GOING GREEN
EDUCATION FOR SUSTAINABILITY

►*Teacher's Handbook and Materials*
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Going Green is part of the Teach About US initiative, proud recipient of the Hans-Eberhard Piepho prize and Laureate of the 2015 Deutschland – Land der Ideen award.

Hans-Eberhard-Piepho-Preis für Ideen im kommunikativen Fremdsprachen-unterricht

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LEUPHANA
UNIVERSITÄT LÜNEBURG

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LIFE Bildung Umwelt Chancengleichheit

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Dear Teacher,

Welcome to the Going Green Project! 'Going Green' is an intercultural blended-learning project and the product of a partnership between the U.S. Embassy in Berlin, the University of Lüneburg, and LIFE e.V. In a pilot project in 2014, German and U.S. students explored approaches to sustainable development collaboratively through an e-learning platform (Moodle). In September 2015, "Going Green" became part of a larger teaching platform *Teach about US* with updated content. In Going Green, schools throughout the country navigate through web 2.0 applications and social media, and exchange their findings. They will publish their local initiatives online and contribute them to concluding regional student conferences in the spring of every school year.

Teaching Principles

In this school project, we offer a selection of up-to-date authentic teaching materials on U.S.-American culture and the issue of sustainable development in the 21st century. The project has an open design allowing for different degrees of implementation in your classroom in accordance with local state and school curricula, time budgets, teaching and learning practices, and technological infrastructures. Yet, we do emphasize several core principles of teaching and learning in this project. Tasks-cycles and materials in the Going Green project were designed following a task-based, integrated-skills approach to foreign language instruction, they provide a guided introduction of computer-assisted language learning to teachers with little e-learning experience. They also open an exciting avenue to fostering intercultural communicative competence.

Task-based language learning & teaching

All Going Green materials are organized in thematic task-cycles that logically build upon one another, but can also be used individually. These task-cycles typically involve a chain of activities that (a) conclude with a clearly defined product, (b) focus on the meaning of communication instead of isolated linguistic and grammatical structures, and (c) reflect patterns of real-world communication. Yet, there is also a place for explicit study of language: Throughout the curriculum, you or your students can select language exercises according to your specific goals and needs.

Computer-assisted language learning

Whether you complete the Going Green project in a blended learning format with your students enrolled on the *Teach about US* learning platform and include activities such as peer editing, forum discussions, or blog writing, or whether you teach Going Green in a more traditional setting with this paper-and-pencil handbook, the Going Green curriculum introduces the following competencies: reading in the web, evaluating information resources critically, participating in digital discourses in forums and social media, and presenting oneself in the digital arena through user videos to your classroom. We understand that even the most fascinating technological advances can be of little use in the classroom if not supported by a critical and robust pedagogy to support its implementation. Going Green materials have been developed in line with current research on school-based blended learning research and in close exchange with practitioner teachers.

Intercultural communicative competence

The thematic focus of this teaching unit is on U.S.-American culture and approaches to sustainable development in a transatlantic perspective. Through the critical review of authentic texts and local case studies, students are encouraged to perform a change of (cultural) perspectives. While students

might hold—and openly exhibit—unreflected stereotypical images of their transatlantic partners (and even their own native culture), authentic texts and local case studies can stimulate learners to develop what has been termed an 'insider's perspective' into the target culture in foreign language research. When German learners, for example, explore that in the U.S. many political and civic initiatives to protect the environment and combat climate change originate on the local level of individual communities and NGOs – and not necessarily on the federal government level -, this insight can change the way they perceive this target culture – and, in turn, their own. In addition, Going Green can serve as an avenue to strengthen or initiate transatlantic partnerships between schools or courses. Does your school participate in a German-American exchange program? Then why don't you participate with your exchange partner as a team.

Going Green and German State Curricula for EFL

Going Green is designed for a target group of intermediate-advanced English learners in grades 10 and above of the German Gymnasium. Yet, the pilot project conducted in 2014 proved that the curriculum also works with younger learners or vocational and other secondary schools. A quick look at the 16 state curricula will show that the topics of sustainability/environmentalism and the cultural framework of the U.S. are represented in all of these curricula. The overview below lists different points of departure for integrating Going Green teaching content in regular classes.

It follows that the suggested classroom work should cover curriculum contents and can, if necessary, be easily extended or adjusted. Think of it as an invitation to incorporate new teaching and learning resources into your classes as well as a strong connection to learning with digital media and authentic resources.

Two more aspects are of interest here:

Although aiming at older high school students, many Going Green contents are also suitable for younger learners. Teachers can make adjustments to tasks and materials as well as adapt the level of task support on the *Teach about US* platform or in their classrooms. The proposed classroom work is designed in a way that also allows for selective classroom use if available time budgets are restricted. For example political cartoons that do not necessarily require high proficiency in English, can be easily adjusted according to specific learner needs and abilities.

We also (and especially) invite teachers and students of English and CLIL (content and language integrated learning, or *bilinguales Sachfachlernen*) courses in Germany as well as interested courses in the U.S. to participate in the project and the student competition for sustainable action plans. The thematic framework of environmentalism is highly relevant to other school subjects, such as Geography, Biology, or Social Science, and Going Green allows for an interdisciplinary approach.

