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Grade-9

# Education for Sustainable Development

## Teacher Guide

United Nations
Educational, Scientific and
Cultural Organization

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Grade 9

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UNESCO
United Nations
Educational, Scientific and
Cultural Organization

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UN Building No.6 Natmauk Road, Tamwe Township
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In partnership with Thabyay Education Foundation

# Teacher Guide

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# Introduction

## Getting started

We hope to create a sustainable future that will benefit our students, communities, and country. By using the Education for Sustainable Development (ESD) Teacher Guide, you will be able to educate your students on the key threats to sustainability we face in Myanmar and how to overcome them. You will also be able to build essential skills through interactive learning activities, readings, and projects. The aim is for students to become committed to lifelong learning and to help promote sustainable living and development in the country.

## ESD and why it matters

**Sustainable Development** is development that meets the needs of people today without causing trouble or destroying the ability of future generations to meet their own needs. Examples of sustainable development include renewable energy, local consumption and production, re-use of goods, peaceful resolutions to conflict, and limited inequalities across social classes.

**Education for Sustainable Development** (ESD) is an approach to education that prepares students to make informed decisions and responsible actions to protect the environment for present and future generations. It is also about learning how to protect our culture, promote sustainable economic practices, and build a tolerant society.

Sustainability is needed in Myanmar because the country is extremely vulnerable to climate change as well as environmental exploitation. Myanmar is a diverse country with rich history and cultures which also deserve protecting. In recent years, the country has experienced rapid economic and political development. With all of this in mind, it is important for Myanmar to build sustainability in four core areas:

- Society (equality, human rights, disaster risk reduction)
- Economy (sustainable consumption and production)
- Environment (climate change, biodiversity, natural resources)
- Culture (cultural heritage and preservation)

So, how can we ensure that current and future developments are beneficial to both people and the planet? **We can start with youth.** Youth will one day lead the country. ESD will give these youth the proper knowledge, skills and attitudes to develop Myanmar in ways that are positive for society and the environment.

Myanmar is joining many countries around the world in teaching students to think about sustainability as a core part of their studies. Globalization links us to people everywhere. Thus, the sustainability of global societies and economies as well as our shared planet is a question we all face.

# How to teach ESD

ESD is about putting students at the center of the learning process. It is about teaching them to think for themselves and become active, committed citizens. ESD does this by building the appropriate knowledge, skills, and attitudes:

- **Knowledge** (information about how and why to make our society, economy, culture and environment sustainable)
- **Skills** (the ability to conduct critical thinking, problem solving, communications, decision making, etc.)
- **Attitudes** (an appreciation for nature, equal rights, diversity and the idea of lifelong learning)

To transfer the above knowledge, skills, and attitudes, this Teacher Guide uses several student-centered learning methods around ESD. These methods are included throughout the book to help turn your classroom into an interactive learning environment. Unlike the traditional methods of lecturing, where the teacher carries most of the work, these techniques get students moving and thinking on their own. But remember, you do not need to develop your own activities for ESD. They are already provided for you with step-by-step instructions on how to carry them out. The idea is to improve the teaching and learning experience in a way that is more effective, but also more fun!

Teaching/learning methods:
Readings: these include stories, case studies, poems, or news articles. Readings allow students to gain different perspectives on issues of sustainability from around the world. Readings also give learners the chance to think critically about new concepts and consider how the issues we study impact individuals' lives.

Projects: these include longer assignments that encourage students to study sustainability in depth. Students may be asked to pick a topic and spend the next 1-2 weeks learning about it. It will allow them to study the topic from different angles and reflect on its significance. Most projects end with a presentation, so that students can share all their hard work with their peers and teacher.

Experiential learning activities: these include hands-on activities that get students out of their seats to take part in the learning process. Students can conduct observations outside of school, take part in a field visit, or work together to complete an experiment. All of these activities involve learning while doing - not just reading a book.

Stimulus activities: these include activities that stimulate the mind. They are designed to be entertaining and promote students' curiosity and enjoyment in learning. They do not need to take much time, but break away from traditional methods of teaching and liven up the classroom. Examples include role-plays, debates, brainstorms, artwork, group work, etc.

Reflection: these include short written or verbal responses to reflective questions. They give students time to think about what they have learned and form their own opinion. This gives students a chance to question their own point of view, and is especially essential to developing critical thinking skills.

Recommendations:
Don't get too confused by all the new terms and teaching concepts. The student-centered learning approach to ESD is all about making learning enjoyable - for both you and the students. Follow these tips as you work your way through the Teacher Guide:

- **Have fun!** School shouldn't have to be boring for you or the students. Take time for ESD activities and remind them how exciting learning can be.
- **Give students time to talk.** If teachers lecture for most of the class, students lose interest, stop paying attention, and often learn very little. By allowing class discussion, you encourage students to express themselves and take part in the lesson.
- **Remember that different students learn in different ways.** Some students may be better at writing than speaking, or expressing their skills through art instead of an academic project. Thus, if a student isn't performing well, that is okay. Just try to give her/him another chance to take part in a different activity that focuses on the same subject.
- **Treat all children with respect.** Sustainability is also about promoting an appreciation for diversity and rights for all. As the students' role model in the classroom, you can teach a very powerful lesson just by treating all children equally.
- **Ask your students questions.** To build students' skills in critical thinking, always ask them questions. If they state an opinion, you can ask, "Why?" "What support do you have?" "What are other opinions on the issue?" With this easy method, you can push students to develop quickly.
- **Encourage your students to ask you questions.** Always allow your students to raise their hands to ask questions. It makes them feel involved in the lesson and helps them to learn more about a topic. If you don't always know the answer that's okay too. You can encourage students to ask someone who might know more about the issue (i.e. ask a local farmer about a specific agricultural technique).
- **Don't give yourself more work.** Student-centered learning is supposed to give the teacher less work - not more. It gives students the power to solve problems and explore new subjects on their own, all while building skills. Your role is to facilitate this process.

And most importantly...

- Just follow the instructions given in the Teacher Guide and you will already be leading an innovative and effective classroom for a sustainable future!

# How to use this Teacher Guide

The guide is divided into four main parts. These parts represent the areas in the current curriculum where elements of sustainability can be added. You can think of it as the main levels of integration of ESD. These are as follows:

Lessons
This section includes brief statements that explain how lessons in the curriculum already relate to sustainable development. You can share these explanations out loud with your class. Reflection questions and possible answers are provided, so that you can encourage a class discussion as well as help students think critically about sustainability throughout different subjects.

Subjects
This section includes a variety of activities that can be used at different stages of a subject course (i.e. Science, Geography, etc.). These will be in the form of readings, projects, experiential activities, stimulus activities, and reflections.

Co-Curricular
This section includes activities for after-school hours such as field trips or student clubs that work on issues related to sustainability. Each co-curricular activity has suggestions and tips for fitting the activity to your class' needs or available resources.

Learning Environment
This section includes visual aids (i.e. posters, infographics, etc.) that can be hung on the classroom walls. This will help remind students of important sustainability lessons throughout the school year.

Additional information on how conduct these levels of integration is given on the following 'How to use...' pages. But to sum up, the Lessons provide explanations you can share with the class about how a particular lesson relates to sustainability (plus reflection questions and answers). The Subjects and Co-curricular sections provide instructions for carrying out ESD activities. The Learning Environment section provides visual aids to make the classroom engaging.

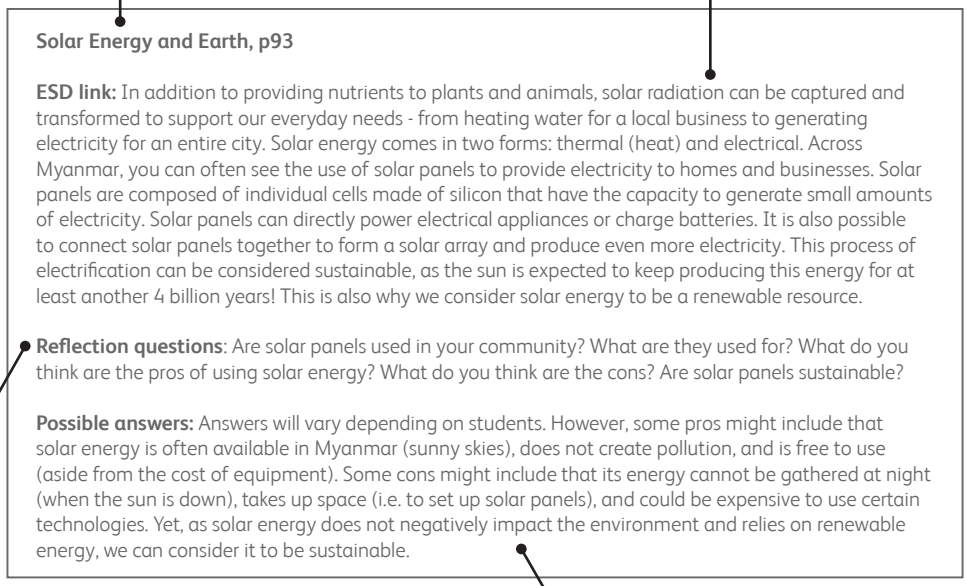
***Now, get started with ESD!***

# How to use: Lessons

**The diagram below explains each part of the lesson guide. Each lesson guide explains how a lesson is related to sustainability. To help your students understand the connection between the topic and sustainability, there are reflection questions and possible answers to support class discussion.**

This is the specific lesson in the current curriculum that this lesson guide links to. The page number marks the start of the lesson.

