: World Food Programme, 2007)

The relation between malnutrition (causing hunger, under-nourishment and mineral and vitamin deficiencies) and health is multidirectional: malnutrition causes health problems, just as health problems cause malnutrition. Failure to tackle malnutrition in a sustainable way is a potential weakness in achieving all Millennium Development Goals.

### 2.2.2 Reduce the under-five mortality rate

Every year over 10 million children die before reaching their fifth birthday, most due to pneumonia, diarrhoea, and neonatal causes. In sub-Saharan Africa malaria is a major cause of death for under-fives as well. Malnutrition has been identified as an underlying cause in over 50% of cases, with zinc and vitamin A deficiencies contributing (Edejer et al. 2005).

38% of these deaths occur to babies in the first 28 days of their life, accounting for more than 4 million babies yearly. Additionally, each year more than 500,000 women die during pregnancy or childbirth.

Almost half of all deaths among children under five occur in sub-Saharan Africa, where the situation since the beginning of the MDG challenge has worsened due to weak health systems, conflicts and AIDS. Especially countries where the HIV/AIDS epidemic hit hard have seen rises in child mortality.

### 2.2.3 Reduce maternal mortality rate

Every year more than 0.5 million women die during pregnancy or childbirth, over half of which occur in Africa. The chances of dying during pregnancy or
childbirth over a lifetime are as high as 1 in 16 in sub-Saharan Africa, compared with 1 in 3,800 in the developed world.

Apart from death, complications during pregnancy and childbirth are a leading cause of disability among women of reproductive age in developing countries. UNSTATS (2005) estimates that every year some 9 million women suffer from serious injuries during pregnancy and childbirth which can be the source of infection or lead to permanent disabilities.

MDG progress reports (see http://mdgs.un.org) show that especially in sub-Saharan Africa and Southern Asia the situation concerning maternal health has not shown improvements in the last years. Since the beginning of the promise there has been no progress and even a deterioration of the situation (MDG progress chart, 2006).

2.2.4 Halt and reverse the spread of HIV/AIDS

Worldwide over 45 million people are infected with the Human Immunodeficiency Virus (HIV), the virus that causes Acquired Immune Deficiency Syndrome (AIDS). About 95% of more than 45 million people infected with HIV globally live in developing countries.

Every year about 3 million people die from HIV/AIDS related illnesses and AIDS is now the fourth leading cause of death in the world. HIV/AIDS is by far the leading cause of premature mortality in sub-Saharan Africa. Globally, just under half the people living with HIV are female, but as the epidemic worsens, the share of infected women and girls is growing and in some sub-Saharan countries the number of infected women and girls now surpasses the number of infected men and boys.

The spread of AIDS in sub-Saharan Africa is at a sufficient rate that it has severe impact on progress on other MDGs. For example, health workers die from HIV/AIDS related illnesses at a faster rate than the governments can replace them, causing a shortage of health workers which means patients suffer from reduced access to treatment and preventative programmes are hindered.

Worldwide more people suffer from HIV/AIDS today than 15 years ago, making HIV/AIDS one of the biggest challenges for the human race to ensure a better world (MDG progress chart, 2006).

2.2.5 Halt and reverse the spread of malaria and other diseases

HIV/AIDS, tuberculosis and malaria collectively kill an estimated 6 million people annually, according to the World Health Organization. Although exact numbers are hard to give, the respective share of these diseases is about 3
million death related to HIV/AIDS, 1.3 related to malaria and 1.7 related to tuberculosis. Most of these deaths occur in or before people's prime productive years.

Preventive measures for malaria are widely available, but still used very limited in especially the poorest regions of sub-Saharan Africa. Much of current monitoring on malaria control in Africa focuses on children under the age of five because they suffer the largest burden. Currently only about 15% of them sleep under a net, and only 2% sleep under an insecticide treated net. Sleeping nets are a low cost but effective method of reducing malaria.

Yearly, there are about 8 million new cases of tuberculosis and about 1 in every 5 people infected with the disease eventually die. 90% of tuberculosis related deaths occur in low- and lower-middle-income countries, especially in sub-Saharan Africa and Southern Asia.

Neither malaria nor tuberculosis has to result in death. Poor diagnosis, lack of appropriate drugs and unavailability of health-services especially in poor rural areas however are avoidable contributing factors.

2.2.6 Access to safe drinking water and sanitation

In 2002, some 1.1 billion people – one sixth of the world's population – still lacked access to improved drinking water. Sub-Saharan Africa is the region where the problem is the most pressing, with 58% of the population lacking access.

Absence of safe drinking water and sanitation are the key causes of diarrhoeal diseases. Every year, 1.6 million persons die from diarrhoeal diseases, the majority of these children in developing countries.

Rural areas have seen the greatest improvements in coverage of safe drinking water compared with urban areas (7% compared with 1%). However, having started from a much lower base, rural areas remain poorly served in terms of access to safe water.

2.2.7 Improve the life of slum dwellers

The world's most impoverished people – the slum dwellers – undoubtedly carry the biggest burden of diseases. The reasons for this are various, from a lack of access to safe drinking water and sanitation, to exclusion from health systems, to the increased risk for accidents and disability because of their daily work.

The use of solid fuels (biomass, coal, etc.) for cooking and heating is responsible worldwide for 4-5% of the global burden of disease. This burden
is faced by slum dwellers as well as those living in rural areas. About half of the world's population suffers from the large amounts of air pollution caused by the use of solid fuels, especially women and children who spend a lot of time indoors and who are responsible for cooking.

Improved access to cleaner fuels, the availability of safe water and sanitation and access to basic health services can make the lives of millions living in the poorest regions of the world much easier.

2.2.8 Provide access to affordable essential drugs

Access to affordable essential drugs can be a solution for many of the major killing diseases and problems described earlier. Malaria can be cured if diagnosed in an early stage and correctly treated; the negative effects of HIV/AIDS can be eased by treatment with the right medication. Unfortunately, for most of the world’s poorest people – especially in regions like sub-Saharan Africa – the drugs needed are either not available, or not affordable, or both.

Progress continues to be made in increasing the availability of essential drugs to developing regions, as a result of efforts by national governments, donors, the private sector, and others. This progress, however, is by far not enough to reach the MDGs or – more important – to make a significant contribution to the life's of the people.

Discussion 2.2: relations between the MDG targets on health

After reading Chapter 2.2, discuss the following questions for 10 minutes:

- What linkages exist between the 8 targets?
- How can success in one of the 8 targets have a positive effect on the other targets?

Also, have a look at your priority list from exercise 2.1. After studying this chapter and the discussion with the other participants, does anything change in your priority list? Do other targets get priority?

CHAPTER 2.3

The present situation in the region

Sub-Saharan Africa lags behind the rest of the developing world on most of the MDGs and especially on those related to health as can be seen in the MDG progress chart for 2006 in Appendix B. As is the case within developing countries all over the world, the well-off in sub-Saharan Africa are improving their health at a faster rate than the poor. None of the poorest regions is currently on track to meet the child mortality target and on the maternal mortality target most are experiencing stagnation or even reversals.
In this chapter a short summary of the health situation in the four focus countries of this training – Malawi, Mozambique, Zambia and Zimbabwe – is given. Extensive WHO reports on the four countries can be found in Appendix C-F.

### 2.3.1 Malawi

*For additional information, refer to Appendix C.*

Malawi’s 13 million inhabitants face a life expectancy of only 41 years at birth, of which they are expected to live 35 in relative good health.

More than one out of six children dies before their fifth birthday. The main causes for this are pneumonia (22.6%), neonatal causes (21.7%) and diarrhoeal diseases (18.1%). Since 1990 under-5 mortality has seen a slow but gradual decrease (27.4%), but the country is still far short from meeting the MDG target.

Maternal mortality is 1,800 out of every 100,000 life births, almost twice the African average in 2006 of 910 deaths per 100,000 life births. Therefore, since 1990 development on this MDG target has reversed the statistics for maternal mortality have shown a deterioration and the MDG target is even further away (1990: 580 deaths per 100,000 life births).

HIV/AIDS mortality rate – one of the country’s major killers – is 681 per 100,000 people, more than twice the African average. HIV prevalence among adults is 14.2%. Malaria was associated with 212 deaths per 100,000 people in 2000. Tuberculosis prevalence and deaths have seen a slow increase since 1990.

Access to improved water sources is relatively high in both urban (96%) and rural (62%) areas. Access to improved sanitation is also above the African average (urban and rural respectively 66% and 42%). Use of solid fuels is as high as 90% for the urban population and 99% for the rural population.

### 2.3.2 Mozambique

*For additional information, refer to Appendix D.*

Life expectancy at birth in Mozambique is 44 years for men and 46 years for women. Any of the 20 million Mozambicans can expect at birth 36 healthy years when male and 38 healthy years when female.

Under-5 mortality has dropped from 150 per 1,000 life births in 1990 to 102 in 2004; a decrease of 32% - almost half of the MDG target. The main reasons for child mortality are neonatal causes (29.0%), pneumonia (21.2%) and malaria (18.9%).
Maternal mortality has seen a significant decline since 1990, but recent numbers indicate the progress has been halted. Currently about 1,000 women die every 100,000 life births. Still, this number has to go below the 400 to even get close to the MDG target.

HIV prevalence among adults is 12.2% and yearly 577 out of every 100,000 people die from the consequences of HIV/AIDS. Deaths associated with malaria are 263 per 100,000. But tuberculosis prevalence and deaths associated with the disease have seen a sharp increase since the 1990. Currently they are respectively at 635 and 129 per 100,000; an increase of 231% and 349% since 1990.

Access to sustainable water and sanitation are below the African average at 76%/24% and 51%/14% (urban/rural). Solid fuel use is currently at 80%.

2.3.3 Zambia

For additional information, refer to Appendix E.

Zambia’s 12 million inhabitants have a life expectancy at birth of 40 years and a healthy life expectancy at birth of 35 years.

Almost one out of five life births dies before their age of five. The main causes are neonatal causes (22.9%), pneumonia (21.8%) and malaria (19.4%). Under-5 mortality seems to have been steady since the start of the MDGs and is therefore far from reaching the MDG target.

Maternal mortality is with 750 per 100,000 life births somewhat below the African average. Since 1990 there has been a slow, but gradual decline in this number (1990: 940 per 100,000 life births).

HIV/AIDS is the primary reason for death in Zambia, with some 100,000 people dying from the consequences of the disease each year. HIV prevalence among adults is high at 16.5%. Malaria and tuberculosis (respectively the number 3 and 6 in the list of main causes of death) yearly kill 158 and 137 per 100,000 people. These numbers have seen growth in the recent years.

Access to improved water sources is relatively high in urban areas (90%), whereas rural areas lag behind the African average at 36%. Access to improved sanitation is slightly above the African average (urban and rural respectively 68% and 32%). Use of solid fuels is 85%.
2.3.4 Zimbabwe

For additional information, refer to Appendix F.

