Tell your students that they are going to be learning about the world’s forests. If possible, give each student a copy of the journal. Have them look at the cover and read the 5 topics the journal addresses. Have them examine the cover photos associated with each topic. In a rapid fire format, have students share what they currently know about each of these topics. If possible, write a list of what students currently know about each of these 5 topics on the blackboard or whiteboard. Save this list for later. Note that the first occurrence of glossary words is given in bold. Glossary words are defined on page 45.

**WELCOME TO THE WORLD’S FORESTS NATURAL INQUIRER!**

Have your students read the first paragraph. When students read this journal, they may read silently or you may select students to read paragraphs out loud. Next, have students “do the math” and give the answer. (In 2011, the UN was 66 years old.) Students should read the next paragraph. Hold a discussion about the meaning of the word “improve.” What does it mean to them? What might improvement mean to people in a country that is in transition and modernization?

Students should read the next paragraph. Ask them to identify the main idea of the paragraph.

The next paragraph begins with “Trees are often planted…” Have students read this paragraph and follow up with a class discussion. Questions to get you started: “How is your life improved by forests?” “What do you think is the topic of this journal?”

**LOGO SIDEBAR:**

Have students read the International Year of Forests sidebar and compare the text with the logo. How have people and forest benefits been shown by the logo? What does the logo say to them?

Examine Figure 1. Has anyone seen a forest planted specifically to produce products? Have them tell about it. If not, what do they imagine such a forest might look like?

Have students read the next 2 paragraphs in preparation for examining Figure 2. Have them locate their region and subregion.

Read the next paragraph, beginning with “Every 5 years…” At the end of the paragraph in rapid fire format, have students say what they think are benefits provided by the world’s forests. Write this list on the blackboard or whiteboard and save it.

Read the next paragraph and then, using Figure 2, have students find the region where they live.
Have students read the paragraph. Compare this list of benefits given in this paragraph with the student-generated list created above. Hold a class discussion about whether students were surprised at some of the benefits provided by forests. Can they think of any additional benefits?

Look at Figure 3. What are some of the forest benefits illustrated by this photograph?

This section provides the background for how FAO collected information about the world’s forests. Begin by asking students if they can imagine how FAO collected information about forests all over the world. After students provide some ideas, have them read the first 2 paragraphs. Hold a discussion about the first and second paragraphs, then read and discuss the third paragraph. Check student understanding of the term, “unit of measurement.”

After students read paragraph 4, have them read the statement from Mr Souleymane GUEYE. By asking questions, make sure that students understand that each National Correspondent was responsible for working with others in his or her country to collect and report information to FAO. Each correspondent also worked with other National Correspondents to share information about their country.

Discuss what Mr GUEYE might have meant when he said, “...the world is a village and we have all to act in the same direction for the safety and sustainability of mankind.” Ask students to discuss other thoughts they have in about Mr GUEYE’s statement.

You may then direct their attention back to the purpose of the data collection and ask the reflection questions.

As an educator, read this section in advance. You may paraphrase the information in this section without having students read each paragraph. It is most important for students to understand that each Inquiry builds on the previous one. It is important, therefore, to present them in order.

THE SITUATION:
Have students read the first paragraph. Have students examine Figure 5 and identify their country’s ecozone type. Have them identify another area of the world with a similar ecozone. Ask them if they think the two areas look similar.
Why or why not? They should guess that the areas look somewhat similar in vegetation cover if they are in similar ecozones, because an ecozone describes an area’s land cover.

In the next number of paragraphs, students will explore Earth’s climate zones and associated vegetation cover. Have students read a paragraph and then examine the associated figure, through Figure 10. Make sure that students understand what each figure is showing about Earth and its relationship to a particular climate zone.

Now look at Figure 11. Have students do a comparison of these photographs. Students may work in pairs or individually. Have students make a list of the similarities and differences between any two of the photographs. If students can find the approximate country location on a world map, have them identify the photograph’s ecozone by referencing Figure 5.

Using this information, have students describe what the photographs reveal about the vegetation in different ecozones. Students can summarize their results for the Reflection Question.

Read the next two paragraphs, answering the question in the first paragraph before moving to the second. Look at Table 1. Make sure that students understand the 3 categories of forests studied by FAO before moving to the next section.

**WHAT FAO DISCOVERED:**

Have students read the first paragraph and examine Figures 12-14. If desired, students can calculate the area in acres by using the following formula:

\[ \text{Acres} = \text{hectares} \times 2.47 \]

If you are in the United States of America, remind students that soccer is called football across the rest of the world. Have them note some characteristics of the Siberian forest in Figure 15.

Read the next paragraph. Ask students to define a primary forest. Look at Figure 16. Have them compare the photographs. What are the similarities and differences? Ask them to explain why they think the differences exist.