The ESD link is a brief explanation on how the specific lesson relates to sustainable development. After reviewing the link, the teacher is encouraged to summarize it and share with the class.



**Solar Energy and Earth, p93**

**ESD link:** In addition to providing nutrients to plants and animals, solar radiation can be captured and transformed to support our everyday needs - from heating water for a local business to generating electricity for an entire city. Solar energy comes in two forms: thermal (heat) and electrical. Across Myanmar, you can often see the use of solar panels to provide electricity to homes and businesses. Solar panels are composed of individual cells made of silicon that have the capacity to generate small amounts of electricity. Solar panels can directly power electrical appliances or charge batteries. It is also possible to connect solar panels together to form a solar array and produce even more electricity. This process of electrification can be considered sustainable, as the sun is expected to keep producing this energy for at least another 4 billion years! This is also why we consider solar energy to be a renewable resource.

**Reflection questions**: Are solar panels used in your community? What are they used for? What do you think are the pros of using solar energy? What do you think are the cons? Are solar panels sustainable?

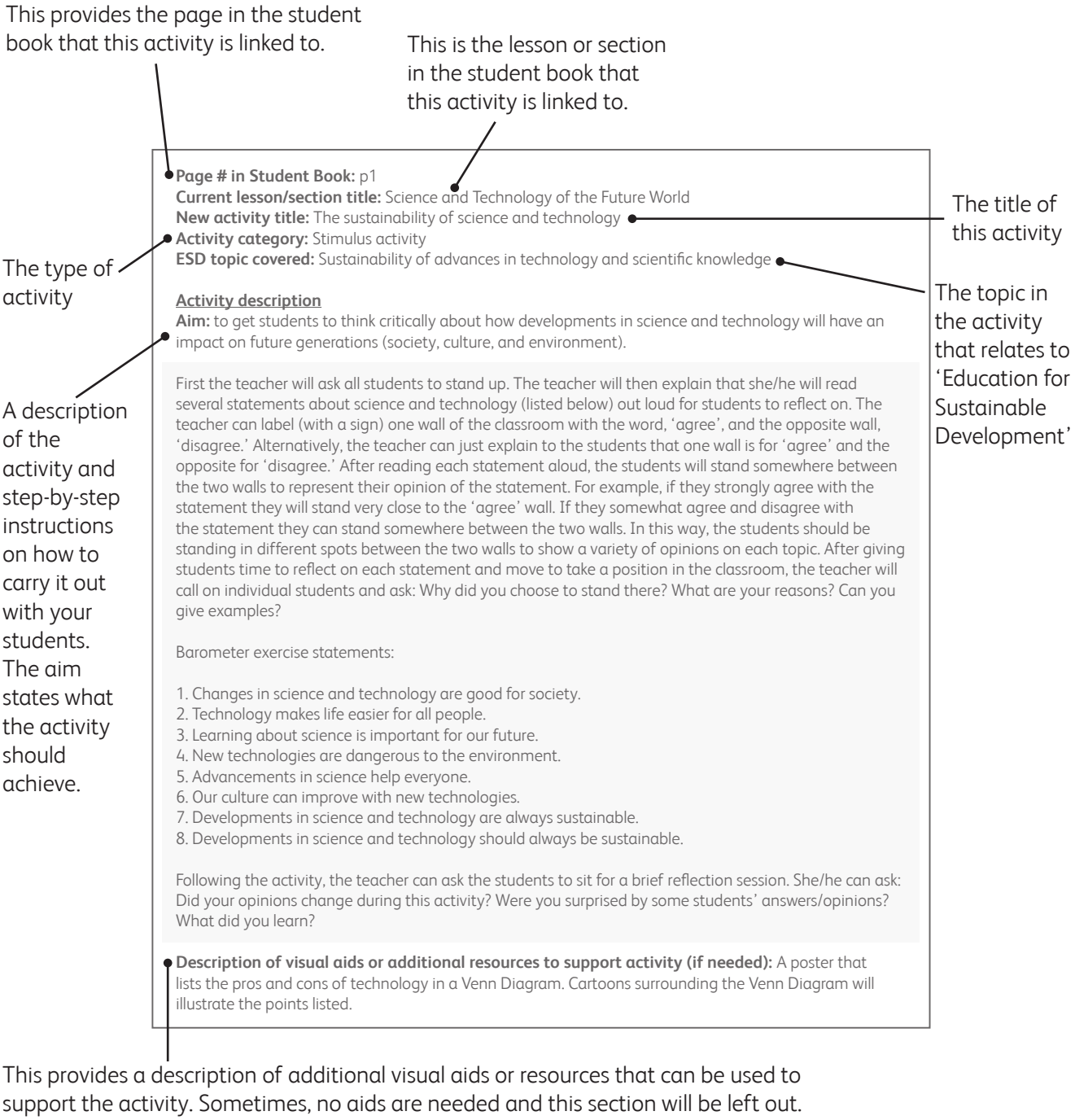
**Possible answers:** Answers will vary depending on students. However, some pros might include that solar energy is often available in Myanmar (sunny skies), does not create pollution, and is free to use (aside from the cost of equipment). Some cons might include that its energy cannot be gathered at night (when the sun is down), takes up space (i.e. to set up solar panels), and could be expensive to use certain technologies. Yet, as solar energy does not negatively impact the environment and relies on renewable energy, we can consider it to be sustainable.

These are questions that the teacher can ask students to help them reflect on and think critically about it if there is time for a class discussion.

These are possible answers that the teacher can share with the class, after they have tried to answer the questions on their own. However, several reflection questions ask for students' opinion or experiences and answers will vary.

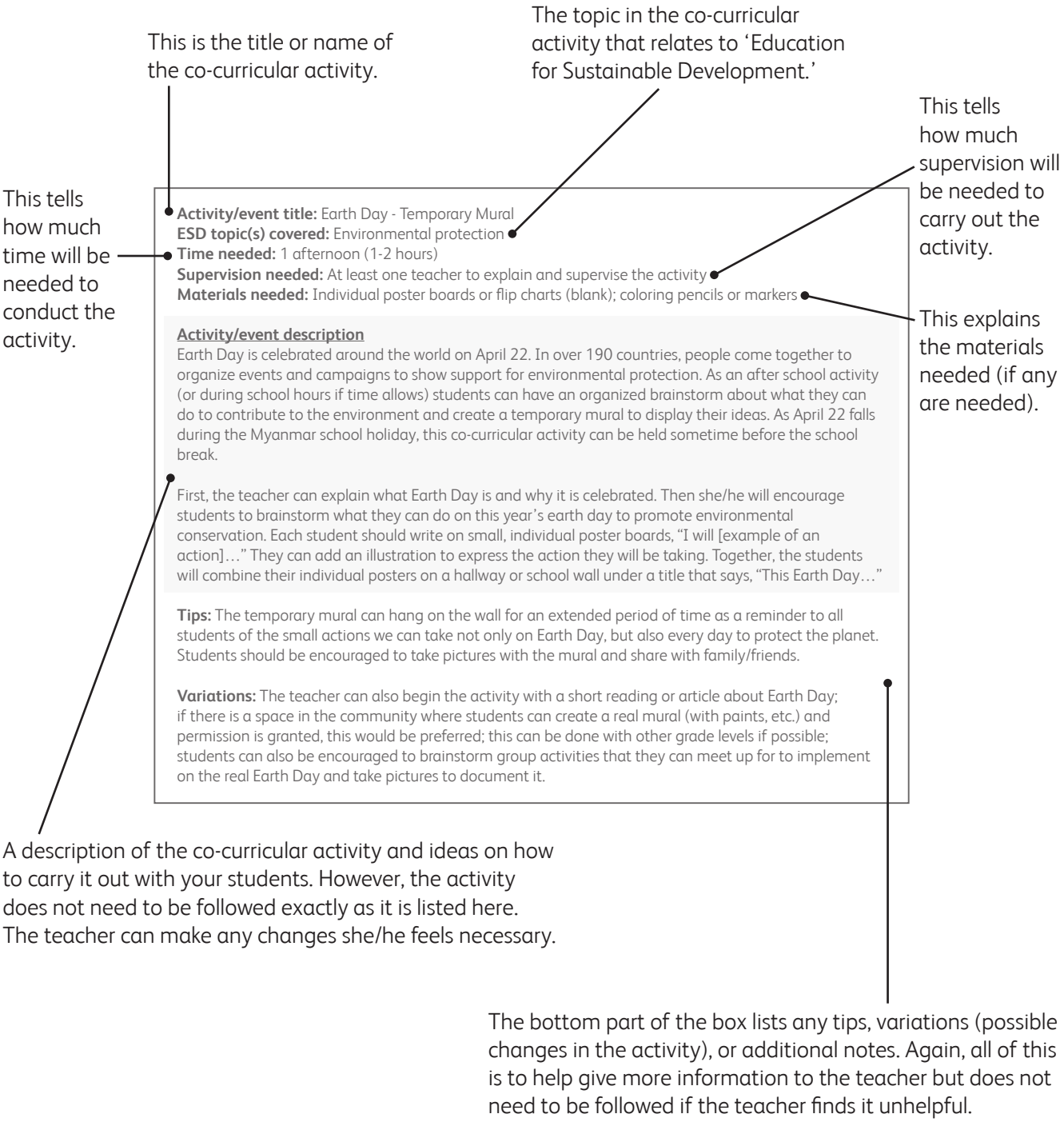
# How to use: Subjects

**The diagram below explains each part of the subject activity guide. This will help you to know what lesson and topic the activity relates to in your current curriculum. It also provides step-by-step instructions for how to carry out the activity with your class.**