The 13 million Zimbabweans can expect at birth to live 37 years (males) or 34 years (females). With this number they have the lowest life expectancy of the four countries addressed in this training.

Under-5 mortality is 129 per 1,000 life births. There has been no progress on this MDG since 1990. The main causes for under-5 mortality are HIV/AIDS (40.6%), neonatal causes (28.1%) and pneumonia (14.7%).

Maternal mortality is 1,000 per 100,000 life births - above the African average. This number has almost doubled since 1990 and the country is nowhere near the MDG target.

HIV/AIDS kills over 180,000 people every year and with prevalence at 24.6% Zimbabwe is worst hit by the epidemic of the four countries addressed in this training. The numbers suggest the problem of malaria can be neglected in Zimbabwe; tuberculosis has seen a rapid increase in both prevalence and death since 1990.

Access to improved water sources is 100% in urban and 74% in rural areas. Access to improved sanitation is above the African average at 69%/51% (urban/rural). Use of solid fuels is at 73% below the African average.

Exercise 2.2: The country specific situation in Malawi, Mozambique, Zambia and Zimbabwe

<table>
<thead>
<tr>
<th>Time needed:</th>
<th>40 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-size:</td>
<td>Groups are formed based on country of origin (all Malawians together, etc.). If a group contains 6 or more participants, divide the group in two.</td>
</tr>
<tr>
<td>Result:</td>
<td>An improved understanding of the country specific situation and a priority list of issues to be addressed in each of the countries.</td>
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**Assignment**

**Step 1:**
(5 minutes)
Within your group, analyse the information given in this chapter and in the Appendix concerning your country. Do you agree on the numbers given and do these numbers seem familiar?

**Step 2:**
(10 minutes)
Within your group, share your opinion on the most pressing development issues in your country (not only health) and how these are related to the general situation in your country. If you have country specific data at your disposal, use this to better explain your opinion.

**Step 3:**
With your group, try to reach consensus on the most pressing
(10 minutes) development issues (both health and non-health issues) and their relation. Which issues have the highest priority in your country? Prepare a short presentation about your country’s biggest issues for the other groups. Especially focus on issues that are specific for your country.

Step 4: (15 minutes) Present your findings to all participants. The objective of this presentation is to give all participants a better understanding of the situation in your country. Try to give data and examples of the problems you address in your presentation and give a list of the most pressing issues in your country.

CHAPTER 2.4

Health issues not addressed in the MDGs

The health-related MDGs do not cover all the health issues that matter to developing countries. They do serve however as markers of the most basic challenges ahead: to stop women dying during pregnancy and child birth; to protect young children from ill-health and death; and to tackle diseases such as HIV/AIDS, malaria and tuberculosis.

An all but comprehensive list of health issues not addressed in the MDGs is given below:

- Prevention of injuries caused by daily chores and work of the world’s poor. Especially rural women face huge risks in their daily duty to fetch water or fuelwood for their families.

- Prevention, cure and treatment of cancer. In both the developed and the developing world cancer is one of the major causes of disability and death. For the world’s poor many of the curative and repressive methods for cancer are not available.

- Adequate health services for preterm births. In some sub-Saharan countries preterm death accounts for over one third of the deaths of newly born children.

- Prevalence of tobacco, alcohol and drug use. Worldwide the problems related to tobacco, alcohol or drug addiction and use are a point of attention, but adequate solutions are still absent.

- The availability of skilled and schooled health workers in especially the world’s poorest regions. There is a lack of almost all types of skilled medical workers in regions like sub-Saharan Africa.

The MDGs can be seen as a test for success in the health sector worldwide. What hope is there for us to succeed in the above named areas if we cannot deal with the fundamental issues raised in the MDGs? Still, a health policy
exclusively focused on the MDGs would have significant gaps and inappropriate priorities.

### Discussion 2.7: Health issues not addressed in the MDGs

Which other important health issues for sub-Saharan Africa are not addressed in the MDGs?

Has the focus on the MDGs had any consequences for addressing these other health issues in your country?

Discuss these issues with all participants for 10 minutes.

## CHAPTER 2.5

### Challenges in the health sector

This module is about challenges for the health sector, especially to achieve the MDGs related to health. Within the health sector there are some challenges as well; challenges that limit success on the challenges faced by the health sector.

The World Health Organization distinguishes the following major challenges to achieve the MDGs on health:

- To strengthen health systems: Without more efficient and equitable health systems, countries will not be able to scale up the disease prevention and control programmes required to meet the health-related MDGs.

- To ensure that health is prioritized within overall development and economic policies. This means a holistic view is required, addressing all determinants of ill-health – education, poverty, gender relations, high risk behaviours, and unhealthy environments – as well as raising the issue of health within national poverty reduction and government reform processes.

- To develop health strategies that respond to the diverse and evolving needs of countries: To design cost-effective strategies which address those diseases and conditions which account for the greatest share of the burden of disease, now and in the future.

- Mobilize more resources for health in poor countries; not only money, but also human resources and technologies.

Currently, everything to meet the MDGs on health is available in our world. Effective interventions to reduce maternal and under-5 mortality exist, but they are not available to people living in the poorest parts of the world. For example:
• With 99 percent coverage of proven effective interventions, 63 percent of child mortality would be averted.

• If all women had access to the interventions for addressing complications of pregnancy and childbirth, especially emergency obstetric care, 74 percent of maternal deaths could be averted.

• Universal access to sexual and reproductive health information and services would have far-reaching effects for both the maternal health and child health Goals and for virtually every other MDG, including those for HIV/AIDS, gender, education, environment, hunger, and income poverty.

CHAPTER 2.6

Summary

Health is a key issue in the Millennium Development Goals. It is represented in three of the eight MDGs and makes an acknowledged contribution to the others. The main challenges are:

• To eradicate extreme hunger

• To reduce the under-five mortality rate

• To reduce the maternal mortality rate

• To halt and reverse the spread of HIV/AIDS

• To halt and reverse the spread of malaria and other diseases

• To provide access to safe drinking water and sanitation

• To improve the life of slum dwellers

• Provide access to affordable essential drugs

Sub-Saharan Africa lags behind the rest of the developing world on most of the MDGs and especially those related to health. None of the poorest regions is currently on track to meet the child mortality target and on the maternal mortality target most are experiencing stagnation or even reversals.

For Malawi, Mozambique, Zambia and Zimbabwe a short description of the most pressing health issues is given. Additional information can be found in the appendices.

The MDGs do not cover all health issues. Cancer, tobacco, alcohol, preterm birth and the availability of skilled health workers are some issues that are
not addressed. However, the MDGs can be seen as a test for success in the health sector worldwide.
Opportunities for energy in interventions

ENERGY IS A DETERMINING FACTOR in achieving the health-related MDGs. Energy is required for everything we do and is involved in every part of our daily lives. Therefore interventions in current energy usage and interventions that use energy to address other issues are of the utmost importance for the development of Sub-Saharan Africa.

Interventions in the health sector give many opportunities to use and incorporate energy services. To understand these opportunities it is first important to know energy’s relation to the MDGs and especially to those MDGs related to the health sector.

Information about Module 3

<table>
<thead>
<tr>
<th>Time needed:</th>
<th>60 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning goals:</td>
<td>After studying this module, participants should be able to:</td>
</tr>
<tr>
<td></td>
<td>- Explain how energy is related to the MDGs;</td>
</tr>
<tr>
<td></td>
<td>- Explain how energy can help to achieve the MDGs;</td>
</tr>
<tr>
<td></td>
<td>- Explain how energy is related to the health sector;</td>
</tr>
<tr>
<td></td>
<td>- Give examples of possibilities for energy in the health sector;</td>
</tr>
<tr>
<td></td>
<td>- Give examples of threats/limitations of the current energy usage to the health sector;</td>
</tr>
<tr>
<td></td>
<td>- Name the disadvantages of (certain) energy services;</td>
</tr>
<tr>
<td></td>
<td>- Take position in a discussion about energy and the MDGs;</td>
</tr>
<tr>
<td></td>
<td>- Advocate energy’s role in achieving the MDGs.</td>
</tr>
</tbody>
</table>

CHAPTER 3.1 Energy’s role in the MDGs

There is no MDG related to energy, despite the fact that reaching any of the MDGs will require a much greater quality and quantity of energy services in developing countries. Almost 1.6 billion people in developing countries live without electricity in their homes, while nearly 2 billion people depend on dung, firewood, and agricultural residues for cooking and heating. The availability of energy services has a distinct impact on the lives (and health) of poor people, in particular women.
Modern energy services contribute to social development by helping to fulfil the basic human needs of nutrition, warmth, and lighting, in addition to education and public health. Energy services are an indispensable part of stimulating development at the local level and an essential input into each of the economic, social and environmental dimensions of human development.

Energy services can play a variety of roles in helping to achieve the MDGs, both at a local, a district and a national level. In Table 3.1 some of the relations between energy and the MDGs are shown, especially those focused on health issues. A more complete overview of the relation between energy and the MDGs is given in Appendix G.

### Table 3.1: Energy and the MDGs (in relation to health) (Modi, McDade, Lallement and Saghir, 2006).

<table>
<thead>
<tr>
<th>Millennium Development Goal</th>
<th>Examples of linkages with energy to achieve (health issues related to) this goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Eradicate extreme hunger and poverty</td>
<td></td>
</tr>
</tbody>
</table>
  - The majority (95 percent) of staple foods need cooking before they can be eaten and need water for cooking.  
  - Energy for irrigation helps increase food production and access to nutrition. |
| 2: Achieve universal primary education |  
  - Energy can help create a more child-friendly environment (access to clean water, sanitation, lighting, and space heating/cooling), thus improving attendance at school and reducing drop-out rates.  
  - Lighting in schools helps retain teachers, especially if their accommodation has electricity. |
| 3: Promote gender equality and empower women |  
  - Clean cooking fuels and equipment reduces exposure to indoor air pollution and improves health.  
  - Street lighting improves women’s safety. |
| 4: Reduce child mortality |  
  - Gathering and preparing traditional fuels exposes young children to health risks and reduces time spent on child care.  
  - Electricity enables pumped clean water and purification. |
| 5: Improve maternal health |  
  - Energy services are needed to provide access to better medical facilities for maternal care, including medicine refrigeration, equipment sterilization, and operating theatres.  
  - Excessive workload and heavy manual labour (carrying heavy loads of fuelwood and water) may affect a pregnant woman’s general health and well being. |
| 6: Combat HIV/AIDS, malaria and other diseases |  
  - Energy for refrigeration allows vaccination and medicine storage for the prevention and treatment of diseases and infections.  
  - Energy is needed to develop, manufacture, and distribute drugs, medicines, and vaccinations. |
| 7: Ensure environmental sustainability |  
  - Using cleaner, more efficient fuels will reduce greenhouse gas emissions, which are a major contributor to climate change.  
  - Energy can be used to purify water or pump clean ground water locally, reducing time spent collecting it and reducing drudgery. |
| 8: Create a global partnership for development |  
  - Improved availability of information and communication technologies can reduce the costs of providing drugs to remote areas. |
To ensure energy considerations are properly addressed in broader
development strategies, more must be done to quantify the linkages
between energy and development.