Ask students to calculate the percentage of primary forest covering Earth’s entire surface. (Multiply 36 percent by 31 percent.) Do they think this is a lot of forest area? Why or why not? (Students will have individual answers to this question. The important thing is for them to provide a reason for their answer.)

Now have students go back and examine Figure 12. Ask them to identify where most of the world’s forests are located on Earth.

Have students read the next paragraph (beginning with “The number of hectares of planted forests…”). Have them examine Figure 16. Ask them to summarize what the findings in this paragraph and figure tell us about the world’s forests.

Have students read the next paragraph about deforestation and examine Figure 17. Have them explain the cause of deforestation in this photo.

Have students read the next paragraph (beginning with “To help understand…”). Have students study Figure 18. This shows the world’s countries and their real areas. Have them identify their own country and any other countries. The following maps, called cartograms, show the countries distorted in size according to a statistic about forest gain or loss (Figures 19-21).

Now, students can work in small groups, in
pairs, or individually. Have them examine each cartogram and study their own country in relation to other countries. After they have examined all of the cartograms, hold a discussion based on the reflection question that begins with, “Look at Figures 19-21…” Next, have students discuss their answers to the remaining reflection questions.

Optional: Do the FACTivity.

**LESSON PLAN FOR INQUIRY 2**

THE SITUATION:

Have students read the first paragraph. Before going to paragraph 2, make sure that students understand what biodiversity is.

Have students read paragraph 2. Hold a discussion about the various levels of biodiversity. (Biodiversity is literally a diversity of life.) Note that an area can be biologically diverse at the genetic level up to the level of plant and animal communities.

Have students read the “Reflection Section.” Have students state in their own words the three things FAO measured to better understand biodiversity in the world’s forests. Then, hold a class discussion based on the reflection questions.

WHAT FAO DISCOVERED:

Have students read the first paragraph and examine Figure 23. Have students examine their own country. Hold a class discussion about whether students have visited any primary forests. If they have, have them share their experience with the class. What did they observe about these forests? What did they like or dislike? Does their country have any birds that look similar to the bird in Figure 22? What do they think the bird in the figure eats? (The bird eats nectar from tropical flowers. Its beak is uniquely adapted for this purpose.)

Genetic Diversity Sidebar: Have students read the sidebar. Hold a discussion about diversity and adaptation. Ask students to consider what would happen if all humans had the same genetic makeup. Ask them to consider if that would be a good thing for humans. Have them state their reasons for their answers.

Have students read the next paragraph and examine Table 2. What do they think stands out in the percent of forest area column? (Europe has a low percentage of area set aside for biodiversity compared with the rest of the world.)

Have students examine Figures 24 and 25. Ask students what they can learn from those figures about the possible future of biodiversity in their own country’s and region’s forests.

Have students read the next paragraph. What do they think is the most important sentence in that paragraph and why? (Students will have individual answers to this question. Their answers can be used to stimulate a class discussion about protected areas.)

Have students examine Figure 26. Have them discuss how their region compares with other regions in the percentage of protected forest areas.

Have students “do the math.” Ask them whether this is a good or a bad sign for the future of forests.
Have students read the next paragraph (beginning with “Biodiversity can be threatened...”). First, have students compare the number of hectares damaged worldwide with the number damaged in North America. About what percentage of insect damage has occurred in North America? Hold a discussion about the increase in damage from invasive insects. There are two main reasons given for the increase in insect damage. Ask students to identify those two reasons.

Have students examine Figure 27. What do they notice about insect damage worldwide and in their own country? What reactions do they have to the amount of damage shown in Figure 28?

Have students read the next paragraph. Ask students what is similar about the quality of the information between reports of fire damage and insect damage? (Not many countries kept records of this kind of damage.)

Have students examine Figures 28 and 30. Do they think the forest in Figure 30 has a high level of biodiversity? Why or why not?

Have students read the sidebar. Hold a discussion about whether or not students were aware that fire can be a good thing for some forests. Now have students reflect on why FAO used the occurrence of fire as an indication that a forest might not have biodiversity. (FAO had to use just a few measures to determine whether a forest had biodiversity. Although some forests need occasional fires, if a forest is destroyed by a fire, it mostly likely no longer has biodiversity.)

Hold a class discussion based on the two reflection questions.

Optional: Do the FACTivity.

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**LESSON PLAN FOR INQUIRY 3**

**THE SITUATION:**

Have students read the first paragraph. Ask students to recall that they had earlier created a list of forest benefits. Bring this student list to their attention and see if they can add any new benefits to the list.