# How to use: Co-curricular

**The diagram below explains each part of the co-curricular activity guide. Each guide gives information to help the teacher prepare for (i.e. supervision needed, materials needed, etc.) and carry out the activity. However, how much or how little of each co-curricular activity the teacher wants to carry out will depend on her/him and how many resources are available at the school.**



# Learning Outcomes

## Package 3: Grades 8-10

Students will be able to describe the interconnected nature of sustainability to other fields and advocate for change within their communities.

| Knowledge |
| --- |
| -Give examples of human rights as defined in the United Nations Universal Declaration of Human Rights<br>-Describe ways in which identity, diversity, and culture can be protected<br>-Describe social and cultural injustices in Myanmar and ways of resolving them<br>-Identify issues linked to poverty in Myanmar and propose ideas for a more equitable society<br>-Define globalization and give examples of its cultural, political, and economic impacts on Myanmar<br>-Explain the connection between the environment/climate change and society, science, agriculture and the economy<br>-Analyze possible consequences of consumer choices<br>-Identify issues related to scarcity and distribution of food and water<br>-Illustrate how water gets cycled through the environment/atmosphere<br>-Describe sustainability issues related to natural resource extraction and consumption<br>-Identify factors that influence the changing use of natural resources over time<br>-Identify environmental, social, and economic factors that should be considered in the management of natural resources<br>-Discuss the advantages and disadvantages of renewable and non-renewable sources of electrical energy<br>-Discuss ways to maintain forests, soil and biodiversity in Myanmar<br>-Discuss the use of chemistry in society as beneficial or not<br>-Illustrate and explain how carbon, nitrogen and oxygen are cycled through an ecosystem<br>-Discuss the potential consequences of introducing new species and of species extinction to an ecosystem<br>-Develop ideas for sustainable forms of tourism in the region and ways to protect cultural heritage<br>-Describe methods used to control soil erosion, and recognize the importance of soil conservation<br>-Identify environmental, social, and economic factors that should be considered in making informed decisions about land use |

## Skills

-Develop an argument for the use of renewable or sustainable resources
-Practice active listening in debates and discussions with peers
-Present on the interconnectedness of sustainability to other fields
-Write a brief research report on sustainable sectors
-Make inferences
-Make decisions within a team; particularly ones that reflect the principles of sustainable development
-Use a variety of strategies to resolve conflicts in ways that are peaceful and fair
-Think critically about the long-term implications of environmental degradation or protection
-Express the ability to think about issues in a systematic and holistic way

## Attitudes

-Show an appreciation for lifelong learning
-Express optimism for local to global movements for sustainable living
-Reflect empathy for populations affected by climate changes and less-sustainable forms of development
-Express pride for ASEAN heritage and support for regional cooperation
-Recognize and take a stand against discriminatory practices and behaviors
-Show a willingness to consider diverse cultures and perspectives
-Value non-violent resolutions to conflict
-Be willing to consider diverse social and cultural perspectives
-Reflect on ethical questions related to sharing wealth and resources
-Respect the Earth as a complex environment in which humans have important responsibilities
-Reflect on the social, economic and environmental impacts of consumer choices
-Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment

# Lessons

## Myanmar

#1

**Education, p4**

**ESD link:** The decisions we make every day are influenced by the education we've received during our lives. Access to quality education is a basic right. If everyone has access to quality education we might be able to create a more sustainable society in the future. We all can agree that we want to live in a world with peace, social justice, and a healthy environment. But how can we achieve these things if we don't have the skills and knowledge to do so? Remind students that the lessons they learn and the skills they gain in the classroom will stay with them throughout their lives. If students practice problem solving and collaboration with peers in class, they will be able to use these same skills in the real world. Education can teach us to think critically. It can also teach us to appreciate nature, peace, and diversity. Education opens our eyes to inequalities in the world and ways to resolve them. Help students understand that education shapes how people see the world. The more we learn, the more we can take actions to create the type of society we want to live in.

**Reflection questions**: What is an important lesson you have learned in school? What things do you think youth should be learning in school? Can a country develop sustainably without education?

**Possible answers:** Answers will vary depending on students. Encourage students to think not just about content they've learned (i.e. specific topics). Remind them that students learn important attitudes and behaviors in school. Students should learn how to respect nature and people from different backgrounds from themselves. They should also learn important leadership skills like decision-making and communications. If the youth of an entire country receives quality education, there is a much better chance for a sustainable future.

#2

**A writer describing his stay in a foreign country, p57**

**ESD link:** Min Thu Wan was very lucky to have the chance to travel the world. He was able to study and teach in the United Kingdom, the United States, and Japan. These experiences gave him the opportunity to learn about different cultures and education systems. In order to build a sustainable world, we should try to learn about different cultures than our own. If we study about different countries and the way they do things, maybe we can learn to respect and understand their practices. We can see that we may have different languages, religions, cultural practices, clothes, and food. However, we can appreciate that all people have the same basic needs and rights. All of us do not have the chance to travel, even if we would like to. But remind students that we can learn about different countries and cultures through our studies.

We can also tell others about our own culture or home country. Education can open our eyes to the diverse world we live in.

**Reflection questions:** Would you like to travel somewhere someday? Where and why? Do you need to travel to a foreign country to learn about different cultures? How can you learn about different cultures on your own?

**Possible answers:** Answers will vary depending on students. But we do not need to travel to a foreign country to learn about different cultures. Students can read books by foreign authors, they can learn about global issues in the newspaper, or they can have a conversation with someone from a different country or background from their own (if possible).

**#3**

**Poems (all)**

**ESD link:** Although poem reading/writing may not always seem essential to one's studies, poetry can have a big impact on how students express themselves and see the world. On an individual level, students get the chance to express their feelings and reflect on issues that affect their daily lives. Many of these issues - such as religion, ethnicity, culture, or the environment - connect us to society and shape how we see the world. Poetry writing allows students to tell things from their unique perspective. Poetry reading, on the other hand, allows students to read about topics from other people's point of view. This can help them to open their mind and empathize with the experiences of others. Poetry can even support community building in the classroom, as students share their stories (poems) and learn to respect and trust each other through such activities. Lastly, poems can preserve cultures from one generation to the next.

**Reflection questions**: How can poetry reading or writing help students to grow/develop? How can poetry reading or writing help an entire community to grow/develop? What can we learn about ourselves when writing poems? What can we learn about others when reading poems?

**Possible answers:** Answers will vary depending on students. Some possible answers for the first two questions are provided in the paragraph above. Also, by spending time to reflect on an issue to write a poem, students may learn that they have more complex feelings or opinions about an issue than they previously thought. When reading a poem written by someone else, students may learn to see an issue in a new way (especially if the poem is written by someone of a different race, religion, social class, etc.)

# English

**#4**

**Evaporation, p20**

**ESD link:** When we think of evaporation, it is helpful to look at small examples of this process such as the ones given in the reading - little pools of water that get smaller and smaller, drops of water on the grass that disappear, etc. But it is important to remember that evaporation occurs on a global scale, cycling water from our rivers and oceans through the environment. As the effects of climate change worsen, however, the cycles of evaporation have been disrupted. Increasing temperatures cause higher rates of evaporation. Also, warmer air is able to hold more moisture before releasing it as rain or snow. This...

means that we are seeing stronger rain storms (downpours) and flooding. Instead of keeping soil and plants wet and healthy, the rain storms can be too strong and wash away the soil and water back into rivers. At the same time, the atmosphere cannot always keep up with the quicker rate of evaporation and takes time to collect moisture back into the air. This means that in between the intense rain storms are periods of little to no rain, causing drought. Thus, the disruptions to evaporation and the water cycle caused by climate change create both too much rain in some periods and too little rain in others. This has major impacts on our ability to keep soil and plants healthy and has been very harmful to farmers and their crops.

**Reflection questions:** Can you see some of these changes in Myanmar? Do you think rainstorms have become more intense over the past few years? Are there more droughts? Were you surprised to learn that climate change impacts evaporation?

**Possible answers:** Answers will vary depending on students. However, it may be surprising for some students to learn that climate change can have contradictory effects on the environment - increased trends of both too much rain and too little rain. The important thing to remember here is that alternating heavy rainstorms and periods of drought make it difficult to sustain plant and animal life, as the soil has trouble holding adequate amounts of water.

**#5**

**Earthquakes, p78**

**ESD link:** Earthquakes can have major impacts that last years after the actual earthquake. It is important to think about how to prepare ourselves for disaster to lessen the negative consequences. Earthquakes are common in Myanmar. One day, it is possible that a powerful earthquake strikes a major city like Yangon. This could cause huge amounts of damage and harm to people. This is especially true in places where the buildings are old and stand close together. It could also impact the local economy. If we learn about earthquakes and the impacts they have, we can also understand the importance of disaster preparation.

**Reflection questions**: Have you ever been in an earthquake? What did you do to stay safe? Why should we learn about earthquakes? What do earthquakes have to do with sustainability? What can you do to prepare for an earthquake?