Discussion 3.1: Energy, health and the MDGs

Discuss the following questions with all participants for 10 minutes:

• Apart from the linkages given in Table 3.1 and Appendix G, what other linkages
  between energy and the MDGs can you think of?

• What positive impact can energy have on the health-related MDGs?

• Do you think energy is a solution for the problems faced in the health sector?*

*Remember that in this manual we focus on energy's relation to the health-
related MDGs. We have no intention to pretend that energy is the only or
the best solution to achieve the health-related MDGs. In fact, later on in this
manual (e.g. in module 7) we focus on health's bidirectional relation with
other development sectors.

CHAPTER 3.2

Energy’s relation to health

3.2.1 Energy’s importance in health planning

In Table 3.1 some of energy's relations with health are shown. Unfortunately
this relation has mostly been ignored by policy makers, project planners and
the international community. For example, there are hardly any studies on
the relation between the energy sector and child mortality or maternal
health. This is especially striking because these health-related issues are two
examples of issues that are closely linked to the use of energy - improved
access to cleaner fuels can have dramatic positive effects on the lives of
children and women.

We cannot stress enough that energy considerations should be part of every
policy or project planning process. For example, clinics with sufficient trained
health personnel may not function at optimal levels if the health personnel
cannot provide various life saving services because the available equipment
cannot be used properly because of a lack of energy. Hot water to sterilize
equipment or to wash patients requires heat energy. Even the simple light
bulb can make a difference. Women report having a less stressful labour if
there is good quality light when they are in the delivery room. Later on in
this training a framework will be developed to include energy in every
planning process.
3.2.2 Negative impacts of energy on health

Energy per se is not the solution to health problems. Remember that everybody - even the poorest people - use energy in every aspect of their daily lives. Moreover, it's the type of energy services used and a possible change in them that can be a solution to health problems.

Many of the poorest people, especially in sub-Saharan Africa, still use solid fuels for their daily energy needs. In Malawi, Mozambique, Zambia and Zimbabwe the use of solid fuels is somewhere between 73% and 99%. Solid fuels have a significant negative impact on the health situation of the people using them - mostly on women and children who are the primary users of solid fuels indoors for cooking and heating purposes.

The use of solid fuels causes air-pollution and when there is no sufficient clean air (indoors) this in turn causes respiratory diseases and general ill-health. According to the World Health Report of 2002, every year 1.6 million people die from indoor air pollution caused by the use of biomass, traditional fuels and/or inefficient stoves. Accounting for 4-5% of the global burden of disease, indoor air pollution is the world's second largest environmental contributor to ill-health (after unsafe water). Coal for cooking and space heating (used in sub-Saharan Africa) can be bad for health as well.

Solid fuels and especially biomass fuels such as fuelwood also place a great burden on those responsible for collecting the energy source - mostly women and young children. Sometimes women have to walk up to 10 miles to collect fuelwood with quite some risk for injuries, harassment and just general exhaustion.

Traditional sources of energy, such as coal or oil, also cause environmental degradation and irreversible harm to fragile ecosystems. Damaged ecosystems make an unhealthy environment to live in and therefore have a negative impact on the general health of people. For example, drinking water can become unsafe due to environmental pollution of traditional power plants.

**Discussion 3.2: Energy does more harm than good**

Especially with the current debate on climate change, energy seems to do more harm than good to our environment. Health and energy sometimes appear to contradict each other. With all participants, discuss for 5 minutes about the following statement:

- Energy is more harmful to environmental health and therefore public health to ever be a solution for health issues in the MDGs.
3.2.3 Positive impacts of energy on health

We believe – as we said earlier – that an improved focus on energy services (the desired and useful products, processes or services that result from the use of energy) in projects and projects in fact can be a solution to the problems in the health sector and improve the health of everyone in this world. Energy allows us to do the things we do, so energy services in general can increase the possibilities we have to do things (related to health) and improved energy services can limit the negative impact of traditional solid fuels that is already present in the things we already do.

New energy services can provide safe water (through boiling), medication (through transport and refrigeration), clean medical equipment (through sterilisation), telecommunications (telephone or internet allows access to remote medical advice which would be very costly to provide on a one to one basis, see Case study 3.1), longer opening hours for clinics (through lightning), reduced drudgery (through alternative fuel sources and technologies), more successful food and cash crop production (through irrigation, transport to markets and improved farming technologies) and many, many things more.

Improved energy services can reduce indoor air-pollution and thereby the burden of related diseases (for especially women and children). They can reduce environmental damage and therefore create a healthier environment to live in. Also, improved energy services can reduce time and costs spend by people to fulfil their energy needs, freeing time and money for education, health services and income-generating activities.

Case study 3.1
HealthNet links healthcare workers around the world

HealthNet is the name of a global communication network, which links healthcare workers around the world. HealthNet was conceived as a means of combating the isolation of health workers in the developing world and the lack of information that impedes their work. The network provides email, electronic medical publications, and access to medical databases and conferences. Access to these sources is provided through telephone lines where this is viable. In countries or regions where the telephone infrastructure is unreliable or non-existent, HealthNet uses satellite ground stations.

HealthNet operates in over African 20 countries. The HealthNet system is used by government departments and agencies, medical facilities and schools, medical libraries as well as individual health workers.

Source: Shakakata, Mottinsylla, Blaauw, Ducray and Fall (2002)
More on HealthNet at: www.healthnet.org
Possibilities for energy interventions

In paragraph 3.2.3 some examples of the positive effects of energy interventions on the health sector are given. This chapter gives more possibilities for energy interventions. It’s important to remember that the given possibilities are only a part of all the possibilities and new ways to use energy in development are discovered all the time.

In Table 3.2 a number of possibilities to use energy in health-related MDGs is given. For each of these possibilities their appropriateness on the 8 health targets from Table 2.1 is given.

Table 3.2: Possibilities to use energy in the health-related MDGs (Matinga, 2005).

<table>
<thead>
<tr>
<th>Energy can...</th>
<th>MDG &amp; Target</th>
<th>1,2</th>
<th>4,5</th>
<th>5,6</th>
<th>6,7</th>
<th>6,8</th>
<th>7,10</th>
<th>7,11</th>
<th>8,17</th>
</tr>
</thead>
<tbody>
<tr>
<td>...provide critical care and emergency care for sick children and their mothers in electrified clinics.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...provide essential services in clinics or health posts that reach the poor.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...enable the storage of vaccines and the availability of vaccines in remote areas.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...make electrified communities more attractive for health professionals and increase the availability and quality of healthcare for children.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...enable notification of disease outbreaks, immunisation sensitisation, campaigns notification and quick referrals through ICTs.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...reduce indoor air pollution from biomass and coal – if the energy source and technology are clean.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>...reduce smoke exposure from biomass and coal among women and contribute to the reduction of low birth weights and still births - if the energy source and technology are clean.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Successful energy interventions start at the community level. This implies a focus on the district level where, in many countries, critical planning, budgeting, and implementation decisions are made. Much can be accomplished without the involvement of the health system, especially for young children. Improved water supplies and sanitation and cleaner sources of energy to reduce indoor air pollution could significantly reduce the incidence of some of the more common diseases of childhood. Teaching mothers and other primary caretakers how to recognize the early signs of potentially fatal illnesses and where to seek care for them is also essential.
Summary (Can energy be a solution?)

There is no MDG related to energy but energy is important for success on achieving the other MDGs. Energy services can play a variety of roles in helping to achieve the MDGs, both at a local, a district and a national level. An overview of the possibilities is given in Table 3.1.

The relation between health and energy has mostly been ignored by policy maker, project planners and the international community. For example, the MDGs for child mortality and maternal health are attainable – but not without extraordinary effort. Energy can be part of the solution to this problem.

Energy considerations should be part of every policy or project planning process.

Energy *per se* is not the solution to health problems. Moreover, it’s the type of energy services used and a possible change in them that can be a solution.

New energy services can provide safe water, medication, clean medical equipment, telecommunications, longer opening hours for clinics, reduced drudgery, more successful food and cash crop production and many, many things more.

Table 3.2 gives an overview of the possibilities to use energy in the health-related MDGs.
TRADITIONAL AND RENEWABLE ENERGY SERVICES as well as energy efficiency services are constantly being developed and researched. Their variation is huge – every service with its own advantages and disadvantages, its own particular uses and its own costs and benefits.

If you want to incorporate energy services into your health-related project or policy planning, you need to know at least the most common energy services, their possibilities and downfalls and the role they can play in the development of especially the health sector.

Information about Module 4

Time needed: 60 minutes
Learning goals: After studying this module, participants should be able to:
- Give examples of traditional/renewable energy services;
- Name the (dis)advantages of traditional/renewable energy services;
- Explain where traditional/renewable energy services can be used in the health sector;
- Take position in a discussion about the relation between traditional/renewable energy services and the health MDGs;
- Advocate the use of traditional or renewable energy services in specific situations;
- Explain the possibilities of energy efficiency;
- Give examples of energy efficiency services;
- Explain how energy efficiency can play a role in the health sector.

CHAPTER 4.1

Conventional and traditional energy sources

With conventional energy sources we mean fossil fuels, such as coal, gas, or oil. Traditional energy sources are biomass resources such as wood, charcoal, dung and crop residues. These energy sources are converted into other forms of energy until they provide energy at the end-user level (the energy chain). This can be done in central power plants, where the fossil fuels are transformed in electricity and then distributed throughout the region. Also, it is possible to burn the fossil fuels where they’re needed in the community, for instance by using engines that are attached to machinery.
All actions in the energy chain – and especially burning fossil fuels – create pollution which has negative impact on the environment and deteriorating human health and consequent economic costs (absence from work, healthcare costs).

The production of crude oil and liquids, natural gas and coal is extremely limited in Malawi, Mozambique, Zambia and – apart from coal – in Zimbabwe, as can be seen in Figures 4.1, 4.2 and 4.3 (World Energy Council, www.worldenergy.org).

Limited production means the four countries rely on imports for their fossil fuels and therefore the traditional energy services will be more expensive, especially at the local level. The only fossil fuels widely available (and widely in use) are biomass fuels, such as fuelwood, dung and other solid material. Most of these solid fuels are available for ‘free’ for people in communities. Policies or projects that restrict access to these free sources of energy (for example by a limit on fuelwood collection) or that force community members to buy fossil fuels will have limited or no impact when these policies and projects do not address the issue of availability of alternative energy services for everyone in the community.