Contact the *Teach about US* team for further suggestions regarding these aspects.

Bundesland	**T** = Themenbereich/-schwerpunkt; **Q** = Thema in der Qualifikationsphase; **Zahl** = Angabe des Halbjahres (sofern vorgegeben)
Baden–Württemberg	**T**: Chancen & Probleme soz. Wandels & der Globalisierung; **T**: zeitgenössisches öffentliches Leben & politische Kultur d. USA; u.a.m.
Bayern	**T**: Umwelt, Natur, Wissenschaft und Technik
Berlin	**Q3**: Eine Welt—Globale Fragen; **Q4**: Herausforderung der Gegenwart
Brandenburg	**Q3**: Eine Welt—Globale Fragen; **Q4**: Herausforderung der Gegenwart
Bremen	**T1**: Universelle Themen der Menschen; **T2**: Aktuelle Lebenswirklichkeit i. d. anglophon. Welt
Hamburg	**T2**: Politische & soziale Themen der Gegenwart; **T2**: Universelle Themen der Menschheit
Hessen	**Q1**: The Challenge of Individualism (USA, Science & Technology); **Q4**: The Global Challenge
Meckl.-Vorp.	**Q3**: Eine Welt—Globale Fragen; **Q4**: Herausforderung der Gegenwart
Niedersachsen	**T1**: Beliefs, values & norms in Western societies: **T5**: Globalisation; **T6**: Science & technology
NRW	**T1**: Erschließung von Alltagswirklichkeiten; **T4**: Themen & Inhalte von globaler Bedeutung
Rheinl.-Pfalz	**T4**: Naturwissenschaften—Technologie—Ökologie,
Saarland	**Q1**: Aspects of society; **Q2**: Science, technology, ecology
Sachsen	**T**: „sich positionieren zu Contemporary Issues in Politics and Society: science and technology, environment"; u.a.m.
Sachsen-Anh.	**T**: The American Way of Life; **T**: Challenges of Our Time;
Schlesw.-Hol.	**T4**: Erhalt der natürlichen Lebensgrundlage; **T5**: Strukturwandel
Thüringen	**T2**: People in Society; **T3**: Politics & Economy; **T4**: Environment, Science, Technology

The Going Green Curriculum

The suggested classroom work for Going Green can be divided into three steps: an introduction to the topic of sustainability, an exploration of four exemplary challenges, and the collaborative production of a joint product (the sustainability action plan), which may include participation in the Going Green student competition for sustainable projects. The overview below shows the project structure of Going Green:

These three sections are, in short:

1   What is sustainability?

Section 1 serves as a general introduction to the Going Green project and to the topic of sustainability. This is the general structure of this section:

— WARM-UP: Attitudes and stereotypes
— RESEARCH: The Ecological Footprint
— CULTURE: Local, state, and federal perspectives on sustainability

2   Group work // Exploring the challenges

Section 2 introduces students to four interesting subtopics of sustainability:

— Plastic//Recycle
— City//Transport
— Food//Sustainable
— Fashion//Toxic
— Youth Participation // Sustainability

Students can choose which of these modules they would like to explore. The modules all follow the same structure including a warm-up phase, a research task, a case study, and a so-called eco-challenge. Some modules contain optional activities as well. In addition, there is a selection of language tasks and exercises for each of these modules.

3   Your sustainable action plan

Section 3 contains the task description for your course's sustainability action plan. Your students should agree on one topic for the final project – their sustainability action plan. The instructions in the *TASK: Sustainability project* provide a general structure for your students' work. It leaves enough room for topic choice, use of media, context of the sustainability action plan, and other aspects.

| Concept (4-6 lessons) | INTRODUCTION to the project and working with Moodle; preconceptions and stereotypes |

| Discourse (6-8 lessons) | Plastic // Recycle | City // Transport | Food // Local | Fashion // Toxic | Youth // Participation | Environmental // Justice | Green // Energy |

| | Eco-Challenge | Eco-Challenge | Eco-Challenge | Eco-Challenge | Eco-Challenge | Eco-Challenge | Eco-Challenge |

| Action (6-8 lessons) | REFLECTION share and present Eco-Challenges, discuss locally identifiable challenges, discuss action plans |

| | CLASS PROJECT AND COMPETITION decide on a joint class project in terms of topic, responsibilities, organization, outcome finalize class project, prepare presentation, participate in student competition |

How to Use this Teacher's Handbook

This teacher's handbook is a condensed version of the teaching materials and task-cycles to be found on the *Teach about US* platform at http://teachaboutus.org. The following pages contain the core activities for all three phases of the Going Green project in the form of print-ready worksheets. You can use these activities in your classrooms entirely or make your own selection and cover the Going Green curriculum in a more cursory fashion. While the activities outlined in the worksheets do not require that your students enroll on the platform individually or that you complete all activities in your school's computer lab, they do focus on using different sorts of digital texts and applications. This means that activities like participating to forum discussions, contributing to an online course glossary or collaborating in a course wiki have been intentionally excluded from the worksheets. But your students will have to complete a number of activities using a computer and going online. These online phases are always linked back to face-to-face classroom activity so as to allow for an effective integration into traditional teaching contexts.