Have students read the next paragraph. On the student-generated list of benefits, have the class say which they believe are productive benefits. Do this for each of the next three paragraphs, identifying which benefits from the list are protective, social, and economic. Some of the benefits might fit into more than 1 category. Have students read the next paragraph before considering the reflection questions.

**WHAT FAO DISCOVERED:**

Have students read the first paragraph. Discuss what might be meant by the term “multiple use.” (Multiple use means that forests are used for more than one purpose. For example, forests might provide products and social benefits at the same time.)

Have students examine Table 3. Hold a class discussion about why European forests might have such a high percentage of area in productive forests. Now have students examine Figure 31.

Ask students to share their experience of a productive forest. If none of your students have an experience with a productive forest, ask them to imagine what one might look like. You may, if you have time, give students the opportunity to
draw their vision of a productive forest.

Have students read the next paragraph and examine Figure 32. Hold a class discussion about wood products. Ask students if they can identify any wood products around them. Also discuss the idea of non-wood forest products. From Figure 32, have students explain why they think these countries have the largest volume of wood removed by percentage. These include food, botanicals for medicines, grasses for weaving, and other non-wood products.

Have students read the first paragraph under “Protective Forest Benefits.” Discuss soil and water conservation. In a class discussion, have students explore why soil and water conservation provide overall protection for forests. Have students compare regions in Figure 34. What do they think stands out about soil and water conservation by region? Have students examine Figure 33. How do they think forests help to conserve soil and water?

Have students read the paragraph about desertification. Have them compare Table 4 with Figure 35. Do students know the location of the countries listed in Table 4? If not, have them use an atlas, encyclopedias, or the Internet to identify the location of each country. Then they can compare each country’s location with the map in Figure 35.

Students should now read the first paragraph under “Social and Economic Benefits.” Hold a class discussion about what social benefits are. Have them consider whether people in their country enjoy social benefits from forests. Hold a class discussion about these benefits.

Have students compare and contrast Figure 36 with Figure 37. Have students identify and discuss the differences in the social benefit being described by each photograph.

Students should read the next paragraph, beginning with “FAO found that some countries…” Have students consider the idea of “multiple use.” Have them reflect on whether classifying forests as multiple use forests causes some of the particular forest benefits to be forgotten. Also have them consider whether managing forests for multiple uses is a good idea. Have them identify advantages and disadvantages of managing forests for multiple uses.

Have students examine Table 5. Have them identify what stands out about the information given in Table 5. Discuss whether they think Oceania’s forests offer any social benefits and why.

Now students will read about economic benefits. Have students read the first 2 paragraphs. Hold a class discussion about whether students agree with FAO that non-wood forest products have a much higher value than was discovered in this research. Have students give reasons for their position.

Have students read the next paragraph and examine Figure 38. As a class, identify different kinds of jobs related to the forest sector. Remind students that many of these jobs might be done in an office. If any students have met an individual who works in the forest sector, have them share what they know about this person and their job.

Now have students “do the math.” Hold a class discussion about whether that seems like a large or a small percentage. Challenge students to think of all of the different kinds of jobs people can have as they consider the percentage of people working in the forest sector. Examples are education, healthcare, business, retail,
construction, manufacturing, (non-forest) agriculture, and travel.

Now have students consider the reflection section. Hold a class discussion to explore each of these questions. Read the sidebar. What social benefit is highlighted in the paragraph? What social benefits are shown in Figure 39? Optional: Do the FACTivity.

**LESSON PLAN FOR INQUIRY 4**

**THE SITUATION:**
Have students read the first paragraph. Hold a class discussion about whether students agree that the climate has been changing more than one would have expected from normal cycles. Ask students to point to any evidence that they have. Explore whether the evidence can be trusted and why.

Have students read the next paragraph. Before moving on, test student knowledge to make sure that they understand what the greenhouse effect is and that it is vital to regulating temperatures on Earth so that life can exist on Earth.

Have students read the next paragraph and examine Figure 40. Hold a class discussion about the rising level of greenhouse gases in the atmosphere. Have students explain what they understand from examining Figure 40. Have students explore whether this figure supports the position that greenhouse gases are rising more than should be expected from normal cycles.

Have students read the next paragraph, beginning with, “Carbon dioxide is one of the...” Check to make sure that students understand (1) that atmospheric carbon dioxide is necessary for life to exist on Earth and (2) that it is only when too much carbon dioxide gets into the atmosphere that plants and animals are affected.

Have students read the next paragraph and examine Figures 41 and 42. Check to make sure that they understand the carbon cycle and that trees (and therefore forests) play a role in the carbon cycle by absorbing and holding carbon on Earth.

Have students read the next 2 paragraphs. Ask students if they think that carbon is present in high amounts in trees. (Students should conclude that if half of a tree’s dry weight is carbon, that carbon is present in high amounts in trees.)