Most traditional energy services can be improved considerably by implementing energy efficiency technologies, as will be discussed in chapter 4.3. In Table 4.1 an overview is given of traditional energy sources, their services and possible applications for the health sector.

**Table 4.1: Examples of traditional energy sources, their services and possible applications**
<table>
<thead>
<tr>
<th>Technology</th>
<th>Service</th>
<th>Potential applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuelwood</td>
<td>Cooking, heating</td>
<td>• Food production in health centres.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heating of health centres.</td>
</tr>
<tr>
<td>Dung/animal waste</td>
<td>Cooking, heating</td>
<td>• Food production in health centres.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heating of health centres.</td>
</tr>
<tr>
<td>Biogas</td>
<td>Cooking, heating, electricity production</td>
<td>• Lighting and vaccine refrigeration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Street and market lighting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heating of health centres.</td>
</tr>
<tr>
<td>Oil</td>
<td>Heating, electricity production, transport, lighting</td>
<td>• Lighting and vaccine refrigeration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Street and market lighting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport to regional hospitals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heating of health centres.</td>
</tr>
<tr>
<td>Coal</td>
<td>Cooking, heating, electricity production</td>
<td>• Lighting and vaccine refrigeration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Street and market lighting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Alternative for fuelwood.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reducing the burden of collecting fuelwood.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport to regional hospitals.</td>
</tr>
<tr>
<td>Natural gas</td>
<td>Heating, electricity production, transport</td>
<td>• Lighting and vaccine refrigeration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Street and market lighting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport to regional hospitals.</td>
</tr>
</tbody>
</table>

**Discussion 4.1: Traditional energy sources**

In Table 4.1 an overview of traditional sources and applications is given. Think about projects or policies you have been involved in or know about and discuss with all participants for 10 minutes about:

- What traditional energy services do you have experience with? How were they used and what is your opinion about their suitability for the health sector?
- What additional traditional energy services and/or applications do you know? What are your experiences with these services/applications?

**CHAPTER 4.2 Renewable energy sources**

Renewable energy (RE) is energy derived from sources that replenish themselves constantly and within a reasonably short period of time (months or years instead of centuries). Renewable energy sources occur naturally and can often be used without any additional costs above the costs for the technology. Examples of renewable energy sources are wind, solar, hydro, biomass, geothermal, tide and wave energy.

In Table 4.2 an overview of renewable energy sources and their origin is shown.
Table 4.2: Renewable energy sources and their origin

<table>
<thead>
<tr>
<th>Natural energy source</th>
<th>Description</th>
<th>Renewable energy source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sun</td>
<td>The source of all energy, transmitted as heat and light.</td>
<td>Solar energy</td>
<td>Energy from the sun.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hydro energy</td>
<td>Energy from flowing water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomass*</td>
<td>Energy from living or recently deceased natural and animal material.</td>
</tr>
<tr>
<td>The earth’s rotation</td>
<td>The earth’s daily rotation leads to various processes (differential heating and changing interplanetary forces) from which energy can be derived.</td>
<td>Wind energy</td>
<td>Energy from the movement of air molecules.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tidal energy</td>
<td>Energy from the tides and currents of the sea.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wave energy</td>
<td>Energy derived from the waves of the sea.</td>
</tr>
<tr>
<td>The earth’s interior</td>
<td>Geothermal energy</td>
<td>Energy from the earth’s inner heat.</td>
<td></td>
</tr>
</tbody>
</table>

* There is some debate as to whether biomass counts as a renewable energy source. Essentially it comes down to timescale. Fast growing crops which can be harvested annually are more likely to be classed as renewable than fuelwood taken from forests without sustainable management systems although both rely on the sun to sustain their lifecycle.

Africa has a large RE potential, some of which has been used for energy production with varying levels of success. RE can be a solution to a lot of problems, such as environmental problems and because of the possibility to implement RE on small-scales it provides affordable alternatives for remote areas that are not connected to the national grid.

In the four selected countries for this training – Malawi, Mozambique, Zambia and Zimbabwe – three renewable energy sources are especially useful to part of the countries energy planning: hydro energy, solar energy and wind energy. A fourth source of renewable energy already in use on large scale is set for significant improvements in use and application: biomass energy. (Biomass current use in the four countries, which ranges between 73 and 99%, is usually unsustainable and harmful for both the environment and the health situation in the country. Interventions such as energy efficiency projects can have a positive impact on the sustainable and correct use of biomass.)

In Table 4.3 an overview is given of current RE technologies and the RE services they provide. Also, examples of their application in the health sector are given.

Table 4.3: Examples of RE technologies, RE services and possible applications
Apart from renewable energy technologies, there are renewable fuels that provide energy services and have potential applications for the health sector. These renewable fuels are given in Table 4.4

**Table 4.4: Examples of renewable fuels, their services and possible applications**

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Service</th>
<th>Potential applications</th>
</tr>
</thead>
</table>
| Solar Photo Voltaic (PV) and Solar Home Systems | Residential, industrial and hospital electrical lighting for homes, schools and streets.  
• Telecommunications and media delivery.  
• Low to medium wattage hand tools. | • Lighting and vaccine refrigeration for isolated clinics to improve service provision.  
• Street and market lighting to facilitate security.  
• Improved income generating opportunities. |
| Solar PV Pumps        | Water pumping for irrigation and drinking.   | Supply of clean drinking water for households and water for sanitation at household and community level.  
• Meeting water needs at rural health facilities. |
| Solar Thermal – (water heating, air heating and power generation) | Space heating and hot water for residential and public facilities.  
• Industrial process heat. | Water and air heating needs for health facilities.  
• Steam generation for electricity generation. |
| Solar Cookers         | Cooking in households and enterprises.       | Alternative for unhealthy solid fuels used while cooking.  
• Reducing the burden of collecting fuelwood. |
| Solar Driers          | Crop drying for homes, micro-enterprises and industry. | Improved crop and food storage.  
• Improved income generating opportunities. |
| Wind Turbines         | Residential and industrial electricity.      | Various electricity applications, such as refrigerators. |
| Wind Pumps            | Water pumping for irrigation and drinking.   | Supply of clean drinking water for households.  
• Supply for water needs at rural health facilities. |
| Efficient stoves      | Households, enterprises, hospital and school cooking. | Reducing time spend cooking and collecting fuelwood.  
• Improved air quality for cooks and cleanliness in food preparation.  
• Improved food production. |
| Small, micro- and pico-hydro | Lighting and electricity needs. | All electricity applications in all sectors. |
### Discussion 4.2: Renewable energy sources

In Tables 4.3 and 4.4 an overview of RE services and applications is given. Think about projects or policies you have been involved in or know about and discuss with all participants for 10 minutes about:

- What RE services do you have experience with? How were they used and what is your opinion about the suitability of this service in the region where you’re active?

- What additional RE services and/or applications do you know? Are they suitable in the region where you’re active? What are your experiences with these services/applications?

- Do RE sources have advantages/disadvantages compared to conventional energy sources?

### Energy efficiency

Energy efficiency means a reduction in the amount of energy needed to realize economic activities or to achieve a certain level of comfort. In other words: energy efficiency decreases our current energy use. Energy efficiency does not only reduce the amount of energy used for a given task, but also the costs of performing these tasks thereby resulting in less money spent by individuals, healthcare centres and governments.
Energy efficiency activities can be focused on existing technologies by making them more efficient through investments in repair, maintenance and retrofits to optimise their performance. It can also focus on non-technical options such as encouraging behavioural changes by energy users. Finally, energy efficiency can focus on implementing state-of-the-art technologies that have limited or no energy requirements.

Investments in energy efficiency are regained by savings on operating costs. After the instalment is repaid further gains can be used to invest in further improvements or debt relieve. The spare energy can be distributed elsewhere to allow additional energy services.

Energy efficiency is absent in many energy plans, projects and policies in Africa. Usually this is due to the lack of awareness of policy makers and project planners about the possibilities of energy efficiency.

There are energy efficiency possibilities at the facility level, at the transport level and at the household/community level. In Table 4.5 an overview is given of energy efficiency services available and their possible impact on the health sector.
Table 4.5: Energy efficiency and its application in the health sector

<table>
<thead>
<tr>
<th>Level</th>
<th>Possibility</th>
<th>Application (in the health sector)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
<td>Instalment of modern energy technologies.</td>
<td>• Cheap electricity for use in hospitals and health centres connected to the national grid.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Electricity for storage of medicines and vaccinations.</td>
</tr>
<tr>
<td></td>
<td>Improved maintenance of existing technologies.</td>
<td>• Limiting smoke emissions (in coal or oil plants).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Better work space security.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improvement of reliability and availability of electricity for hospitals/healthcare centres.</td>
</tr>
<tr>
<td></td>
<td>More efficient/appropriate transportation of energy.</td>
<td>• Lower energy bills for remote healthcare centres.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduction of health risks associated with energy transport.</td>
</tr>
<tr>
<td></td>
<td>Cogeneration (electricity and warmth).</td>
<td>• Improvement of availability of (cheaper) energy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduction of waste and spill-over effects.</td>
</tr>
<tr>
<td></td>
<td>Training of plant staff (improved HRM).</td>
<td>• Better work place security.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Smaller losses in energy production and transport.</td>
</tr>
<tr>
<td>Transport</td>
<td>Improving vehicle efficiency.</td>
<td>• Reduction of emission of gases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduction in risks of traffic accidents.</td>
</tr>
<tr>
<td></td>
<td>Subsidies on more energy efficient means of transport.</td>
<td>• Reduction of emission of gases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improvement of availability of (cheap) transport.</td>
</tr>
<tr>
<td></td>
<td>Increasing taxes on fossil fuel.</td>
<td>• Reduction of emission of gases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lower car use (and thereby risk of traffic accidents).</td>
</tr>
<tr>
<td>Household/Community</td>
<td>Improved stoves that use less fuelwood.</td>
<td>• Reduction of smoke emission indoors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less time spend on collection of fuelwood.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduction of costs associated with cooking, heating, etc.</td>
</tr>
<tr>
<td></td>
<td>Charcoal stoves instead of traditional (fuelwood) stoves.</td>
<td>• Reduction of smoke emissions indoors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less time spend on collection of fuelwood.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Opportunity for income generation.</td>
</tr>
<tr>
<td></td>
<td>Briquetting as alternative source of fuel.</td>
<td>• Reduction of smoke emissions indoors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less time spend on collection of fuelwood.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Opportunity for income generation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lesser dependency on one source of fuel.</td>
</tr>
<tr>
<td></td>
<td>Improved water pumps.</td>
<td>• Lower water costs for healthcare centres and individuals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved sanitation.</td>
</tr>
<tr>
<td></td>
<td>Improved (access to) public transportation.</td>
<td>• Improved means of transport to regional hospitals or healthcare centres.</td>
</tr>
<tr>
<td></td>
<td>Awareness programmes on energy consumption.</td>
<td>• Lower energy bills for households and hospitals or healthcare centres.</td>
</tr>
</tbody>
</table>

Although many of the possibilities given above might seem insignificant in relation to the general energy problem, it’s important to understand that enhanced energy efficiency at the end-use level is a good way to reduce
poverty. It reduces the energy costs of households and the burden placed on especially women and children to collect energy sources such as fuelwood, thereby limiting the hardships they face and the associated health problems. Investment can be low cost and many energy efficiency measures have short payback times.