**Possible answers:** Answers will vary depending on students. You can remind them that if we learn about earthquakes and what to do in case of an earthquake we can prevent more damage from happening - to both people or buildings. Learning about earthquake preparedness may even save many lives. Earthquakes are related to sustainability because if an earthquake strikes, it can harm the positive developments of a country. It can lead to deaths, bad living conditions, illness, destruction of buildings/ roads, problems in the local economy, and so on. This is not sustainable. But if we prepare before an earthquake hits, the negative consequences may be lessened. Of course, we never know when an earthquake will strike but we can always be prepared. If an earthquake hits, we should follow the "dos and don'ts" list in handout 092. Be sure to share this handout with your class.

# Geography

**#6**

**Weather and climate, p2**

**ESD link:** When we study climate and geography, we should think about how climate change affects different parts of the world in different ways. Most of the carbon dioxide emissions that cause global warming come from industrialized countries. However, it is often developing countries that suffer the most extreme consequences. Also, developing countries usually have fewer resources to recover from natural disasters when they strike. For countries like Myanmar or Bangladesh, with a lot of coastal areas, the destruction caused by coastal storms can be severe (i.e. Nargis). People who rely on agriculture for... their livelihoods are especially vulnerable to climate shifts (i.e. droughts, flooding). Other people that are sensitive to climate change include elderly or sick people, pregnant women, children, and low-income populations. We should think about how to promote the rights of these groups and developing countries in fighting for environmental protections.

**Reflection questions:** Is it fair that most of the countries causing (or fueling) climate change don't suffer the worst consequences? How can groups that are vulnerable to climate change (i.e. low-income populations) fight for their rights? How can countries that are vulnerable to climate change fight for their rights?

**Possible answers:** Answers will vary depending on students. Some ideas for protecting people's rights could start with campaigns to raise awareness of climate change, lobbying for government officials to express their concerns about climate change at the national and international levels, organizing regional marches/protests, or creating a local committee to address worries about climate change.

**#7**

**World's Climate, p40**

**ESD link:** We should remember that earth's landforms, climate, water and air are shared by everyone. This lesson looks at the earth's desserts, savannahs, rainforests, and more. We all share responsibility for preserving these places. No one country can solve the world's environmental problems on their own. We can keep this in mind when studying about different parts of the planet. All countries must work together to protect the planet. This can be done through international negotiations and agreements on the environment, environmental laws, or advocacy by people like you and me.

**Reflection questions**: Why do world governments need to cooperate? What is being done by governments around the world to protect the environment? What are more suggestions for what they can do?

**Possible answers:** Answers will vary depending on students. Some countries pollute more than others. Some countries are affected more by climate change than others. Some regions of the world that work to protect the environment are unfairly harmed by the carelessness of other regions. Pollution does not stop at country borders. Therefore, the protection of our planet can only happen if more countries work together and agree to take actions. There are already many international environmental agreements. For example, the Paris Agreement is an agreement for countries to lessen their greenhouse gas emissions. This is signed by 195 countries. However, some countries who cause the most greenhouse gas emissions, have not fully committed to the agreement. Pressure should be put on these biggest polluters for the sake of the rest of the world.

#8

**Ocean water, p52**

**ESD link:** Oceans cover more than 70 % of the surface of the planet. Because oceans are so big, many people assume that pollution cannot do much harm to them. However, marine pollution has increased in recent years and will have long-lasting effects if we don't take action soon. Chemicals, waste, sewage, and plastic pour into these bodies of water on a daily basis. Most of the pollution that goes into our seas and oceans comes from land activities. For example, many farmers in Myanmar use pesticides and fertilizers. But these toxic materials eventually run off into rivers and the sea. Pollution from the air can also affect oceans. Each year, it is estimated that 8 million metric tons of plastic goes into the ocean. All of this pollution can kill marine animals and destroy entire ecosystems. Myanmar sits on the Bay of Bengal and Andaman Sea. We should do our part to prevent marine pollution.

**Reflection questions:** Have you seen pollution in the water in Myanmar? (Rivers or oceans) Do you think most people know about marine pollution and its effects? What can we do to help?

**Possible answers:** Answers will vary depending on students. In order to help, students can spend more time trying to learn about the consequences of pollution. Students can also study oceans, their rich biodiversity, and how people rely on them. They can share what they know with friends, family, and community members.

# History

#9

**Early cultures, p7**

**ESD link:** We need to learn about ways people lived in the past to make sure the ways we live today are sustainable. The problems we face today, like environmental protection or human rights, also existed in the past. When we study history, we can see how governments dealt with these issues and if they were successful or not. In other words, we can learn from mistakes made in the past and not repeat them. There are many times in history when a civilization collapsed because it destroyed its environment or got too greedy. Its people and land suffered. However, some practices from the past may be better than things we do today. For example, many people today buy too many things they don't need. They buy lots of clothes, cars, a big home, and fancy electronics. But in many ancient civilizations, people lived with very little materials. In this example, the ancient way of living was more sustainable. It didn't use up too many resources and create lots of waste or pollution. Sustainable development is not always about moving forward (i.e. technological advancements). It is also about looking to the past to see if older practices could still be used today. We can look at agricultural practices, systems of governance, natural resources used, and so on.

**Reflection questions**: What is one important lesson you have learned from studying history? What is an example of a common practice in the past that was sustainable? What is an example of a common practice done today that is not sustainable?

**Possible answers:** Answers will vary depending on students. One example of a sustainable practice from the past is self-sufficient farming. In many ancient civilizations, people grew all of their food on their own land and lived off that. However, there were also many unsustainable systems - such as feudalism or plantations - that exploited people and the land. An example of an unsustainable practice today is the use of plastics. We often buy and use products that come in plastic. But plastic does not break down for...

hundreds of years and stays in the environment as waste. In ancient civilizations however, people used more sustainable materials that did not cause so much harm to the environment.

#10

**Peasant revolution, p56**

**ESD link:** The peasant revolutions teach us that unequal societies are not sustainable. In England and France, people felt they were being treated unfairly. For many people, it was difficult to make enough money to survive. High taxes and weak systems of governance created problems for many people. These economic and social issues continued to grow over time. Also, the people who were forced to work as serfs (slaves) had no real freedom. They were forced to do hard work and live in horrible conditions. While some people worked as slaves, others were very wealthy. But social and economic inequalities cannot last forever. As we can see in the examples of revolution, people are eventually forced to take action and fight for their rights. Although the peasant revolutions studied here were violent, there have been many other non-violent protests around the world. People often come together to work toward more equality and rights for all. Economies that create inequality and suffering cannot last and will eventually break down.

**Reflection questions:** In Myanmar's past, why have people organized in protest? In your opinion, can protests or revolutions lead to fairer societies or systems of governance?

**Possible answers:** Answers will vary depending on students. People often fight for their rights. These might include the right to better pay, right to education, right to health care, etc. People may often protest for a fairer system of government, where everyone has a say in politics and not just the wealthy classes.

# Biology

#11

**Variety of living organisms, p59**

**ESD link:** In our local environment, we probably see a mix of plants and animals every day. Myanmar has a lot of biodiversity. A region that is biodiverse has many different kinds of plants, animals and other organisms. They all work together to sustain a healthy environment. If an area has more biodiversity it is more sustainable. Biodiversity is good for a number of reasons. If there are a lot of different plant species in an area, there can be a greater variety of crops. Also, a biodiverse ecosystem is healthier and can recover quicker from natural disasters. Healthy ecosystems with a variety of plant and animal life lead to better soil, better protection of water resources, more contributions to a stable climate, and so on. A biodiversity hotspot is an area that has lots of biodiversity and is in danger of losing this biodiversity because of human interference. Myanmar is part of the Indo-Burman Hotspot, one of 34 hotspots around the world. We should remember that biodiversity is needed for environmental sustainability and should be preserved for future generations in the country.

**Reflection questions**: Think about where you live. Is there a variety of living things? Give some examples. Why is biodiversity important to your community?

**Possible answers:** Answers will vary depending on students. Biodiversity influences everything about our environment - the air we breathe, the water we drink, and the food we eat. A healthy environment means a healthy population. You can share with the students the story of the potato famine in Ireland in the...

1800s and how a lack of biodiversity affected the people. Most farmers only grew one type of potato (the 'lumper' potato). When this potato got a disease almost all of the crops were destroyed. Many people died of starvation. However, if there had been more types of potatoes, some of them may have survived the potato disease and been used for food.

# Economics

#12

**Goods and services, p7**

**ESD link:** When we think about the production and consumption of goods in our society, we should also think about their distribution - across social classes, regions, or even countries. We should think about inequalities in the distribution of goods and how this can lead to scarcity in some communities or parts of the world. Scarcity exists when there is a limited supply of a good but a high demand for it. When people do not have enough goods to meet their needs, this has huge impacts on their quality of life, health, economic well-being, and so on. This is especially dangerous for poorer populations who cannot afford to pay for scarce goods and will therefore suffer the most. Some examples of scarcity include: the lack of crops after a drought leading to a lack of food for people/animals and no source of income for farmers (scarcity of food); an undereducated population in a country that needs highly skilled workers to develop its industries (scarcity of labor); over-polluting in a lake leading to both a lack of clean water and uncontaminated fish (scarcity of water and food).