Except for these introductory remarks, the teacher's handbook comes without further instructions for teachers like lesson plans or extensive teaching rationales. The preview Going Green e-classroom, however, includes detailed 'Teaching Notes' at the beginning of each curriculum section. In addition to information and useful tips for integrating the suggested classroom work into your daily practice, they also offer selected background information complementing the tasks and materials.

The following overview introduces the suggested classroom work in brief.

YOUR ATTITUDES TOWARDS SUSTAINABILITY

Everybody has stereotypes and underlying assumptions concerning the topic of sustainability, but also towards the question how our countries—the U.S. and Germany—go about addressing environmental challenges.

The worksheet should elicit and help students become aware of these stereotypes as well as activate prior knowledge and assumptions. We suggest that your students fill out the questionnaire and then discuss the outcomes in class together. If you have enough time, why don't you ask your students to summarize your course's results on a poster? Your students could review these and identify extreme opposites or general trends and formulate study questions to be answered in the upcoming lessons. At the end of the project, have your students revisit these answers and reflect upon their changed views and insights.

THE ECOLOGICAL FOOTPRINT

At this stage, students will learn what the topic of sustainable development entails. An important part of this goal is to define the core terminology and

concepts necessary to develop a basic understanding of the issue. The worksheet introduces students to the concept of the ecological footprint and the most important related terms and concepts (task 1); it then asks students to examine their lifestyle's impact on the environment by calculating their own ecological footprints and engaging in a critical discussion of their results in class (tasks 2 & 3).

The materials used here include audiovisual texts that can be viewed individually or in class. The ecological footprint questionnaire (task 2) requires web-access. Additional resources can be accessed by students at their own will.

▤ WHAT IS SUSTAINABILITY?

This worksheet focuses on the underlying concept of sustainability. In order to evaluate different approaches to sustainability, students should construct a conceptual understanding of this topic. Starting from their own views and assumptions (task 1), learners review audiovisual texts and deduce definitions of sustainability and related terms. The suggested resources exemplify that sustainability has different connotations in everyday language; it can be understood from the perspective of different agents (for example, the local farmer vs. a fisherman vs. business owners, and so on); and it should satisfy different needs according to the so-called 'three-pillar model'. This model posits that sustainable development needs to consider and equally satisfy ecological, economic, and social perspectives towards a given challenge. On a more general plane, the notion that definitions are not necessarily clear-cut or set in stone and, as in the case of sustainability, socioculturally dependent, is an important one for learners to be deduced here.

GROUP WORK // EXPLORING THE CHALLENGES

As outlined above, students can now choose to focus on one of four study modules addressing the topics of plastic pollution, urban development, local food production, sustainable fashion, environmental justice, and green energy or youth participation in the context of sustainability. These modules follow the same parallel structure (see below) and can be explored in small groups. Alternatively, your students can decide on one single module as a course. The following descriptions address the individual task types of these modules instead of presenting each module individually.

▤ RESEARCH TASK

Students explore an exemplary issue or challenge connected to the module topic in this research task (for example, the issue of marine plastic pollution and the Great Pacific Garbage Patch). The information is presented mainly in the form of videos, infographics, texts, and further web-based media.

The research task description directs students through this variety of materials so that they can develop a concise understanding of the challenge instead of browsing the web without any clear direction or goal.

As an outcome to this activity, students document their findings (for themselves as well as for their classmates) in the form of a collage or poster, which they should present briefly in an oral presentation in class.

▤ CASE STUDY TASK

The case study task encourages students to explore one local manifestation of the environmental issue of the module. The case studies combine a critical look at the environmental challenge (for example, the plastic pollution and the Great Pacific Garbage Patch), its impact on local U.S. communities (for example, the West coast of the U.S.), and thereby a focus on American culture, as well as possible ways of addressing it politically in the civil society (for example, through public awareness campaigns by NGOs and petitions to ban single use plastic bans).

As an outcome to this task, students should discuss their findings in their small group using the guiding questions in the task instructions and prepare a report for their classmates (either orally or in the form of a poster).

▤ ECO-CHALLENGE

Students now progress from the general module topic and its representation in the U.S. to their own local environment. It is, for example, easy to view a challenge like marine plastic pollution solely as an issue for the U.S., while neglecting its relevance and immediacy in the students' environment. Yet, it is precisely this interconnectedness of environmental challenges and the fact that the issues presented in Going Green easily transcend national borders which can fuel student engagement in environmental activism. The eco-challenge bridges both cultures in a research- and process-oriented manner. Students are asked to analyze how the module topic affects their local community (that is, their town/city, neighborhood, family, friends, school, etc.). Potential questions might include,

— *How much food waste is regularly produced at our school cafeteria?*
— *Which civic groups are involved with environmental questions and policies in our community?*
— *How are our foods grown or our clothes produced, how far do they travel until being sold in stores, and under what ethical circumstances are they produced?*
— *How bike-friendly is our community and what needs to happen so that more students or commuters use their bikes for transportation?*

This can be done, for example, by performing an experiment (adopting a vegetarian diet for two weeks), conducting interviews (with local businesses, the mayor, NGOs, fellow students), administering a questionnaire survey (on the street, at school), taking photos or recording a video (of a public awareness campaign, plastic pollution on the school grounds). Students should document their eco-challenge and present their product in class.