### Exercise 4.1: Energy efficiency projects

| Time needed: | 15 minutes |
| Group-size: | Groups of 2/3 participants |
| Result: | An idea/draft for an energy efficiency project |

#### Assignment

**Step 1:**
(5 minutes)
Exchange experiences with energy efficiency in projects with your partner(s). Have you ever been involved in an energy efficiency project or have you read about energy efficiency projects in the health sector?

What is a good example of an energy efficiency project for the health sector?

*If you don’t know any energy efficiency projects for the health sector, think about a possible project that could be suitable in the region you’re from. What could be a good example of such a project?*

**Step 2:**
(10 minutes)
Briefly describe the project. Focus on:

- What was exactly done with regard to energy efficiency?
- What benefits did this have for the health situation in the region?
- What (possible) disadvantages did the project have?
- What challenges needed to be overcome for the project to be a success? Were they overcome?
- What positive side-effects of energy efficiency policies or programmes can you think of that improve the livelihood of the people in the region where you work? (Think about reducing costs, creating income generation opportunities, etc. which all feed through to better well-being and health.)

**Step 3:**
Individually, with the experiences from this exercise: Do you think energy efficiency can prove a solution to some of the health problems in the region where you work? Why (not)?

### CHAPTER 4.4 Summary

Energy has different sources:

- Conventional and traditional energy sources, such as fossil fuels and biomass.
- Renewable energy sources, such as the sun and water.

All sources have their own specifics, benefits and disadvantages. In Malawi, Mozambique, Zambia and Zimbabwe the principal source of energy is biomass.
The four countries have a large renewable energy potential. Their access to traditional energy sources is limited.

The module gives an overview of different sources, technologies and services of energy and their application for the health sector.

Energy efficiency means a reduction in the amount of energy needed to realize economic activities or to achieve a certain level of comfort. Energy efficiency is absent in many energy plans, projects and policies in Africa.

In Table 4.5 an overview of energy efficiency possibilities is given.
Neither health nor energy is an isolated development issue. It is critical to recognize that political, economic, social and environmental (PESE) issues directly influence access to and utilization of healthcare and energy. Women’s restricted access to modern fuels in most parts of Africa is just one of the many examples where all these issues have an impact on – and are influenced by – policies or projects to provide energy for health planning.

Any sound policy of project planning process to provide energy for healthcare should take in account the PESE preconditions and its impact on PESE issues. Only in that way we can assure success on our path towards achieving the Millennium Development Goals on health.

Information about Module 5

| Time needed: | 60 minutes |
| Learning goals: | After studying this module, participants should be able to: |
| | - Explain which political, economic, social and environmental preconditions exist to implement energy services for the health sector; |
| | - Explain the political, economic, social and environmental impact of energy services for the health sector; |
| | - Give examples of how political, economic, social and environmental implications of energy services can be moderated and used in their advantage for the health sector; |
| | - Make suggestions for the use of energy services in the health sector that respect political, economic, social and environmental issues. |

CHAPTER 5.1

Political aspect of health and energy planning

The political aspect of health and energy policies or project planning relates to the way in which the access to use, production, provision and distribution of health and energy services are organised. This includes both organizational issues such as who is allowed to make decisions, as legal issues which give privilege to or restrict certain aspects of energy and health planning.
5.1.1 Strengthening policies and institutions for improved health and energy planning

Institutions like the World Bank and the African Development Bank continue to stress that simply more money will not solve the problems faced by many African countries on their way to achieving the health-related MDGs. For success it is important that interventions reach their target audiences, not only in the capital and other major urban centres, but also in the rural areas. To assure this both policies as institutions need to be strengthened.

Strengthening policies and institutions should focus on:

- A pro-poor approach of the health sector. By bringing a poverty reduction lens to the health sector the most vulnerable groups in society receive the attention they require.

- An access-oriented approach of the energy sector. By providing affordable and appropriate energy services to everyone in society, even the poor, preventative and curative health programmes come within reach of everyone.

- Lowering the non-financial barriers that restrict individuals from access to health and/or energy. Women often face non-financial barriers to access health/energy services, as tradition will not allow a woman to be alone with a male who is not a family member which could hinder examination by a doctor.

- Acknowledgement of the dual role of households as producers and users of health and energy services. This includes acknowledgement of metabolic energy in energy statistics and the role of (mostly) women as providers of medical attention to their children and community.

- Improvement of the performance of health workers on areas such as quality, responsiveness and efficiency. Energy can be a tool to improve the working conditions of health workers, as electrified health centres give health workers more possibilities to perform their job.

5.1.2 Possible political consequences of health and energy projects or policies

More than once in recent years, energy related projects have proven to be a catalyst for political and/or legal reform. In the case study about women’s health, income and status in Tunisia at the end of this paragraph you can see an example of this.
As access to energy and good health touch the core of people’s existence their possibilities to address other development issues are numerous. Some examples of possible political consequences of sound health and energy planning include:

- Improved access to energy frees time for people usually under a burden of collecting energy sources such as fuelwood. This time can be spend on education, health care, but also on political activities. As women usually are the primary providers of energy for cooking and heating in households, improved access to energy can give them the possibility to become active in community centres, political committees, etc.

- Improved health care reduces the burden of sickness for especially women and children, therefore giving them more opportunities to be educated. Educated people have improved control over their own lives and are less vulnerable to diseases, thereby making them even stronger and giving them the opportunity to become active in politics.

- Availability of energy and healthy workers improves the economy of a region (or a country). Thereby, the availability of resources to make fundamental change to the health sector increases and this in turn allows more predictable long-term planning, improving the lives of all.

In Case study 5.1 an example is given of a successful project related to health and energy that had a significant political impact. The full case can be found in Appendix H.

**Case study 5.1**

**Women’s Health, Income and Status in Tunesia**

In Tunisia, where rural electrification is rooted in a strong national commitment to a broader programme of rural development, gender equity and the reduction of social inequities, women and girls appear to have benefited in particular from improved access to education, health services (especially concerning reproductive health), information from TV, and economic opportunities. The first benefit of rural electrification cited by households with children is that of improving homework and school performance, while at the same time reducing eye problems from the use of candles and kerosene lamps. Rural electrification has also resulted in benefits for health services and clinics, which have been able to expand their range of equipment and services, notably health education.

For the complete case, please refer to Appendix H.

*Source: ENERGIA newsletter, volume 4, issue 4, November 2001.*

Exercise 5.1: Women's health, income and status in Tunisia

<table>
<thead>
<tr>
<th>Time needed:</th>
<th>15 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-size:</td>
<td>Individual</td>
</tr>
<tr>
<td>Result:</td>
<td>Understanding of relations between development sectors and politics</td>
</tr>
</tbody>
</table>

**Assignment**

**Step 1:** Read the case study in Appendix H.

**Step 2:** Make a drawing of causes and consequences of the development programme in Tunisia:

- What was the first thing that changed?
- How did this influence other sectors of the Tunisian society?
- How did this in turn influence other sectors?
- Were there any bidirectional connections?
- What were the political consequences of the programme?

The drawing should give you an understanding of the relations between different sectors in society and how health/energy programmes influence these sectors.

**Step 3**

In your drawing, mark the sectors from the case study that do also require improvement in your country. Can you see how this can be achieved through action in other sectors? And: how would this influence other sectors in your country?

How will your country’s politics be influenced by changes in the underlying sectors?

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**CHAPTER 5.2 Economic aspect of health and energy planning**

The economic aspect of health and energy project or policy planning involves the financial resources available for the implementation of the proposed policy or project. This financial resource - or budget - reflects a country’s focus on health and/or energy issues. It is very well possible that quite some budget is allocated to health interventions, but the linkage to energy interventions is overlooked.

**Case study 5.2 The expanded programme on immunisation (EPI)**

The joint World Health Organization/UNICEF Expanded Programme of Immunisation (EPI) provides refrigeration of vaccines in rural health clinics throughout the world. Since the mid-1980s, the EPI uses solar PV-powered refrigerators wherever they are economically and technically justified.

Constant refrigeration of vaccines is of utmost importance as vaccines that have been exposed to extreme heat lose their effect. As there is no way of assuring a vaccine hasn’t been exposed to heat in its transport to the rural health centre and
storage there, the quality and quantity of refrigeration in what is called “the cold chain” is well above the minimum requirements.

For many rural health centres this means that their solar PV systems provide excessive energy. However, this energy is often not used for more than refrigeration of the vaccines. This is a typical example of a health intervention where no thought was given to the broader linkages the energy part of the intervention could have had (e.g. the same solar PV systems could have provided lightning, heating, etc.).

Sources and more information available at:
roo.undp.org/get/solarpv/docs/bgmateriel/ESMAP/ESMAP - Photovoltaic applications in rural areas of the developing world.pdf
www.who.int (search for Expanded programme on immunisation)

In chapter 5.1 we said that simply more money will not help to achieve the health-related MDGs. Still, there remains a significant gap in resource availability if the health-related MDGs are to be achieved in sub-Saharan Africa. Greater efficiency in resource use will help a little, but will not be sufficient.

As ill-health and especially HIV/AIDS have devastating effects on all sectors of the economy, it’s not in the long term interest of a country to deal with health as an isolated issue in resource planning and budget allocation. Health should be seen as an integral part of all economic planning in every situation. The same applies to energy, which is also closely related to all sectors of a country’s economy.

For project and policy planners at the district level, it is important to understand that the relation between energy, health and other development sectors can be used in advantage for the health sector. For example, the education budget can be used to educate people on preventing diseases such as malaria. This, in turn, relieves mothers and children from the burden of this disease thereby freeing time and resources for more education.

Discussion 5.2: Resource planning and budget allocation to the health sector

Discuss with all participant for 10 minutes about the following issues:

- How are resources and budgets divided over the different development sectors in your district? Do you agree with this division?

- How can you use health and energy projects to make better use of the resources and budgets available?
Can you think of ways to use budget allocated to – for example – water management to address the health sector? How could energy play a role in this policy or project?

In countries such as Malawi, Mozambique, Zambia and Zimbabwe that face a serious disease burden, failing to address the health-related MDGs and other major causes of ill-health will have devastating effects on the economy and the development of the country in general. As death of teachers, health workers, caring mothers, etc. is occurring at a rate faster than they can be replaced (Cassels, 2004; WHO, 2005), the health situation will only worsen unless every sector of the economy takes its responsibility to tackle the health problems.