**Reflection questions**: What do you think would be the consequences of long-term scarcity of water in Myanmar? How would different groups of people be affected differently? Is this just? Is it sustainable?

**Possible answers:** Answers will vary depending on students. Some possible answers include an increase in conflict or disputes over water sources, lack of access to clean water (i.e. water for drinking/cooking), shortage of food (because crops rely on water to grow), energy shortage (i.e. hydropower plants), and slow economic growth (because many industries rely on water). Poorer communities and farmers would be hit the hardest, leading to an unequal and unjust distribution where some people are impacted more by scarcity than others. Such a system is not sustainable, as water is a limited resource and can run out eventually and future generations will not be able to live off it.

#13

**The labor force, p48**

**ESD link:** When we study populations in Economics (i.e. workers, consumers) we should remember that we are not just looking at numbers. For example, we may study about how 100 laborers in a village work in textiles. But 100 is more than just a number. This number reflects 100 unique lives. It represents people with wants and needs. It represents people with families to care for. A business owner might focus only on the gains and losses of his/her company. Over time she/he may lower the workers' salaries or raise their working hours to save money. But it is very important not to forget that each worker has basic rights to be protected. In the UN Universal Declaration of Human Rights it states: "Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment. Everyone, without any discrimination, has the right to equal pay for equal work. Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection. Everyone has the right to form and to join trade unions for the protection of his interests." Students

should keep this in mind throughout their lives. Whether they are employers or employees, it is essential to protect labor rights. An economy that exploits its labor is not a sustainable one.

**Reflection questions**: What are the labor conditions like in your community? What can people do to fight for their basic labor rights? If you become a business owner one day, how will you treat your workers?

**Possible answers:** Answers will vary depending on students. People who must fight to protect their rights can form peaceful protests. They can also go to the government or human rights organizations to express their concerns and get help.

**#14**

**Agriculture, livestock, and fishery in Myanmar, p75**

**ESD link:** It is very important that these sectors are made sustainable in Myanmar. People rely on plants (agriculture) and animals (livestock, fishery) to survive. Plants and animals rely on a healthy environment. An unhealthy environment or overuse of these resources could lead to many negative effects: not enough food for people, contaminated food, not enough income for farmers/fishermen, an unstable economy, and so on. The link between people's well-being and the planet's well-being is very strong. In order for these sectors to be truly sustainable, they should not harm the environment and should be good for people's health, communities, and animal welfare. Some sustainable techniques could include: using less pesticides, treating and feeding animals well, not over-fishing, etc. However, it is not just the responsibility of farmers and fishermen. People who consume the goods from these sectors can also take part. For example, we can eat less meat and fish and eat more vegetables.

**Reflection questions**: What did you eat this past week? Did it come from one of these sectors? How are agriculture, livestock, and fishing all related?

**Possible answers:** Answers will vary depending on students. However, all students should realize that most of what they ate in the past week came from one or more of these sectors (i.e. rice, chicken, vegetables, fish, etc.). These sectors are all related because they all rely on the environment. Also, a change in one sector can cause changes in another. For example, if a farmer uses pesticides on a crop, the pesticides can later run off into rivers. This could kill the fish or contaminate them. Also, people will be eating unhealthy food. This shows us that everything is connected.

# Agriculture

**#15**

**Method of growing crops, p1**

**ESD link:** There are various methods that can be used in farming and gardening. Multiple cropping, intercropping and mixed cropping are all methods of polyculture. The choice of the method depends on the farmland size, the desired products, water availability and the seeds sowed. What these methods have in common is that they contribute to improving the soil and increasing biodiversity, reducing plants' risk of disease and helping in pest control. Contrary to monoculture, polyculture methods help maintain and create healthy and rich soil that can sustain the food production of current and future generations.

**Reflection questions:** 1. Which of the polyculture methods is most adapted to your area? Why? 2. Which polyculture methods are used for food production in your community?

**Possible answers:**
1. Answers may vary.
2. Answers may include: more varied food, access to food that grows throughout the year and better nutrition.

**#16**

**Seed quality control, p28**

**ESD link:** Seed quality control is very important to ensure that saved selected seeds are appropriate to the environment: climate variation, soil quality, water availability and dietary requirements. Seed banks are a very important practice because it allows you access to the most appropriate seeds based on an environment's requirements. Seed banking is also a sustainable practice because it creates independence and self-sufficiency. Farmers with seed banks do not have to buy expensive seeds or be forced to use seeds that were collected from plants on which chemical fertilizers and pesticides were used.

**Reflection questions:** 1. Have you ever heard the concept of a seed bank? 2. Do people have seed banks in your community? 3. What could be the steps to starting a seed bank in your community?

**Possible answers:** Answers may vary for 1 and 2.
3. First, start a seed bank. Second, select the right seeds. Third, encourage farmers to share seeds.

# Subjects

## Myanmar

**#1**

**Page # in Student Book:** Prose, p57
**Current lesson/section title:** A writer describes his stay in a foreign country
**New activity title:** Reflection essay
**Activity category:** Reflection
**ESD topic covered:** Global citizenship, world cultures

**Activity description**
**Aim:** to allow students to express their thoughts/feelings about travel abroad. They will also reflect on the importance of learning about other cultures different from their own.

This activity can be done in class (if time allows) or as homework. Students will work individually to write an essay about a foreign country they would like to visit. The essay should have at least 3 brief paragraphs to answer the questions below:

1) Where in the world would you like to travel to? Why?
2) What would be the benefits (to you) of travelling to this country?
3) What can you do now to start learning more about this country?

In the next class session, students can share their essays to the class. They do not need to read them exactly as they are written but can just summarize their main ideas. Essays do not need to be marked by the teacher. It is more important that the students have fun expressing their thoughts while building writing skills. There are no wrong answers.

You can also remind the students that we can become more open-minded when we learn about different cultures. When we study about foreign cultures, we can learn to appreciate and respect them.

We may not all have the chance to travel abroad. But we can learn about foreign cultures in school, in books, in the newspaper, or online. We can also talk to people who have lived abroad or even ask a foreigner about their home country.

**#2**

**Page # in Student Book:** Poems (all)
**Current lesson/section title:** N/A
**New activity title:** Poem writing and illustrations
**Activity category:** Stimulus activity
**ESD topic covered:** Diversity, culture and the environment

**Activity description**
**Aim:** to encourage students to develop their writing skills while expressing themselves creatively. They should learn to enjoy writing on a topic that both interests them and relates to sustainability.

Students will work in small groups in class (if time allows) or individually at home to write a short poem. Their poems will be on one of the three topics below. Students choose which of these topics they wish to focus on.

The idea is not to write poems with perfect grammar and vocabulary, but instead to freely express themselves. Each of the topics also allows students to reflect on issues related to sustainability.

Topics to choose from:
1. Diversity (this can be about the cultural, religious, or ethnic diversity of people in Myanmar or around the world)

2. Culture (this can be about local culture and customs)

3 The environment (this can be about nature and our appreciation of it or reliance on it)

After the activity is complete, students can write their poems on large pieces of paper or poster board and illustrate it as they like. One idea you can suggest to students is to have each line of the poem form a different part of the picture.

Lastly, each group will present their poem out loud to the rest of the class and hold up their poem/ illustration for everyone to see. If possible, you may hang up the posters on the walls to remind students of their hard work and creativity.

# English

**#3**

**Page # in Student Book:** p20
**Current lesson/section title:** Evaporation
**New activity title:** Dangerous weather
**Activity category:** Stimulus activity
**ESD topic covered:** Climate change

**Activity description**
**Aim:** to demonstrate to students how the water cycle (and evaporation) is affected by climate change. The international example will allow students to make the connection between the process of evaporation and rain fall on a large scale.

This activity can be done in class (if time allows) or as homework. First, explain to students that climate change causes increased levels of evaporation around the world. This creates stronger rain storms and flooding in parts of the world, like Bangladesh. Have students read the handout, "Dangerous Weather." Then, ask them to reflect on the following questions. These questions can also be used for a class discussion.

1) How does this article make you feel? Surprised? Upset?
2) What do you think should be done to help people in Bangladesh?

3) Do you see similar problems in Myanmar? If so, what?

The questions can be asked in Myanmar if it is easier. However, ask students to write short responses to each question in English. You do not need to mark their answers for errors. The point of the activity is just to get students to reflect on the global impact of climate change.

**Visual aids or additional resources:** "Dangerous weather" handout, (091)

**#4**

**Page # in Student Book:** p78
**Current lesson/section title:** Earthquakes
**New activity title:** Earthquake preparedness
**Activity category:** Stimulus activity
**ESD topic covered:** Disaster risk reduction

**Activity description**
**Aim:** to inform students of the dos and don'ts in the case of an earthquake as well as ways to prepare beforehand. Students will also practice persuasive writing skills in a short letter to encourage a family member/friend to follow the safe practices if an earthquake occurs.

This activity can be done as classwork (if time allows) or homework. First, students will read the "Earthquake preparedness - dos and don'ts" handouts and reflect on the following questions:
1. Have you ever experienced an earthquake?
2. If so, what did you do?
3. Do you think people in your community know how to react in the case of an earthquake? Why or why not?

If this activity is done in class, the above reflection questions can be discussed out loud for students to share their thoughts. If the activity is done as homework, students do not need to write answers but can just spend a few moments reflecting on their experiences.