📑 YOUR SUSTAINABILITY ACTION PLAN

In the target task of this unit, your students should agree on one topic for the final project—their 'sustainability action plan'. The task instruction provide a general structure for your students' work. It leaves enough room for topic choice, use of media, context of the sustainability action plan, and other aspects related to their action plan and its presentation.

The core idea here is that learners will take up one aspect they have encountered during the eco-challenges (or even a new one), identify the underlying problem, develop ideas for a solution as well as indicators for evaluating their success and collaboratively plan their project. The final step will be to plan or pilot the action plan's implementation in their environment (course, school, town etc.).

Again, it is you and your students who decide on the form of presentation and/or documentation of your class project. There is no limitation as to which media or communication channel should be used. This aspect, of course, will also be acknowledged in the Going Green student competition (s. below). A procedure with awards in different categories will be implemented, so that, for example, a poster will not have to compete with a video contribution.

Participating in the Going Green Student Competition

The U.S. Embassy and their partners invite all participants to enter their action plans into a student competition with awards for outstanding products arising from classroom work. We believe that this is an excellent opportunity to boost student motivation and to strengthen the understanding that their approaches for sustainable development are relevant to their communities and beyond. From the 2014 pilot project we know that in most cases, student engagement to produce an action plan exceeded their teachers' expectations (and ours included) by far! Many participants saw their action plans and project outcomes featured in local newspaper articles and radio reports, at school festivities and even town hall meetings.

We would like to emphasize that participants are encouraged to submit their contributions, regardless of class grade or school level or even the type of action plan. In 2014, the competition categories were formed after receiving the submission, reflecting the open character of the contribution. As educators ourselves, we understand that a poster should not have to compete with a complete website and social media campaign, that some participants naturally will have more time to prepare their action plans than others, and that young learners (in 2014, a grade-six course from Aalen won one of the awards!) will produce different outcomes than, for example, a year twelve AP English course.

In order to take part in the Going Green student competition, your students (one representative) or you will have to submit your course's contribution by the submission deadline (it will be announced online and in our newsletter). This will be done by uploading the product (or a link to the product) onto the *Teach about US* platform. To do this, a registered and logged-in user needs to visit the platform's Going Green section, enter the Virtual Town Hall, go to the section 'Your sustainability action plans' and enter your action plan into the 'DATABASE: Your sustainability action plan'. If—for whatever reason—your upload fails, you may also submit your group's contribution via e-mail to the Going Green team.

The contributions will go through a twofold evaluation process: The jury of experts in sustainability as well as your students themselves will have a chance to evaluate the submissions online before the concluding Going Green student conferences taking place at the end of the school term. We will announce more information on this procedure in due time.

Tasks

(1) *Fill out the questionnaire. Think about and answer the questions. The goal is to reflect on your personal assumptions towards sustainability, so there are no right or wrong answers here.*

(2) *Review your classmates' responses. Discuss your responses orally in your class. These questions could be helpful:*

— *Are there any responses that surprised you or that you did not expect?*
— *Are there any questions that reveal larger trends? Which ones?*
— *Are there questions with opposing responses? What are some of the extreme answers?*

1 Think of the U.S. and its population's attitudes towards the environment. Do you think there is a typical attitude? What words, ideas, or images come to your mind? Give some examples (at least 3).

_____

_____

2 What images came to your mind in the previous question about the U.S. and the environment? The collages below represent two extreme stereotypes of sustainability in the U.S.

Which collage most resembles your ideas – the one on the left or on the right? Tick a point on the scale to indicate your impressions.

collage on the left   *undecided*   *collage on the right*

◁ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ▷

3 Now think of Germany and the Germans' attitude towards the environment. Do you think there is a typical attitude? What words, ideas, or images come to your mind? Give some examples (at least 3).
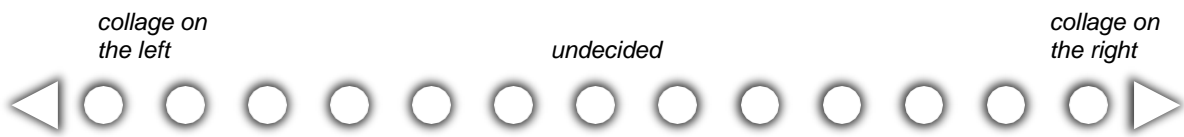
_____

_____

4 What images came to your mind in the previous question about Germany and the environment? The collages below represent two extreme stereotypes of sustainability in Germany.