CHAPTER 5.3

Social aspect of health and energy planning

The social aspect of health and energy project or policy planning involves (traditional) social structures, the social organization of communities, privileges and restrictions of certain groups in society and the division of tasks and responsibilities within groups of people. An example of a social aspect in health planning is the fact that in some countries male babies receive better health care than female babies. Social structures differ significantly between rural and urban areas and are also subject to change with the ongoing rate of urbanization.

As with most things, there are costs related to the use of health and energy services. Especially for really poor people these costs can be a barrier to the use of any service besides those services that repay themselves directly. Unfortunately, most health and energy services repay themselves over a longer period of time, thereby making them unavailable for the poorest people in every community.

In many societies women and children in male headed households do not contribute directly to the income generating process. Also, they usually have limited or no access to household budgets and hardly anything to say about the use of these funds. Therefore, funds are used to address the needs of men who are responsible for growing cash crops and generating income in other ways.

Furthermore, women might be restricted from access to health services as they are required to stay at home during the days to care for the children, household chores such as cooking and washing and the collection of fuelwood and water. At night, when women might have free time, social convention can prohibit women walking to the health centres as women are not allowed to be alone on the streets after dark.
Especially these traditional limitations to what men and women are allowed to in a society can have an impact on health and energy project or policy planning. Giving the poor access to services by exempting them from payment has proved difficult to implement, as funds alone might not be the only reason why they cannot access these services.

A good understanding and thorough research about why people have no access to health and energy services, not only focused on the financial aspect of access, but furthermore on the limitations given by society, is necessary for any policy or project to be successful.

**Discussion 5.3: Social implications on health and energy planning**

Discuss with your fellow participants for 10 minutes about the following issues:

- In your experience as a project or policy planner, which social implications have you encountered and how did you overcome them?

- Which groups do you know about who are usually limited in their access to health and/or energy services? How can you address these groups?

**CHAPTER 5.4**

**Environmental aspect of health and energy planning**

The environmental aspect of health and energy planning relates to the dependency and impact on the environment health and (especially) energy projects or policies have.

The availability of energy sources differs from place to place. Some countries have rich oil fields, while others have abundant sunshine for solar power. The availability of energy sources, both renewable as traditional, is one of the core considerations in any energy planning process.

However, health and energy have other dependencies on the environment. The proximity (or not) of water, for example, can have great impact on planning processes for safe drinking water and sanitation and the energy requirements to deliver these water services.

For every planning process – not only those related to health and/or energy – it is very important to do an in-depth investigation of the environmental resources needed to implement the policy or project and their availability in the target region. These environmental resources include (flowing) water, forests, (agricultural) land, height differences, wind, sunshine, climate, etc. etc.

Since the 1980s increased attention is given to the use of renewable energy sources rather than traditional energy sources such as fossil fuels, because
of their smaller impact on the local and global environment. For example, the use of renewable energy sources and more efficient technologies in households could reduce the negative impacts on women’s health from burning fuelwood and reduce the pressure on natural resources because of a limited need for fuelwood.

Therefore, besides the investigation of the environmental resources needed, there should also be a focus on the environmental impacts of a planned policy or project. A good understanding of the relation between any project and/or policy and the environment can save a lot of trouble on the long-term, as less or no negative side-effects of the policy or project occur in the environment.

Discussion 5.4: Environmental aspect of health and energy planning

Discuss with all participant for 10 minutes about the following issues:

- In your work as project or policy planner, have you had any experience with the environmental aspects of the projects or policies you were involved in?
- How do you usually deal with environmental issues in your work? Do you take health consideration into account when you deal with environmental issues (such as the negative effects on the health situation of the degradation of the environment)?
- What opportunities and limitations does the environment offer in the region or district where you are usually active?

CHAPTER 5.5

Summary

Health and energy are related to other development issues. It is critical to recognize that political, economic, social and environmental (PESE) issues directly influence access to and utilization of healthcare and energy.

Any sound policy of project planning process to provide energy for healthcare should take in account the PESE preconditions and its impact on PESE issues.

The political aspect of health and energy policies or project planning relates to the way in which the access to use, production, provision and distribution of health and energy services are organised.

The economic aspect of health and energy project or policy planning involves the financial resources available for the implementation of the proposed policy or project.

The social aspect of health and energy project or policy planning involves (traditional) social structures, the social organization of communities,
privileges and restrictions of certain groups in society and the division of tasks and responsibilities within groups of people.

The **environmental** aspect of health and energy planning relates to the dependency and impact on the environment health and (especially) energy projects or policies have.
THERE IS GENERAL CONSENSUS among both government and development partners that the health-related MDGs should not be addressed in isolation from other development sectors. Equitable, well planned and implemented health and/or energy policies and projects play a central role in other sectors such as women’s equity, poverty reduction, education and agriculture.

Module 6 focuses on the cross-sectoral linkages of health and energy. In previous modules (especially modules 2 and 5) we already touched on some of these linkages. It’s important to understand that looking beyond the health and energy issues in your planning processes is not an add-on, but should be an integral part of all your activities.

<table>
<thead>
<tr>
<th>Information about Module 6</th>
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<tbody>
<tr>
<td><strong>Time needed:</strong></td>
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<td><strong>Learning goals:</strong></td>
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CHAPTER 6.1

**Gender, energy and health**

6.1.1 Gender within health and energy

Both health and energy issues are related to gender issues. Men and women participate in nearly every aspect of life. Therefore the informal rules that regulate the behaviour and values of men and women (the gender system of roles and relations) have a potential impact on nearly every aspect of life. Only the third MDGs addresses gender specifically (“promote gender-
equality and empower women") but addressing gender is of critical importance to achieving every MDG.

Some of the gender issues that should be respected in health and energy planning per MDG are shown in Table 6.1.

Table 6.1: Gender issues in the health-related MDGs (WHO, 2003; WHO, 2005; DCPP, 2007).

<table>
<thead>
<tr>
<th>Millennium Development Goal</th>
<th>Gender issues related to this MDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Eradicate extreme hunger and poverty</td>
<td>• Girls may receive second choice of available food, leading to inadequate nutritional intake when resources are scarce.</td>
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<tr>
<td></td>
<td>• Girls may receive less medical and other care than their brothers, leading to greater ill-health with potential nutritional effects.</td>
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<tr>
<td></td>
<td>• Due to routinely undervaluation of girls in certain areas, standard of normal development for girls may be set at unhealthily low levels.</td>
</tr>
<tr>
<td>3: Promote gender equality and empower women</td>
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</tr>
<tr>
<td>4: Reduce child mortality</td>
<td>• Certain diseases (such as malaria and TB) during pregnancy, can lead to underweight and premature babies with lower chances of survival.</td>
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<tr>
<td></td>
<td>• In areas where son preference is common, the lower level of resources devoted to female children might mean that they are less likely to be vaccinated.</td>
</tr>
<tr>
<td>5: Improve maternal health</td>
<td>• Women's education is strongly correlated with positive maternal health outcomes. High rates of illiteracy/low rates of school attendance among women and girls contribute to maternal mortality.</td>
</tr>
<tr>
<td>6: Combat HIV/AIDS, malaria and other diseases</td>
<td>• In sub-Saharan Africa HIV/AIDS prevalence rates among women are already distinctly higher than those among men.* Due, probably, to a combination of biological factors relating to the reproductive tract and social norms which facilitate older men having sexual relations with much younger women (and men in general having more sexual partners than women).</td>
</tr>
<tr>
<td></td>
<td>• The only two widely available means of preventing HIV transmission - male condoms and abstinence – are generally available to men independent of their partners' desires, while they can usually only be practised by women with male cooperation.</td>
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<tr>
<td></td>
<td>• Effective prevention of mother-to-child transmission drugs and methods may be limited to women without autonomy or financial resources to do so without their husband’s participation.</td>
</tr>
<tr>
<td>7: Ensure environmental sustainability</td>
<td>• Generally women do the cooking in households throughout the world and therefore carry a large burden of indoor air pollution.</td>
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<tr>
<td></td>
<td>• Women and children generally spend more time indoors than men, which adds to their indoor air pollution burden.</td>
</tr>
<tr>
<td>8: Create a global partnership for development</td>
<td>• Women do not regularly control a family's cash income, and women's health, furthermore, may not be prioritized as highly as that of the male “breadwinner”.</td>
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<tr>
<td></td>
<td>• Women’s opportunity costs for accessing medicines and health centres may be more burdensome due to their daily “un-interruptible” tasks.</td>
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</table>

* Sub-Saharan Africa is currently the only region in the world where HIV/AIDS prevalence rates are higher among women than among men. This is due to the impact of various gender inequalities (WHO, 2003; WHO, 2005).

Discussion 6.1: gender relations to health and energy
In Table 6.1 some examples of gender implications on the health sector are given. Some are directly related to energy issues. Discuss with all participants for 10 minutes about:

- Which other gender issues can you think of in relation to the health sector? Do you know any from your own experience?
- Does energy have comparable influences on gender issues? Can you give examples of the relation between energy and gender?
- Which gender issues in the health sector can be addressed by energy services? How should this be done? Do you have experience with this?

### 6.1.2 Recommendations for gender sensitive planning

Research about gender roles and implications in development has given us some more understanding of gender as a development issue. In general, however, the work on gender differentials is only beginning and clearly requires further exploration (ENERGIA, 2001). An improved focus on gender in data collection, planning, implementation, monitoring and eventually evaluation of policies and projects can have a significant positive impact on the livelihoods of women, men, children and the poor in general.

Some general recommendations that can be given are:

- The first thing to do for project and policy planners is to collect data disaggregated by sex on relevant development issues and especially for reporting on the MDGs. Such gender-disaggregated data identifies more clearly the problems and opportunities in a given community.

- To use the gender-disaggregated data in a corresponding way, policy and project planners should receive at least basic training on gender sensitive planning. For now, this is especially valuable in relation to health and energy issues.

- Gender should be an integral part of every policy or project planning framework and gender considerations should be at the basis of every decision made in the planning process. For this, gender-disaggregated data can be used.

- The success of a given project or policy should be evaluated as the impact it has on both women and men, even when the project is aimed at the household or community.

In relation to health and energy issues, the following recommendations can be given for gender sensitive planning in the health and energy sector (based on Matinga, 2005):
• Modern energy services can lighten the burden of women in their daily tasks of collecting fuelwood, drinking water and child care. This frees time to care for babies, nurture sick people, spend time outdoors, education and other activities that in turn have a positive effect on the health situation of women and a community.