After completing the reading and reflecting on the questions, students will write a persuasive letter to a family member or friend of choice to persuade them to prepare for an earthquake and follow the proper steps of action in case an earthquake occurs. Thus, the letter should not only explain to the family member or friend what to do before and during an earthquake but also why they should take these precautions. The teacher does not need to mark the students' letters for errors but can instead encourage students to share their letters (read them out loud) to the other students. If the assignment is done as homework, students can share their letters in the following session.

**Visual aids and additional resources:** "Earthquake preparedness - dos and don'ts" handout, (092)

# Geography

**#5**

**Page # in Student Book:** p2
**Current lesson/section title:** Weather and climate
**New activity title:** Climate change stories
**Activity category:** Stimulus activity
**ESD topic covered:** Climate change

**Activity description**
**Aim:** for students to realize the impact of climate change on individuals' lives. The stories should help students understand how climate change affects all parts of the world in different ways.

This activity can be done in class (if time allows) or as homework. Have students read the handout, "Climate Change Stories." Then, ask them to write a brief written reflection. They can use some of the questions below to guide their writing:

-How do these stories make you feel?
-Did you learn something new while reading them?
-Are there similar stories happening in Myanmar?
-Do they make you want to learn more about climate change?

If time allows, students can share their thoughts/feelings about the reading in a class discussion.

**Visual aids or additional resources:** "Climate change stories" handout, (093)

# History

#6

**Page # in Student Book:** N/A
**Current lesson/section title:** Does not link to a particular lesson, but should come toward the end of the course as a review activity
**New activity title:** Sustainability of the past and present
**Activity category:** Stimulus activity
**ESD topic covered:** Sustainability of past and present societies, economies, systems of governance, etc.

**Activity description**
**Aim:** to get students to think critically about the sustainability of past and present systems. They will reflect on societies, economies, and systems of governance from their history lessons and compare them with today.

First, the teacher will ask all students to stand up. The teacher will then explain that she/he will read several statements about the past and the present out loud for students to reflect on. The teacher can label (with a sign) one wall of the classroom with the word, 'agree', and the opposite wall, 'disagree.' Alternatively, the teacher can just explain to the students that one wall is for 'agree' and the opposite for 'disagree.' After reading each statement aloud, the students will stand somewhere between the two walls to represent their opinion of the statement. For example, if they strongly agree with the statement they will stand very close to the 'agree' wall. If they somewhat agree and disagree with the statement they can stand somewhere between the two walls. In this way, the students should be standing in different spots between the two walls to show a variety of opinions on each topic. After giving students time to reflect on each statement and move to take a position in the classroom, the teacher will call on individual students and ask: Why did you choose to stand there? What are your reasons? Can you give examples?

Barometer exercise statements:

1. The way we live today is very different from the way people lived in ancient Myanmar.
2. The way we live today is better than the way people lived in previous periods.
3. The system of governance used in ancient Myanmar is better than our system of governance today.
4. Our system of governance today is not sustainable.
5. The problems that created the peasant's revolution/industrial revolution have been completely solved.

6. A capitalist economy is sustainable for Myanmar.
7. There are more peaceful relations in Southeast Asia now than in the past.
8. Our economic practices today are better for the environment than those in the past.

Following the activity, the teacher can ask the students to sit for a brief reflection session. She/he can ask: Did your opinions change during this activity? Were you surprised by some students' answers/opinions? What did you learn?

# Biology

**#7**

**Page # in Student Book:** p9 or p59
**Current lesson/section title:** Not specific to one lesson, but might fit best in 'Plants and Animals' or 'Variety of Living Organisms'
**New activity title:** Brainstorm for biodiversity
**Activity category:** Reading
**ESD topic covered:** Biodiversity in Myanmar

**Activity description**
**Aim:** to encourage students to understand and appreciate the biodiversity in Myanmar and brainstorm ways to contribute to environmental protection.

This activity can be done as classwork (if time allows) or homework. Students will first read the "Biodiversity in Myanmar" handout and reflect on the rich plant and animal life in the country. After completing the reading, students will take time to brainstorm:

1. 3 things individual students can do to protect Myanmar's biodiversity
2. 3 things the entire class can do together to protect Myanmar's biodiversity

If the brainstorm is completed in class, you can encourage students to work in pairs or small groups to come up with ideas. While ideas for actions to take will vary, below are some sample answers you can share with the class.

Sample answers:
1. Individuals can… share what they learned with family and friends; recycle and not waste plastic that might damage the environment; spend time researching more about Myanmar's plant and animal life; not buy products that are harmful to the environment; grow a plant or small tree at home; etc.
2. The class can… conduct a 'trash pick-up' together to clean the school grounds; make awareness raising posters about biodiversity to share with other classes or the community; plant a school garden; create a environment club that meets to discuss and take action on environmental issues in the community; etc.

**Visual aids or additional resources:** "Biodiversity in Myanmar" handout, (094)

#8

**Page # in Student Book:** p9 or p59
**Current lesson/section title:** Not specific to one lesson, but might fit best in 'Plants and Animals' or 'Variety of Living Organisms.' It could also be used toward the end of the course as a review.
**New activity title:** Myanmar plants and animals
**Activity category:** Project
**ESD topic covered:** Plants and animals native to Myanmar

**Activity description**
**Aim:** to remind students of how each plant and animal in Myanmar plays an important role in the environment and in people's lives.

Most of this activity should be done at home. However, the students will present their final work (a poster) to the class at the end.

Students will pick one plant or animal that is from Myanmar. Then, they will have 1-2 weeks to find information about this plant or animal. It may be difficult for all students to find a lot of information if resources are not available. If there are no books about Myanmar plants and animals, students can also ask members of the local community for help. For example, if a student wants to write about soybean plants, he/she can ask a local soybean farmer about it. If students still have trouble gathering information, they shouldn't worry too much. The point of this activity is more for students to reflect on the plant/animal's relationship with both nature and people.

As students collect information, they should make a poster that they will later present to the class. Each poster needs to have the following:
-The plant or animal's name
-An illustration of the plant or animal (by the student)
-A few facts about it (if possible)

On each poster, the students should also give a short response to these questions:
1) Why is this plant or animal important to the environment?
2) Why is this plant or animal important to people?

Finally, each student will give a short presentation of their poster and findings to the class.

**Visual aids or additional resources:** Poster boards for students to complete their project on

# Economics

#9

**Page # in Student Book:** p7
**Current lesson/section title:** Goods and services
**New activity title:** Scarcity of goods
**Activity category:** Project
**ESD topic covered:** Scarcity of goods

**Activity description**
**Aim:** to build skills in students to develop and use interview questions as a tool for gathering information. Students will also learn about how people experience scarcity of goods.

Explain to students that interviewing is a method we can use to collect information from people. In this activity, students will ask open-ended questions in the interviews. Open-ended questions encourage the interviewee to give full, meaningful answers on their own knowledge or experiences. This is different from yes or no questions that only provide little detail.

Students will select 4-5 people in the community that they want to interview. Outside of class hours they will conduct their interviews and record their notes in a notebook. The teacher should allow them at least 1-2 weeks to finish their interviews.
Students will ask each interviewee the following questions:
1) Have you ever not had enough of a good? (i.e. experienced scarcity of a good)
2) How did this make you feel?
3) What did you do?
4) What are some goods you have to use every day?
5) Is it possible that these goods will ever run out?

After the interviews are complete, students can share their findings, thoughts, and opinions on scarcity of goods in a class discussion. The interview answers do not need to be marked but should just be used to encourage discussion about how people experience scarcity in their community.

**#10**

**Page # in Student Book:** p75, 94, and 104
**Current lesson/section title:** Relates to several sections: agriculture, forestry, mining and energy; this activity can be done after these sections, as a review
**New activity title:** Industries of Myanmar
**Activity category:** Project
**ESD topic covered:** Sustainability of agriculture, forestry, and mining

**Activity description**
**Aim:** to give students time to reflect on how these sectors influence the lives of ordinary people in Myanmar. It is also a chance for students to work with the resources they have (community members, newspaper, radio/television) to get diverse perspectives on issues.

Divide the class into three groups. One group will be responsible for conducting research on agriculture, one for forestry, and one for mining. Explain to students that they will spend 1-2 weeks gathering information on the sector they were assigned. They should record notes/reflections on these main questions:

1) How do people in Myanmar rely on this sector?
2) What is the impact of this sector on the environment?
3) What is the impact of this sector on people's lives? (and their rights)
4) Is this sector sustainable or not? Why?

In order to collect enough information to answer these questions, students can use all resources available to them. This might include listening to the radio, reading local news, or talking to family, friends, and community members. Encourage them to think critically about each sector's impact on people and the environment. Do these sectors bring wealth, improve communities, or develop the country? Do these sectors cause pollution, provide workers with only low salaries, force communities to relocate? Or are the impacts both positive and negative?

At the end of the 1-2 weeks, each group of students will present their findings to the class. If the students would like, they can also create a poster to show their results. If not, it is also fine to share their research...

and thoughts verbally. The presentations do not need to be marked by the teacher for errors. However, she/he can ask questions during the presentation to get students to provide as much information as possible (as well as the students' own opinions and experiences).