Which images most resemble your ideas? Choose a point on the scale to indicate your impressions.

collage on the left   *undecided*   *collage on the right*

◁ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ▷

5 One dimension in which we influence sustainable development almost every day are our consumption habits: Every day we make consumer choices that can have a lasting impact on the world that surrounds us; every day we decide which products we buy, how much we pay for them, how carefully we select them, and many other aspects. Answer the questions below by indicating your opinion on the scale. There are no correct or wrong answers.

When making consumption choices, how much do you consider impacts on...

	never	rarely	some-times	very often	always
the natural environment?	○	○	○	○	○
the society and people?	○	○	○	○	○
the economy?	○	○	○	○	○

6 To what extent do you agree/disagree with the statements below? Indicate your answers on the scale:

	strongly disagree	rather disagree	unde-cided	rather agree	strongly agree
When I buy clothes, I mainly care about appearance, quality, and price. The conditions under which the clothes were produced are not my responsibility.	○	○	○	○	○
It's up to the individual to decide whether or not to buy and drive an SUV.	○	○	○	○	○
In the name of securing a sustainable future, we have the right to break the law.	○	○	○	○	○

The ecological footprint

> Footprints. We make them everywhere we go. But unlike the impressions we leave in mud or sand, which we can clearly see, our Ecological Footprints outline the space we each need to survive.
>
> Understanding exactly how big our Ecological Footprints are can be difficult because they encompass all the space and resources we need to live—light (energy), air, water and soil.
>
> Learn how the choices you make affect the size of your Ecological Footprint.
>
> —*IslandWood.org*

Task: What is the ecological footprint?

(1) Watch these following videos to learn about the concept of the ecological footprint. Below each video you will find some keywords that are explained in it. Take notes and try to define these terms. Together with your classmates, you can write the definitions on large index cards and post them on your classroom wall.

Video
Global Footprint Network: What is ecological overshoot?

https://www.youtube.com/watch?v=NJtrMMa4VOM

Keywords: *ecological footprint, ecological debt, ecological credit or capital, global overshoot*

Video
Veolia: Let's reduce our environmental footprint!
http://youtu.be/p9cCFBcVRO4

Keywords: *environment, footprint, carbon footprint, water footprint, resources footprint, ecosystems footprint*

Task: What is *your* ecological footprint?

(2) Explore your own ecological footprint and become aware of your lifestyle's impact on our planet's limited resources. Visit the WWF website and answer the questions about your lifestyle.

(3) Follow-up: Answer the following questions alone at first and make detailed notes. Then, discuss them in class and comment on the results of others. You can focus on these guiding questions:

— *What are generally the most surprising outcomes and statistics?*
— *Which of your expectations were fulfilled or not?*
— *Where can you find similarities or significances between your individual results?*
— *Where do we begin if we want to reduce our footprints?*

Interactive
WWF UK: Footprint calculator
http://footprint.wwf.org.uk/

Tasks

(1) *What does sustainability mean to you personally? Take a few moments and note down a definition or keywords concerning your own understanding of the concept.*

(2) *Share your idea with a partner or a small group and compare and discuss your ideas. Where are the differences and similarities? Which keywords should be included? Can you formulate a definition on which all group members can agree?*

(3) *The following resources approach the concept of sustainability from different perspectives. Watch the videos carefully and take detailed notes. Compare them to your previous discussion and results. Can you modify your previous definition? Pay attention to what aspects this definition might include and think of examples to support your definition.*

Video.
Kingpins: What is sustainability?
https://vimeo.com/51476502

Video.
PBS: Lexicon of sustainability – What is sustainability?
http://vimeo.com/92196477

Video.
Explainity: Sustainability explained
http://youtu.be/_5r4loXPyx8

Figure: Three-pillar model of sustainability (© Facing the Future 2010)

Society
- How are people's lives affected?
- How are cultures affected?
- Do some people benefit at the expense of others?

Environment
- How are plants and animals affected?
- How are air, water, and soil affected?
- What is the long-term impact on the environment?

Economy
- How are local, national, and international economies affected?
- Are meaningful job opportunities provided?
- Is there a long-term economic gain for people and communities?

☕ **Warm-Up**

Do you know where the food you eat every day is grown and produced?

(1) Brainstorm: Take a moment to think about the last meal you ate – your breakfast this morning or your dinner from last night. Try to make a list of all the products and/or ingredients that were used to cook or prepare it.

(2) Guess: Where do you think were these ingredients grown and produced? How far did they travel until they came to the store or market where you bought them? How were they transported? If you do not know this exactly, take a good guess. Indicate the locations on a map.

(3) Look it up: Check the products in your refrigerator at home: Are they adequately labeled? If not, visit the closest supermarket or grocery store and check where these products typically come from.

(4) Document your findings: Document your results to all three questions and discuss them critically with your group members.

If you need some inspiration for this task, take a look at "The Food Labeling Guide" from the U.S. Food and Drug Administration.

Text
U.S. Food and Drug Administration: A Food Labeling Guide – Which information needs to be provided on a packaging
https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-food-labeling-guide

Interactive.
National Geographic Education: MapMaker Interactive
https://mapmaker.nationalgeographic.org/

Optional: *Food and You*
Explore the issues connected to sustainable food and watch the Food and You video. It critically discusses the impact of our everyday consumer choices and the effects on our food system.