Have students do the reflection questions. Hold a class discussion about each of these questions.

**WHAT FAO DISCOVERED:**
Have students read the first paragraph and examine Figures 43 and 44. Ask students if they have seen litter and deadwood in forests, either in person or in photographs. If they have, have them compare and contrast the litter and deadwood they have seen with Figures 43 and 44.

Have students read the next short paragraph and examine Figure 45 and 47. Ask students to compare and contrast the pie charts. Ask which region’s forests hold the most carbon. Why do they think this is so?

Have students “Do the math.” Ask them to give their reactions to the weight of the carbon in all of the world’s forests.
Have students read the next paragraph, beginning with, “The amount of carbon in the forests’ litter…” Ask students if they are surprised at the comparison between the amount of carbon in litter and deadwood, compared with the amount of litter in the soil. Ask students to explain their reaction.

Have students read the next sentence and examine Figure 48. Ask students what they notice about this bar chart. (Students should notice that the amount of carbon being held has gone down in all but 2 regions.)

Have students read the next sentence and examine Table 6 on page 33. Ask them what they notice about the amount of carbon being held by the world’s forests per hectare. Then have them read the next short paragraph.

Do the reflection question on page 35 and hold a class discussion about the role of forests in reducing the impact of climate change.

Have students read the paragraph about the IPCC and examine Figure 49. Ask students why the loss of forests may be increasing carbon emissions into the atmosphere.

**ACTION ON CLIMATE CHANGE**

Students should read the paragraphs about the United Nations work with REDD and REDD+, and then read the action items associated with REDD+. Ask students how they can tell that the first 2 action items are a part of REDD.

Read the next paragraph. Discuss the use of money to encourage action to address climate change. Do students agree that this is a good idea? What are the advantages and disadvantages of using money to encourage action?

Now have students read the paragraph about carbon sequestration. Make sure that students understand how carbon sequestration compares with other forest benefits. Check their knowledge concerning the value of carbon sequestration.

Have students read the next paragraph, beginning with, “The United Nations also recognized…” Hold a class discussion about how forest management can help maintain the health and wellbeing of the world’s citizens.

Do the reflection questions and hold class discussions about each question.

Optional: Do the FACTivity.

**LESSON PLAN FOR INQUIRY 5**

**THE SITUATION:**
The first 2 paragraph introduces the idea of criteria and indicators for healthy and sustainable forest management, as defined by FAO. Have your students read this paragraphs and check to make sure that they understand what the words “criteria” and “indicators” mean. Have your students examine Table 7.

Have them take time to explore this figure. Check to make sure that they understand each set of indicators, when taken together, provide evidence regarding the criterion to which the set of indicators is associated.

Before doing the math, have students examine Figure 50 and check their understanding of cubic meters of wood.

Then “do the math.” This math problem relates to the second indicator of the first criterion (cubic meters of wood). As an extension, get a cylinder (such as a pencil or a can), measure
its diameter and length, and calculate its approximate volume.

Compare the cylinder with the photo of tree boles. What is one difference between a tree bole and the cylinder?

If students need a hint, show them a cup that has a smaller diameter at its base than at its top. Ask students to guess why the calculation of a tree bole’s volume is not exact.

Do the reflection questions. Hold a class discussion about each question.

**WHAT FAO DISCOVERED:**
Have students read the first paragraph. In small groups, have them examine Tables 8 and 9. Their examination of Table 9 should focus on comparing their subregion with their region; and their region with the rest of the world.

What can students say about sustainable forest management worldwide and in their subregion and region? Ask them how their subregion compares with the rest of the world. If students had the opportunity to speak with forest managers in their own subregion or country, what would they recommend?

As an extension, have students write letters to their country’s forestry division with recommendations for forest management, based on FAO’s study about the world’s forests. Have students read the last paragraph and then do the reflection questions. Hold a class discussion about these questions.

Challenge students to compare the positive signs with some of the less positive findings presented in this journal. Overall, what do they see in the future of the world’s forests?

Optional: Do the FACTivity.

Summary Exercise:
Have students divide into 5 small groups. Each group will take one of the Inquiries and create a poster to summarize the information in their Inquiry. Display the posters in the school.

As an alternative, have each group create a 5-10 minute verbal summary of their Inquiry. Present these summaries in order, for a total of 25-50 minutes, to other students (and parents). Invite local forestry professionals if possible.

**WORLD’S FORESTS PHOTO CHALLENGE!**

These are new photos that the students have not yet seen. They should match each photo with its caption by numbering the photos according to the correct caption. Hold a class discussion about the photos and explanations.

**FIGURE IT OUT!**

Students should examine each of the images on this page and in small groups or as a class, explain the meaning of the image based on what they have learned in the Inquiries.