# Agriculture

#11

**Page # in Student Book:** p17
**Current lesson/section title:** Seed technology
**New activity title:** Starting a seed bank
**Activity category:** Project and experiential learning activity
**ESD topic covered:** Seed banking

**Activity description**
**Aim:** to learn how to start and maintain a seed bank. Students will reflect on the benefits of seed banking. They will also practice presentation skills.

**Steps 1: Introduction**
Explain to the students that "seed banking is a practice that can help increase food security through maintaining and improving seeds and food quality."

**Step 2: Reading and discussion**
1. Students read "steps to start a seed bank" and discuss the following questions:
-What would be the benefits of seed banking in your community and its food security?
-Do you know if seed banking is practiced in your location? If not, do you think it would be successful, if introduced?

**Step 3: Seed banking**
2. Students form groups and plan to start their seed banking, following the steps in the reading.
3. Follow the steps over several months.
4. Occasionally, students share their progress (seed testing).

**Step 4: Presentation**
5. Students conduct presentations sharing their experiences with seed banking, including the seeds they collected initially, the seeds tested and the seeds selected for storage and sharing.
6. Invite students from other grades to attend the presentations.

**Visual aids or additional resources:** "Steps to starting a seed bank" handout, (095)

# Co-curricular

**#1**

**Activity/event title:** World café
**ESD topic(s) covered:** Will vary
**Time needed:** 1 hour weekly, bi-weekly, or monthly
**Supervision needed:** At least one teacher to supervise sessions
**Materials needed:** None

**Activity/event description**

Students who are interested in discussing global affairs can meet with each other after school hours for 'World Café.' The idea is that students feel as if they are at a café (or local teashop) where they might normally hang out with friends and openly discuss their opinions on different issues. It will allow them a chance to reflect on current issues and events happening beyond their communities.

Ideally, students should meet once a week or every other week. Each time the students meet up, they will discuss a different topic chosen by the teacher. These topics should touch on current affairs that the students already have some knowledge of from their classes. Some ideas for discussion topics include:

-Peace and conflict
-Youth activism
-Human rights
-Globalization
-Migration
-Climate change
-Cultural heritage
-Diversity
-Renewable energy
-Social inequalities
-ASEAN

Once the topic is chosen, students can sit at tables in small groups to share their opinions and ideas about the topic.

**Tips:** To make sure students don't talk with the same group of people the entire time, the teacher could give a 10-minute time limit before students have to move to another table.

**Variations:** The topic for each meet up could also be chosen by students. They can all vote on a topic that is important to them in their lives.

**#2**

**Activity/event title:** Environmental Student Club
**ESD topic(s) covered:** Environmental preservation, climate change, waste management, etc.
**Time needed:** Ongoing - weekly, bi-weekly, or monthly meetings (students decide the frequency); 1-2 hours per meeting
**Supervision needed:** One teacher who can supervise and facilitate each meeting
**Materials needed:** None

**Activity/event description**

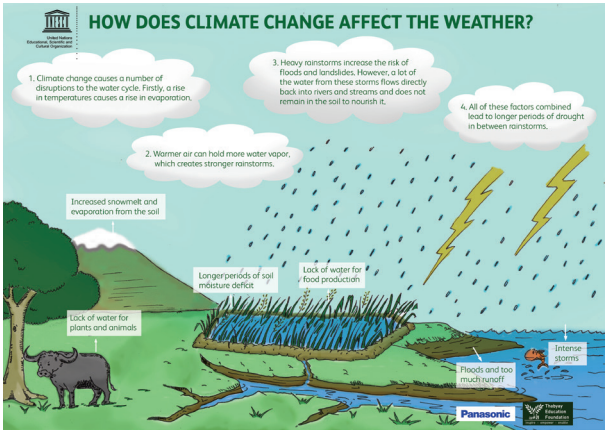
Organized and supervised by a teacher, but run by students, an environmental student club can allow for students to meet weekly, bi-weekly, or monthly (after school hours) to discuss and act on environmental issues in the community. In the first few meetings, the group of students can decide what their objectives are for the club and who can be in charge of what.

Preferably, the students will not only gain knowledge and act on environmental issues, but they will also learn to take responsibility of the club and create practical activities to take part in. The teacher should have minimal involvement in facilitating and supervising club meetings, but encourage students to take the lead. Although it should be up to the students to decide the purpose and activities of the club, below are some ideas to get started thinking about:

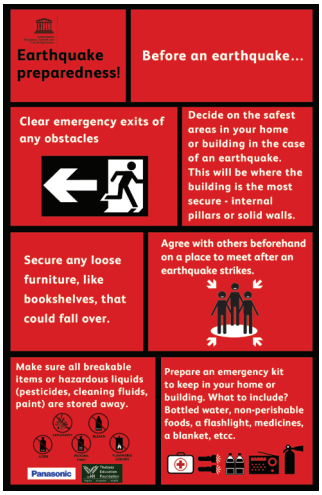
- Monthly trash pick-ups
- Monthly recycling project
- Students organize and contact guest speaker to come give talks at school on environmental issues
- Students organize and go on hikes/picnics outdoors to appreciate nature
- Students fundraise for and host awareness raising events in the school or community
- Students watch environmental films/documentaries (if equipment is available for this)

# Learning Environment

**#1** **Impact of climate change on weather:** an infographic that shows the impact of climate change, particularly on the natural processes of the water cycle.



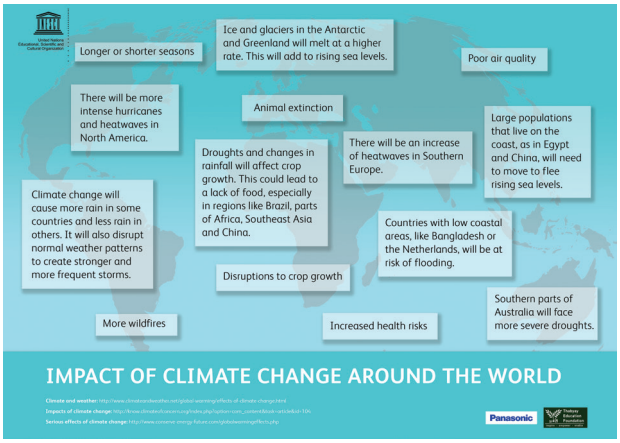

**#2** **Earthquakes:** a poster to inform students on earthquake preparedness. It provides practical information on what to do before, during, or after an earthquake.





**#3**

**Impact of climate change around the world:** an infographic that explains different consequences of climate change in different parts of the world.



# Handouts

## #091 Dangerous weather

**Dhaka, 2017** -- Bangladesh sits on the Bay of Bengal and has a large delta that runs through the country. It has three main rivers but about 700 rivers in total. Each year, Bangladesh has a lot of flooding that affects most of the country. Severe weather is getting worse and worse due to climate change. Because of its rivers and geographical location, Bangladesh will experience many negative impacts from climate change in the future.

In recent years, flooding has forced hundreds of thousands of people to leave their homes. Floods can cause deaths, destroy houses and ruin land used for agriculture. This is a huge problem, being as the majority of people work in farming or fishing. Floods also make it hard to get clean water, food, and medicine. It takes time for people to rebuild their homes and re-start their lives.

These floods keep getting worse over time. But floods are not the only problem. Climate change has also led to rising sea levels and stronger storms. In 2015 there was only one big cyclone. But in 2016, there were four. The strength of storms has also increased recently. In 2007, Cyclone Sidr was so strong that it destroyed tens of thousands of home and affected around 3 million people.

Each time there is a big flood or storm, farmers in the country lose a lot of money. Farmers have to take loans to pay for seeds. Then, when their new crops are destroyed, they are in even more debt than before. Some people who lost their homes or properties in floods move to Dhaka to find new work. But life in the city is also not easy.

It is estimated that 20 million people in Bangladesh may lose their homes by 2050. Climate change will continue to raise temperatures and sea levels as well as cause more storms. Unless we take action quickly on the climate, there may be many “climate change refugees” in the future that are forced to leave the country.

# #092 Earthquake preparedness - dos and don'ts

The timing and strength of earthquakes cannot be predicted. However, we know that earthquakes are likely to occur in Myanmar because the country lies on major fault lines. In the case of a big earthquake, the best way to protect yourself and others is to be prepared and know what actions to take when one occurs. Damage caused by earthquakes is likely to be more extreme in urban areas with close, poorly constructed buildings. But regardless of where you live, there are clear steps you can take to stay safe - sometimes how you react is even a matter of life and death. Read the steps below, written by the United Nations, for simple and practical actions to take in the event of an earthquake.

**Step 1: Preparedness**

- Work out the safest areas at your home or workplace in an earthquake.
- Identify emergency exits and keep them clear of any obstacles.
- Plan together how you will meet up again, if you are all separated.
- Check and repair cracks in walls or gaps in the mortar between the bricks/blocks of your home or office.
- Move chairs and beds clear of heavy hanging items (ceiling fans, pot plants, paintings, mirrors, etc.).
- Brace/secure freestanding bookshelves, cupboards, stoves, gas cylinders and water heater tanks so that they cannot easily topple over.
- Secure cupboard doors with strong latches.
- Store breakables, heavy items and hazardous liquids (pesticides, cleaning fluids, paint, paint thinner) on bottom shelves, or outside the house altogether.
- Store flammable items away from your stove.
- Regularly check the safety of your stove.
- Get a fire extinguisher of appropriate type and capacity.
- Prepare your Survival Kit*.