Video
foodandyou.org: Food and You
http://youtu.be/olSLiOtumYs

QUIZ

1 Defeating hunger is one of the most crucial challenges the world faces today. Hunger kills more people every year than AIDS, malaria, and tuberculosis combined.

Say you randomly picked 100 persons living on our planet: How many of them would not have enough to eat?
  a.   4
  b.   25
  c.   6
  d.   13

(The correct answer is: 13. There are 842 million undernourished people in the world today. This means that one out of eight people does not have enough food to live a healthy and active life. Hunger and malnutrition are in fact the number one risk to health worldwide. It is a contradiction of our time that there is actually more than enough food in the world to feed everyone. >> Learn more about this topic and visit the United Nations World Food Program (http://www.wfp.org/hunger).)

2 From farmers to consumers – food is wasted along the entire food chain. Globally, one third of the food produced for human consumption is thrown away.

How many percent of food waste occurs at the retail and consumer level in industrialized countries?
- *a. 40%*
- *b. 33%*
- *c. 15%*
- *d. 63%*
- *e. 21%*

(The correct answer is: 40%. A third of the food produced for human consumption is wasted. That amounts to approximately 1.3 billion tons per year. In industrialized countries over 40 % of food waste occurs at the retail and consumer level. Think about it: In your country, four out of ten products that you could eat are thrown away! Sadly, in developing countries the same amount of food loss occurs during harvest and food processing. In Europe, 90 million tons of food are wasted annually. The USA generates approximately 35 million tons of food waste per year and Germany throws away around 7 million tons of food while only representing a third of the U.S. population. >> Learn more about this topic and visit the European Commission on Food Waste (https://ec.europa.eu/food/safety/food-waste_en).)

3 This is one of the hotly debated topics in modern agriculture – and not just since the controversies brought about by the TTIP agreement: GMOs. Genetically-modified organisms. In simple terms, these are agricultural products that have been genetically altered. This is done using genetic engineering techniques, that is, DNA from different species are combined, hoping that their advantages will add up. For example, tomatoes could be merged with DNA from another plant to make them rot slower, or corn could be modified to produce richer crops.

What were the first genetically modified organisms (GMO) that have been sold to consumers in the USA?
- *a. Pigs*
- *b. Corn*
- *c. Tomatoes*
- *d. Salmon*
- *e. Potatoes*

(The correct answer is: Tomatoes. Tomatoes were the first GMOs that were sold to American consumers in 1994. The tomatoes called "FlavrSavr" contained a modified gene that should drastically reduce the formation of polygalacturonase (PG) and therefore stop a tomato's softening process. However, the "FlavrSavr" did not meet the researchers' expectations and disappeared from U.S. supermarkets only four years later. Today, GMOs can again be found in American stores. However, 26 states now have the legal authority to require appropriate food labeling to ensure transparency for the consumers. >> Learn more about this topic and visit the Center for Food Safety (http://www.centerforfoodsafety.org/issues/976/ge-food-labeling/fact-sheets) and the GMO Compass (https://gmoanswers.com/current-gmos-crops-dont-include-tomatoes).)

Research task: Exploring Genetically Modified Food

Sustainability does not only concern the aspects of transportation, technology, and energy. In fact, one major topic that concerns us all immediately is the aspect of sustainable food. In recent years, the debate on genetically modified organisms, short "GMOs", has produced controversy among many citizens on both sides of the Atlantic. Learn more about this issue by doing the tasks below.

Tasks

(1) *Investigate the issue of GMOs with the resources given below as well as other resources. Focus on these questions first:*

— *What are GMOs?*
— *Why are they produced? (see Videos 1 and 2)*
— *What are general advantages and disadvantages linked to GMOs? (see video 3)*
— *What are typical GM foods and ingredients?*

(2) *Document your findings in the form of a poster or collage. Pin it to your classroom wall for your classmates and present your findings using this poster/collage.*

You can start your research from here. Search for more resources online as needed.

Video.
Sci show: Why Are GMOs Bad
https://youtu.be/sH4bi60alZU

Video.
PBS: The lexicon of sustainability – GMO
http://vimeo.com/92190378

Video Transcript.
Feeding Nine Billion: Science, Technology and GMOs
https://feeding9billion.com/F9B-Videos-Science-Technology-GMOs.htm

Text
World Health Organization: 20 questions on genetically modified foods
http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/

Text
Cornucopia Institute: Top 10 Most Common GMO Foods
https://www.cornucopia.org/2013/06/top-10-most-common-gmo-foods/

📍 **Case study task: Chipotle Mexican Grill – A blueprint for sustainable fast food?**

When we think of fast food, certain images and expectations usually come to our minds: fat, low nutritional values, etc. But can *fast* food also be *sustainable* food? One U.S. restaurant chain – Chipotle Mexican Grill, based in Colorado – argues that food served fast does not need to involve the typical fast food experience:

> ❞ Our focus has always been on using higher-quality ingredients and cooking techniques to make great food accessible to all people at reasonable prices. But our vision has evolved. While using a variety of fresh ingredients remains the foundation of our menu, we believe that "fresh is not enough, anymore." Now we want to know the sources for all of our ingredients, so that we can be sure they are as flavorful as possible while we are mindful of the environmental and societal impact of our business. We call this idea, Food With Integrity, and it guides how we run our business.
>
> —*Chipotle Mexican Grill*

Tasks

(1) Research this case study using the resources below. Search for more resources online as needed. Take detailed notes of your findings and the sources you used. Use these questions to structure your findings:

— *What does it exactly mean for food to be local or organic? What is more important to you – local or organic food? (resource 1)*
— *What does Chipotle's concept of "Food with Integrity" include? How does the company present itself and its efforts for a sustainable food through marketing? And what is meant by "Chipotle-nomics"? (resources 2, 3, 4)*

(2) Chipotle's creed "Food with Integrity" sets high standards for a fast food restaurant chain. Some say, those standards are too ambitious. In 2015 Chipotle failed to live up to its own food safety standards, causing hundreds of customers to contract foodborne illnesses. Take a critical look at the resources to find out what the scandal was about. (source 5)

— *What does Prof. Wilkins argue is the inherent challenge of Chipotle's business model? And what is the role of the customer in this business model? (source 6)*
— *Do you think customers are also to blame for such scandals? (source 6)*

(3) Report and discuss your findings in class.

You can start your research from here. Search for more resources online as needed.

Video Text Infographic
PBS: Lexicon of Sustainability
https://www.pbs.org/food/features/lexicon-of-sustainability-episodes/

(Browse through this video series and the additional materials on the website. You might also find the videos and infographics on *local vs. organic*, *locavore*, *urban farming*, *traceability*, and others quite useful.)

Video Text Infographic
Chipotle Mexican Grill Website
http://www.chipotle.com/

Video.
Chipotle Mexican Grill: Back to the Start (commercial)
https://www.youtube.com/watch?v=S1zXGWK_knQ

Video.
Chipotle Mexican Grill: The Scarecrow (commercial)
https://www.youtube.com/watch?v=UQXPVZLBKLg

Text Video.
Chipotle's founder touts improvements to food safety
http://money.cnn.com/2016/09/21/news/companies/chipotle-food-safety/

Text
Chipotle's health crisis shows fresh food comes at a prize
https://www.wired.com/2016/01/chipotles-health-crisis-shows-fresh-food-comes-at-a-price/

Eco-Challenge: Food and you

Now that you have learned about the challenges and measures in the case study, take a look at your own community:

Tasks

> (1) *Your guiding question should be: What are challenges that your community (family, friends, school, town/city) faces concerning the module topic? Or are there any best practices that you can share?*
>
> (2) *Select a research method, plan your research, and carry it out. Remember, small is beautiful! These are some possible approaches and methods you might wish to apply:*
>
> — *Conduct a **questionnaire survey** among your classmates, your sports team, your school, your community.*
> — *Do a **(self-) experiment**, e.g. avoid using a specific product or change your habits for a period of time.*
> — *Do an expert **interview**, for example with people who work in the field under analysis (e.g. environmental activists, business owners, researchers, engineers, waste mangers, cleaning staff etc.).*
> — *Think of **other creative ways** to identify and visualize the impact of a sustainability challenge in your community.*
>
> (3) ***Document your approach and findings well**, for example in a short PowerPoint or Prezi presentation, a poster, a news report text, or a photo diary, a popplet, or a video.*
>
> (4) *Present your work in class (roughly 10 minutes).*

Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE: Eco-challenges - Food//Local in the Virtual Town Hall. Review and comment on other groups' uploads. Compare them to your own eco-challenge.

Need some help? Here are two eco-challenge suggestions for Food//Local:

— Take a look at the Non-GMO Project's 'Non-GMO Challenge' at *https://livingnongmo.org/tag/non-gmo-challenge/* and find out what it takes to avoid these products in everyday life. Plan and carry out a self-experiment: Can you live without GMOs for a few or two? Write a blog diary or take photos or shoot videos to document your experience.

— Another approach to sustainable food options is the so-called 100-mile diet. Find out what this means by visiting the ecolife website at *http://www.ecolife.com/health-food/eating-local/100-mile-diet.html*. Conduct a self-experiment in which you apply the principles of this diet. Document your experiences, e.g. when trying to buy groceries. Write a blog diary, take photos, or shoot a video.

☕ **Warm-Up**

(1) *Take a look at these goods from a local farmers' market somewhere in the U.S. Can you come up with a plausible story behind the photos?*

— *What could these items be?*
— *Who sells them and who might buy them?*
— *Where do they come from?*
— *Why are they sold at the market?*

QUIZ

1 It usually takes a certain amount of time for materials to biodegrade, that means to dissolve under the influence of bacteria or other biological and physical means (for example, light, water, oxygen). A compost pile is an example of biodegradation.