• Modern (cleaner) energy services reduce exposure of women living with HIV/AIDS to disease vectors and triggers. People living with HIV/AIDS are more vulnerable to diseases that healthy people can cope with without significant difficulty. A simple infection can cause severe health problems and even death for infected people. Modern (cleaner) energy services can delay the onset and acceleration of opportunistic infections.

• Modern energy services reduce time needed to gather fuelwood and water, thereby limiting the exposure of women to the repetitive strain injuries, such as backaches or headaches, during their daily walks.

• Electrified health care centres can provide better and safer health services, whereas central lightning can provide men and women with an opportunity to visit the health care centre at night.

Remember that any energy and/or health intervention will have consequences (either positive or negative) on both men and women and that usually men and women are affected differently by an intervention. Also, remember that gender is not just about women; men can face specific problems as well which need to be addressed in project and/or policy planning.

Project or policy planning processes that focus on the specific needs of men and women, as well as on the consequences on both sexes of the intervention are considered gender sensitive. Any planning process that does not take into account gender issues is called gender blind.

Discussion 6.2: Recommendations for gender sensitive planning

In this chapter some recommendations for gender sensitive planning in the health and energy sector are given. However, there are numerous other possibilities to use health and energy projects or policies to improve gender issues. Discuss with the other participant for 10 minutes about:

• What are your experiences with gender sensitive planning? Have you ever used gender-disaggregated data in your policy or project planning?

• How can the energy and health planning processes be made more gender sensitive?
CHAPTER 6.2  
Energy and health in other development sectors

All development sectors are linked in one way or another. Dealing with one development sector in isolation is virtually impossible and moreover ill-advised for policy or project planning. The same applies to health, energy and the other development sectors. Malnutrition, for example, is caused not only by food deprivation, but also by the debilitating effects of infectious diseases, such as diarrhoea and pneumonia, and lack of care.

Relations between development sectors are multidirectional. There is no one development sector that can solve problems in all other sectors. On the other hand: failure in one development sector will have negative impacts on all other sectors.

6.2.1 Agriculture

Agriculture is for many of the sub-Saharan African population, especially the very poor in rural areas, their primary source of food and income. Support to the agriculture sector is considered as one of the most direct ways to move people out of poverty in Africa. There are strong inter-linkages between agriculture and other development sectors including health and energy.

Agriculture brings people some of the ingredients for a healthy life: food, income and even medicines (see Case study 6.1). On the other hand agriculture also is part of some of the health problems in poor regions: exhaustion, risks of working on the land and - especially with cattle - the risk of infections. Safe and healthy working conditions for farmers and their families (not only men work on the land!) can improve the livelihoods of millions of people.

Case study 6.1
Cultivating Artemisia to combat Malaria in Africa

The key ingredient in the leading treatment for malaria in Africa - artemisinin - comes not from high-tech research, but from an ancient medicinal plant, Artemisia annua. Drugs developed to replace quinine have lost effectiveness with the development of resistance. This has led to attempts to increase cultivated production of Artemisia in Africa.

Commercial production of Artemisia in Africa has largely been limited to Kenya, Tanzania, and Uganda and has essentially been tied to the activities of one holding company. With the growing demand, production has been expanded to new areas such as Mozambique, Malawi, and Zambia. Various development assistance agencies, such as USAID, provide assistance to overcome the challenges linked to the cultivation of the new and unknown crop in Africa.

Energy plays a role in agriculture as in everything. Most poor farmers in sub-Saharan Africa still rely on metabolic energy for the majority of the agricultural tasks. Modern energy services can reduce their burden, but also provide means to increase production by allowing irrigation, electrified grinding, milling, etc. Also, modern energy services allow the transport of cash crops to markets and the storage of food crops.

**Discussion 6.3: Agriculture, health and energy**

Discuss with all participants for 10 minutes about:

- What are your experiences with projects and/or policies in the agricultural sector? Were health and/or energy issues addressed in these activities?
- Can you think of an example of a project that addresses health, energy and agriculture? What are the possibilities for these kinds of project for the development of communities and/or regions?

**6.2.2 Education**

The importance of good education for development and poverty alleviation is widely recognised. The quality of education in especially sub-Saharan Africa is among the lowest in the world. Enrolment is low on all levels, teaching materials are insufficient, attendance by girls is poor, classes are overfull and teachers are poorly trained and paid.

Education is a precondition for many health issues: educated mothers are less vulnerable for child mortality, educated children live healthier lives and without education there are no trained health care workers to work in health centres. In many countries, the lack of trained health care professionals is a major constraint in the development of the people.

Weak health care systems and ill-health have a negative impact on education: sick children will not attend school or they are kept out of school when a family member falls sick to do their chores, sickness draws funds away that could be used on schooling and unattractive working conditions limit the number of students that want to be trained to work in health centres. These are just a few of the many linkages between health and education.

Energy services can have a positive impact on education, both directly and indirectly. The availability of modern energy services allows schools to be open after dark, to provide better food for the students and to use technologies which are important to modern education: computers, photocopiers, projectors, televisions, science equipment, etc. Indirectly modern energy services free time of women and children from their daily chores which can be spend on education.
Access to modern energy services also means access to the media (radio, television). Even if women are working all day in the kitchen, an educational radio programme can inform them about a wide range of issues, including health issues. In Africa, there have been several projects to educate people through radio and television programmes, as can be seen in Case study 6.2.

**Case study 6.1**

**Educational radio and television programmes to assist development in Tunisia**

Follow-up of Case study 5.1.

Women's reproductive health is seen as having benefited from the rural electrification programme in Tunisia: women with electricity organise their daily tasks so that they have time to watch TV, which passes on many health messages, for example on reproductive health and contraceptive methods; vaccinations; the prevention of sexually transmitted diseases; and health checks for breast cancer, colon cancer, etc.

Family planning units in the villages now use audio-visual aids, making awareness-raising campaigns more effective. Better information for girls from family planning services, but above all from TV, is credited with the rapid decrease in teenage pregnancies.

For the complete case, please refer to Appendix H.

*Source: ENERGIA newsletter, volume 4, issue 4, November 2001.*

**Discussion 6.4: Education, health and energy**

In this chapter some relations between education, health and energy are given. Discuss with the other participants for 10 minutes about:

- What other relations between education, health and energy can you thing of?
- Do you have experience with projects and/or policies aimed at the relation between education, health and energy? What are your experiences?

**6.2.3 Water**

Water quality and sanitation are among the most important determinants of public health and are at the top of the World Health Organization’s list of primary healthcare components. Sustainable access to safe drinking water is one of the Millennium Development Goals. Access to safe water and sanitation help to control epidemic diseases and will help to improve the
livelihoods of many people who rely on natural sources of water for their daily lives.

Clean water creates a healthy livelihood. Sufficient water allows irrigation which in turn improves the availability of food. Water and health are closely related and health policies that do not incorporate water issues will not have the expected effects.

Modern energy services can generate the energy needed for pumping and sterilising water, on large scale but also on community level. Energy services can provide water for irrigation. Although energy cannot do much about the availability of water, energy helps to distribute the water over regions and even countries so everyone can benefit from it.

CHAPTER 6.3

Multisectoral planning (summary)

All development sectors are linked in one way or another. Therefore, the health-related MDGs should not be addressed in isolation from other development sectors. Also, health and/or energy projects can have positive effects on other development sectors.

Both health and energy issues are related to gender issues. Only the third MDGs addresses gender specifically ("promote gender-equality and empower women") but addressing gender is of critical importance to achieving every MDG.

An improved focus on gender in data collection, planning, implementation, monitoring and eventually evaluation of policies and projects can have a significant positive impact on the livelihoods of women, men, children and the poor in general.

Project or policy planning processes that focus on the specific needs of men and women, as well as on the consequences on both sexes of the intervention are considered gender sensitive.

There are strong inter-linkages between agriculture and other development sectors including health and energy. Agriculture brings people some of the ingredients for a healthy life and uses energy.

Education is a precondition for many health issues: educated mothers are less vulnerable for child mortality, educated children live healthier lives and without education there are no trained health care workers to work in health centres. Energy services can have a positive impact on education, both directly and indirectly.
**Water and sanitation** create a healthy livelihood. Modern energy services can generate the energy needed for pumping and sterilising water, on large scale but also on community level.
THE USE OF ENERGY SERVICES in health interventions depends on many factors, such as your objective with the proposed project or policy, the availability of energy sources in the implementation area and earlier projects and policies.

Module 7 gives an overview of possible selection criteria for energy services in health interventions. This module gives the participant the tools to create checklists for future health and energy interventions.

<table>
<thead>
<tr>
<th>Information about Module 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time needed:</strong> 60 minutes</td>
</tr>
<tr>
<td><strong>Learning goals:</strong></td>
</tr>
<tr>
<td>- Explain which selection criteria are important for energy related interventions in the health sector;</td>
</tr>
<tr>
<td>- Give examples of selection criteria for energy and health interventions;</td>
</tr>
<tr>
<td>- Use and modify checklists with selection criteria.</td>
</tr>
</tbody>
</table>

**CHAPTER 7.1 Selection approaches**

To select the most appropriate energy service or technology for a given health intervention, there are three possible approaches. None of these approaches is better than the others: they apply in different project and policy situations. This depends on – amongst others – the political, economic, social and environmental issues we’ve seen in module 5. Also, in every selection process elements of all three approaches are required.

The three selection approaches are:

- The **demand-driven approach**: a selection based on an assessment of the energy services and the quantity of energy required. Ideally, target communities are involved in setting the demand. This bottom-up approach creates ownership and responsibility and therefore increases the chance of successful implementation.
• The **energy resource-driven approach**: a selection based on the availability of energy sources available in the area. Usually, this is an expert top-down approach with little involvement of the communities involved. This approach is usually faster and cheaper to implement than the demand-driven approach.

• The **technology-driven approach**: a selection based on a preference for a certain technology. Again this is an expert top-down approach with little involvement of the communities involved. Starting from the desired technology to use, project/policy planners look at the possibilities to use it to the benefit of a community. This approach has considerable pitfalls, as the selected technology might not be the most appropriate, nor the most accepted.

### Discussion 7.1: Selection approaches

Look at the three selection approaches given above. Discuss with all participants for 10 minutes about:

- In your experience as a project or policy planner, which approaches have you used? Which approach is most commonly used?

- What are your experiences with these approaches? Which approach do you prefer?

### CHAPTER 7.2

#### Selection criteria

As every energy intervention has an impact on various aspects of the lives of the people involved (either positive or negative) and as health issues are related to virtually every sector of society, the selection of energy services for health interventions can best be based on a participatory, multi criterion approach.

Usually the only selection criteria for any kind of intervention are financial criteria. What does the intervention costs and what returns does it have? Or: will the intervention be profitable? However, a focus on more than just financial criteria can give significant benefits. Sometimes interventions fail for examples because the technology used wasn't the most appropriate, because the environment causes unforeseen troubles, because the intervention is not accepted by the target group or because (the lack of) legislation does hinder the success of the intervention.