**Step 2: During the Earthquake**

When an earthquake strikes, for a minute or two the solid earth will move like the deck of a ship. What you do during and immediately after the tremor may significantly improve the likelihood of survival and minimizing injuries. Following some simple dos and don'ts will help you survive!

DO:

- If Indoors - stay there. You will be clear of falling debris outside.
- Keep clear of windows, overhead fittings, bookshelves, and all glass.
- Duck and take cover under (and hold onto) a strong doorframe, bed, table, or bench. Protect your head.
- In high-rise buildings - stay clear of windows and outer walls. Get under a desk near a pillar or solid internal wall (not a partition).
- If outside – look for large open areas. Keep well clear of walls and buildings, especially awnings and parapets, all overhead structures, bridges, power lines, and trees.
- If in a vehicle - stop in a wide open area and stay in it until the shaking stops. Try and obtain further information before continuing and then beware of landslides, fallen power lines, damaged roads, overpasses and bridges.
- Above all, keep calm and ride out the shaking.

DON'T:

- Don't panic. The motion itself is harmless unless it shakes something on top of you. The earth will not open up and swallow you.
- Don't use elevators to escape from the building. Use the stairs and designated emergency exits when instructed to evacuate.

- In crowded areas or shopping malls, don't rush for the doors. Stay inside but move clear of overhead fittings or shelves.
- Don't run through or near buildings. The greatest danger from falling debris is just outside doorways and close to outer walls.

**Step 3: After the Earthquake**

When the motion has stopped you can still be injured by secondary hazards. It is often the case that more injuries result from falling debris and fires after earthquakes. Be wary of all possible hazards whilst tending to any injuries or lending assistance to others!

DO:
Extinguish all fires immediately.
Calmly leave the building – walk do not run.
The building will be littered with dangerous objects – be careful.
Turn off electricity, gas, oil, and water supplies at the mains.
Check for split inflammable liquids, etc., that could cause a fire.
Stay calm and help others if you can – check them for injuries and apply First Aid. Call an ambulance if it is serious.
If you live on the coast and the sea withdraws suddenly, immediately move inland to higher ground – a tsunami may be approaching.
If you smell gas open all windows and doors, report the leakage and do not re-enter the building until you know that it is safe to do so.
Carefully check your utilities (water, sewerage, and electrical mains) for cracks/breaks, but do not turn them on until verified by a technician.
Check for cracks or damage in your roof, walls, chimneys, etc.
Be prepared for aftershocks – stay out of badly damaged buildings.
If you have to camp outside - choose a wide open space.
Conserve your supplies – use water from heater tanks, toilet cisterns and ice cubes, use easily spoiled food first and salvage what you can.

DON'T:
Don't use candles, matches, or other open flames.
Don't touch any exposed wiring – it may be live.
Don't move the seriously injured unless they are in immediate danger.
Don't use your telephone except to report an emergency.
Don't turn power, water, or gas back on, even if apparently undamaged.
Don't waste water or food, as supplies may be interrupted.
Don't go sight-seeing or enter any damaged buildings
Don't drive unless it is essential – keep the roads free for emergency use.

*A Survival Kit could be made of essential goods that you might need in the event of a disaster. You might include some medications, a flashlight and batteries, toiletries, canned food, blankets, etc.

**Source: 'Safety and Security Guidance Note for UN Personnel: Earthquakes.' United Nations.**

# #093 Climate change stories

**Xinlong, Hunan, China**
"About 80% of our crops totally failed this year. It only rained once in mid-August. Because of the rain there are now a few rice sprouts in the field. But because the drought was so severe, these sprouts are worthless.
-Li Baohua, Village Chief

"The Hunan drought this year is a byproduct of global climate change. Climate change makes more extreme weather. This makes it riskier for villagers to earn money from farming.
-Dr. Xie Yijun, Senior Engineer, Hunan Meteorological Research Center

**Dadaab refugee camp, Kenya**
"The long drought took place during the summer. Our livestock died because they didn't have anything to eat. So my children went hungry. My husband is gone. So my girls can only depend on me. And God. There isn't much I can do.
-Fatuma Abdi Tidane, Somali Refugee, Dadaab Kenya

"My neighbors died of starvation. There wasn't anything we could do. We came here because we had no other choice. We had nowhere else to go. "
-Amina Ibrahim Mohamed, Somali refugee, Dadaab Kenya

"Before the famine my life was better. I was a man in my own country. When you have livestock and a farm and it all disappears, it feels like falling off a cliff."
-Abdi Abdullahi Hussein, Somali refugee, dadaab Kenya

**Placencia, Belize**
"These corals are listed as critically endangered and that is literally one step from extinct in the wild. When they say coral bleaching, it means that the coral gets stressed out and the algae either leave or die. They then look bright white instead of their normal reds or browns that you associate with live coral… Climate change is considered to be the biggest threat to coral and coral reefs. This whole community is reliant on a healthy reef ecosystem for the tourism and fishing industries."
-Lisa Carne, Marine Biologist, Placencia, Belize

**Source: www.climaterealityproject.org**

# #094 Biodiversity in Myanmar

**Inside a biodiversity hotspot**
Myanmar is among the most biodiverse countries in Southeast Asia. Almost all of Myanmar is located inside the Indo-Burma Biodiversity Hotspot, one of the world's 34 "richest and most threatened reservoirs of plant and animal life" as identified by Conservation International. Myanmar's terrain ranges from glaciers in the north to coral reefs in the south. It has four main physical areas: mountains in the north, highlands in the east and west, plains in the central area, and fertile delta regions in the south. It is rich in natural resources and home to a wide variety of wildlife.

Here are some reasons why Myanmar is so biodiverse:
>>It has a wide range of elevation - from 0 meters along the coast to 5,881 meters at the top of Hkakabo Razi, the tallest mountain in Myanmar. This wide range of elevation provides many different ecosystems and habitats.
>>Myanmar has almost 2,000 km of coastline and 800 islands.
>>About 45 % of Myanmar's land is forested, and there are a variety of different types of forests providing habitat for many different kinds of plants and animals
>>It has four major river systems

**Biodiversity hotspot:** An area that 1) is home to many different kinds of species and 2) is in danger of being destroyed.

**Threats to biodiversity**
Biodiversity is under serious threat as a result of human activities. The main dangers being population growth and resource consumption, climate change and global warming, habitat conversion and urbanization, invasive alien species, over-exploitation of natural resources and environmental degradation.

In Myanmar, primary threats identified included the commercial and subsistence exploitation and trade of natural resources including wildlife, timber, fish and non-timber forest products. Stakeholders also highlighted the expansion of the human footprint across the country.

In particular human settlements, agriculture and plantations are considered the greatest threats at this time although the potential threat of expanding infrastructure development is expected to become much greater in the near future. More specific threats such as gold and other mineral extraction are more localized and therefore were not reported as frequently. Stakeholders considered the lowest threats to be invasive species and wildlife diseases.

**Conservation projects**
The emergence of threats has triggered a strong response from the local and international community. A network of qualified and motivated organizations has decided to come together to provide effective conservation solutions. These include support to the Myanmar government in drafting effective environmental legislation and enforcing laws and regulations. Currently, work for nature conservation in Myanmar stretches from the far north of the Hkakabo Razi National Park (which is working toward recognition as a UNESCO Natural World Heritage Site), to strengthen the protection of the last stronghold for biodiversity in Myanmar, to the far southern Myeik archipelago where an incredibly rich biodiversity of over 1000 species of animals, plants and marine life survive.
Likewise, work in the western Rakhine coasts for a more sustainable fishing and aquaculture and the eastern turmoiled borders with China and Thailand, where logging and wildlife trade pose a serious threat to the conservation of ecosystems even hundreds of kilometers away. The commitment for nature conservation is growing fast in Myanmar, thanks to the initiatives of a thriving civil society and the technical support from international NGOs.

**Source: myanmarbiodiversity.org**

# #095 Steps to starting a seed bank

Seed banks can be done individually, in groups or in a class/community.

**Step 1: Get started**
- Form your group of participants
- Decide what seed you want to plant (vegetables, fruits, herbs, flowers, etc.)
- Brainstorm on where you can find those seeds (from farmers, shops, friends, etc.)
- Divide tasks for collecting the seeds

**Step 2: Choosing the right seeds**
- Before collecting the seeds, make sure that you are collecting seeds that are of good quality and appropriate to your environment. You might know the origin of the seed and whether they are organic or not.
- Ask this information from people who are providing the seeds.
- Collect seeds at the end of each growing season.

**Step 3: Testing the seed**
- Testing seeds will demonstrate whether your collected seeds are of good quality and appropriate to your environment.
- Use just a few seeds for testing. If after testing, you are unclear if the seeds are good or not, you will still have some seeds for testing. If the seeds are good, you may want to keep as many of them as possible.
- When planting the seeds, make sure you have provided all the necessary requirements- good soil, enough sunlight and aeration and sufficient, clean water.
- Monitor plant growth.
- Document results from your selected seed.

**Step 4: Storing the seed**
- Store the seeds in a container to prevent humidity. Keep the containers stored at a cool temperature.
- Keep the containers far from the reach of animals.

**Step 5: Sharing seeds and information**
- Share your goods and selected seeds with people who are also in need of seed banking and with farmers in your location.
- You can also organize seed swaps.
- Share information about the best quality and appropriate seeds, based on your testing.