We advocate the use of different sets of criteria, which address all issues that determine the success or failure of an intervention. Therefore the selection criteria discussed in this chapter do focus on various types of criteria:
• **Technical selection criteria:** based on the available possibilities (such as energy sources) and the demand for certain services (such as lightning) a selection can be made.

• **Environmental selection criteria:** the environment offers opportunities and gives limitations for certain technologies and services. Think about the availability of water, but also the existence of an electrical grid.

• **Social selection criteria:** these criteria focus on the needs, desires, etc. of the communities or people the energy services are offered to. Can health workers use the service and/or technology? Can they repair it when it breaks down? Can they afford it?

• **Political selection criteria:** the availability of policies, taxation, import and export regulations, frameworks, etc. can limit or increase the available options for energy services.

• **Financial selection criteria:** can the energy service or technology be paid for? These criteria focus on the costs and benefits of a given intervention, in the short and the long run.

**Discussion 7.2: Selection criteria**

With all participants, discuss for 10 minutes about:

• Do you understand all selection criteria given above? Which ones do you think are most important for energy and health projects or policies?

• Can you give examples of selection criteria for each of the 5 types of selection criteria?

• Can you think of other selection criteria, which are not covered by the types given above?

**CHAPTER 7.3 Checklists**

Selection criteria can best be used as a checklist in the early phases of the project or policy planning process. Although checklists differ for every process and there is no general list that can be used in all situations, an example checklist can be useful.

Please note that although a checklist is an easy tool, using the checklist requires expert knowledge. Answering the questions should be taken serious, even if this implies spending time and money on proper research.

In the checklist in Table 7.1 a broad range of criteria is given.
<table>
<thead>
<tr>
<th>Type</th>
<th>Criterion</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>What energy sources are available?</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>Is the required energy source already in use?</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>Can the required energy source easily be implemented?</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>What energy services are needed?</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>What form of energy is needed (heat, electricity or shaft power) to provide the energy service</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>Can the selected energy sources provide the form of energy and the services that are needed?</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>What technology is required to use the available energy source?</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>What renewable energy sources are available?</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>What environmental impacts will result from the use of a technology and/or service?</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>Is it possible to implement a given technology in the terrain?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Is the selected technology easy to use by community members?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Does the technology satisfy additional functions which are valued by the user?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Does the selected technology compete for scarce local resources?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Can the technology provide its services under all normal conditions?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Can the system be supported and maintained by the community?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>What auxiliary equipment or tools are necessary?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>What services are required for the technology, can these be provided?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Does the project help to increase equity between women and men?</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Do buyers have access to credit if needed?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Does the country have an energy/health policy (strategy) paper?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Does the government prefer certain technologies above others?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Does policy limit or promote the use of a certain technology?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Are legal frameworks in place for private party participation?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Does the country support the implementation of programmes or projects to increase energy use in the health sector?</td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td>Does the country have pricing mechanisms that benefit energy services or technologies?</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>Are there any subsidies available for energy services or sources or technologies?</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>What are the costs and revenues of a given energy service?</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>What are the taxes related to a given energy service?</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 7.4 How to use checklists?

A checklist like in Table 7.1 can be used in the technology assessment process: which technology is the most suitable for a given project or policy? A checklist is in fact a plan for a rigorous technical, environmental, social, political and financial (economic) analysis of the situation in a specific region. This means a checklist is by no means a list you can just ‘check’. Thorough analysis by experts is necessary to answer the questions that a checklist asks.

The analysis is complicated because energy is linked to many non-energy issues, for instance, between energy and health. The links consist of multiple functions of technologies on the one hand, and multiple uses of the same resources on the other hand. Examples of resources with multiple uses are water, wood and dung. Because of the linkages, alternative energy options cannot be evaluated from the point of view of energy alone.

Good use of a checklist starts with a good checklist. Use literature and expert knowledge to construct a checklist for the project or policy you’re working on. This checklist should include all considerations that could possibly influence the outcome of the project or policy. There is no standard for the number of items, but it’s better to ask a few straightforward questions than to have failure in your project because you forgot one.

Then you’ll need to find the right experts to research the items. As this research might involve field study, extensive desk research, etc. it’s good to allocate a considerable amount of time and money for the research. With the results of the expert research you can evaluate your options. This also might require the involvement of experts.

Exercise 7.1: Make your own checklist

| Time needed: | 25 minutes |
| Group-size: | Groups of 2/3 participants |
| Result: | A list of items not yet mentioned in Table 7.1 |

**Assignment**

**Step 1:** (10 minutes) For this exercise you’ll need to think about the checklist items for a typical rural development project. In a small African village, unconnected to the national grid, the health centre has to be provided with electricity for refrigeration, lightning and heating. You are unfamiliar with the village.

Try to make a comprehensive checklist of everything you need to know to select the most appropriate energy technology.

**Step 2:** With this checklist, for which items do you need expert knowledge? And
<table>
<thead>
<tr>
<th>(5 minutes)</th>
<th>which type of experts do you need? Write them down next to the items.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 3:</td>
<td>With all participants, present the items on your checklist that aren't</td>
</tr>
<tr>
<td>(10 minutes)</td>
<td>displayed in Table 7.1. Explain them.</td>
</tr>
<tr>
<td></td>
<td>When all participants present their new items, you can improve Table 7.1</td>
</tr>
<tr>
<td></td>
<td>to provide you with a better example checklist.</td>
</tr>
</tbody>
</table>
MUCH OF THE ACTION NEEDED to address the health-related MDGs in sub-Saharan Africa can be taken immediately. Therefore it is of the utmost importance to include health and energy considerations in the policy and project frameworks used by planners.

In this module all lessons learned in this part of the training will be combined to create an energy sensitive policy and project planning framework for health policies and projects.

Information about Module 8

**Time needed:** 60 minutes  
**Learning goals:** After studying this module, participants should be able to:  
- Explain where energy should be included in a policy/project framework;  
- Design and use an energy-sensitive framework for health interventions.

CHAPTER 8.1  

**Energy sensitive project and policy frameworks**

Any given framework for interventions in the health sector requires first and foremost a focus on households – not only as users of services but as the foundation stone of good health and well-being – and on providers and their accountability. The same applies to energy: households are not only users of energy but can be providers of energy as well. Next, an energy sensitive framework for the health sector should focus on the relation between energy and health.

Most frameworks consist of six phases:

1. **Identification** of the challenges, project/policy objectives, stakeholders, etc.
2. **Preparation** of the proposed project/policy; writing the proposal, etc.
3. **Appraisal** of the project/policy proposal
4. **Approval** through negotiations with decision makers; dedication of the needed funds
5. **Implementation** and monitoring

6. **Completion** and evaluation

**Discussion 8.1: energy consideration in the framework**

With all participants discuss for 10 minutes about:

- In which of the six phases should energy and health considerations be addressed?

- Where in this example framework would you use the checklists from module 7? What answers should these checklists give in the phases where you use them?

- How can energy considerations play a role in the other phases? (Think about: justifying choices made, etc.)

Sometimes the energy needs identified during project/policy implementation are only incorporated at that or later phases in the framework. This can prove to be expensive and might result in a loss of motivation due to failures. If however, energy is incorporated right from the initial phase of the project/policy planning, it can more easily be incorporated in the design, implementation and evaluation and can thus more effectively contribute to project/policy efficiency and success.

**Discussion 8.2: experiences with incorporating energy in projects/policies**

From your work as a planner, share your experiences with energy in projects and/or policies with your fellow participants. Discuss for 5 minutes about:

- Have you ever been in a situation where during the implementation of a policy or project, you realized energy should play a role in the process? How did you react? What were the consequences?

- Can you imagine situations where energy implications of a project or policy (especially in the health sector) only become clear during the implementation phase? How would you react on such a situation?

**Exercise 8.1: Make your own energy sensitive project/policy framework**

<table>
<thead>
<tr>
<th>Time needed:</th>
<th>40 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-size:</td>
<td>Individual (or in teams from the same organization)</td>
</tr>
<tr>
<td>Result:</td>
<td>A draft for an energy-sensitive project or policy framework in the health sector</td>
</tr>
<tr>
<td><strong>Assignment</strong></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td><strong>Step 1:</strong> Decide whether you'll make a framework for policy or for project planning.</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2:</strong> (5 minutes) Write down (in considerable detail) the phases you usually go through during the entire process, from initiation till the closure.</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3:</strong> (10 minutes) To each phase, add the considerations you usually have (e.g. the questions you ask)</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4:</strong> (15 minutes) To each relevant phase, add energy considerations (e.g. questions related to energy issues). Where needed, use the checklist from module 7.</td>
<td></td>
</tr>
</tbody>
</table>
| **Step 5:** (10 minutes) Compare your framework with that of your neighbour:  
  - What are the similarities?  
  - What are the differences?  
  - How do you explain the differences?  
  - Can you strengthen your framework with that of your neighbour? |
ENERGY AND HEALTH INTERVENTIONS can play a role in achieving the health-related MDGs. In this last module the participants of this training will look back at the training so far and identify challenges they will go and face when they go home.

**CHAPTER 9.1 Energy and health to address the MDGs**

Throughout this training the linkages between the MDGs and energy and health are given. It is probable that by now you understand the possibilities of energy interventions and the positive effects of improved health. Therefore this module focuses on what you’ll do with your new knowledge.

**Exercise 9.1: Health, energy and the MDGs**

<table>
<thead>
<tr>
<th>Time needed:</th>
<th>25 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-size:</td>
<td>Individual</td>
</tr>
<tr>
<td>Result:</td>
<td>An action plan for addressing the health related MDGs in the home countries</td>
</tr>
</tbody>
</table>

**Assignment**

- **Step 1:** (5 minutes) Look back at exercise 2.1. What do you think about your list of priorities for targets in development policies or projects? Make a new list of the three development issues (and/or MDG targets) of which you think they should get a priority in development policies or projects. Write these three issues down in order of importance.

- **Step 2:** (10 minutes) Identify possibilities to address each of the three issues in your home country. Where do you see chances and opportunities? Can you also identify quick wins? (Things that can be changed easily and without much effort.)

- **Step 3:** (10 minutes) Make a simple action plan to address the three issues (and others) in your country. This should be a personal action plan: what are you going to do
with the knowledge you gained in this course? Where will you start with making changes? How will you start with planning policy or project development processes?

Make a plan for the first three months and only write down the major actions.

| Step 4: | Exchange your action plan with that of your fellow participants. |


DCPP (2007). *Achieving the Millennium Development Goals for Health: So far, progress is mixed—can we reach our targets?* Disease Control Priorities Project.


WHO (2003). ‘En-gendering’ the Millennium Development Goals (MDGs) on Health. Department of Gender and Women's Health, World Health Organization