How long do you think it takes for conventional plastics – let's say a plastic cup holder or a plastic bottle – to biodegrade completely?
   a. *1 year*
   b. *10 years*
   c. *6 months*
   d. *500 years*
   e. *100 years*

(The correct answer is: 500 years. Conventional plastics made from polypropylene and polyethylene – two of the most common types of plastics as used for plastic bags and other everyday-life products – need whole centuries to biodegrade! Biological organisms that can be found in compost piles, for example, are not able to dissolve plastics: "Nature doesn't make things like that, so organisms have never seen that before." says Kenneth Peters, who is an organic geochemist at Stanford University. Plastic trash that pollutes the environment might have been used on a single occasion only. Its impact, however, can last much longer. >> Learn more about this topic and visit the live science website (http://www.livesci-ence.com/33085-petroleum-derived-plastic-non-biodegradable.html).)

2 Plastic, like almost no other material, is part of our everyday lives. It is used for food containers and packaging, techno-logical devices, toys, and even furniture. On top of that, there are 3D printers today that are able to produce virtually every shape made from plastic.

In 1960, plastics constituted less than 1% of solid waste in American communities. How big do you think is the share of plastic trash today?
- *a.* *5%, which is slightly more than in 1960*
- *b.* *13%, which is significantly more than in 1960 and the result of our dependence on plastics*
- *c.* *50%, because of all the new plastic products and our behavior in today's 'throw-away society'*
- *d.* *almost 0% because of efforts to reduce and recycle plastics*
- *e.* *1%, that is about the same as in 1960*

(The correct answer is: 13%. Plastics make up almost 13 percent of the municipal solid waste stream in the U.S. Doesn't seem much? Well, compared to the year 1960, this means an increase of about 1300%! In other words, despite all efforts to reduce and recycle plastic, its share of all trash produced in towns and cities today is almost 13 times as much as 50 years ago. "The largest amount of plastics is found in containers and packaging (e.g., soft drink bottles, lids, shampoo bottles), but they also are found in durable (e.g., appliances, furniture) and nondurable goods (e.g., diapers, trash bags, cups and utensils, medical devices). The recycling rate for different types of plastic varies greatly, resulting in an overall plastic recycling rate of only 9 percent, or 2.8 million tons in 2012. However, the recycling rate for some plastic products is much higher, for example in 2012, 28 percent of HDPE bottles and 31 percent of PET bottles and jars were recycled." – U.S. Environmental Protection Agency, EPA. >> Learn more about this topic and visit the U.S. Environmental Protection Agency's website (https://www.epa.gov/trash-free-waters/plastic-pollution).)

3 Many people in developing countries have difficulties accessing clean drinking water, whereas citizens in the U.S. and E.U. member states spend billions of dollars buying bottled water – although clean drinking water from the tap is available. One way to evaluate the usefulness of a product is to compare its cost and benefits. In the case of water bottles, think of its production process: How much water is used on average to produce just one bottle in comparison to its water capacity?

One way to evaluate the usefulness of a product is to compare its cost and benefits. In the case of water bottles, think of its production process: How much water is used on average to produce just one bottle in comparison to its water capacity?

- *a.* *It takes 4 times the amount of water to produce the bottle compared to its capacity.*
- *b.* *The amount of water to produce the bottle equals the amount to fill it.*
- *c.* *There is no water needed in the production process of a plastic bottle.*
- *d.* *It takes 3 times the amount of water to produce the bottle compared to its capacity.*
- *e.* *It takes twice the amount of water to produce the bottle compared to its capacity.*

(The correct answer is: It takes 3 times the amount of water to produce the bottle compared to its capacity. Annually, 53 billion gallons of bottled water are consumed all around the world. To produce the bottle itself you will need three times the amount of water as you can eventually fill in. Additionally, around 17 million barrels of oil (that is, over 2 billion liters!) are used in the production process of water bottles annually – enough to fuel 100 million cars for a whole year! Because only 1 out of 5 water bottles is recycled, the remaining four bottles contribute to the huge amount of plastic waste. More surprisingly, an average bottle of water costs $10 per gallon compared to tap water, which costs only $.0015 per gallon. So, why pay when you can have the same product for a much lower price? >> Learn more about this topic and visit the Facts About Bottled Water website (https://bottledwater.org/facts-about-bottled-water/).)

Research task: The Great Pacific Garbage Patch

The Great Pacific Garbage Patch is a growing concern – not only for environmentalists, but for the fishing industry, tourism, in fact everyone dependent on a functioning marine eco-system. Learn more about the challenge of the Great Pacific Garbage Patch (or the "Trash Vortex," as it is called sometimes) as well as its causes and exciting ways to counter this challenge.

Tasks

(1) Review these materials and create a profile of the Great Pacific Garbage Patch with detailed notes answering the questions:

— *What is it?*
— *Who or what causes it?*
— *Who is affected by it?*

(2) Document your findings in the form of a poster or collage. Pin it to your classroom wall for your classmates and present your findings using this poster/collage.

You can start your research from here. Search for more resources online as needed.

Video.
Heal the Bay: The Majestic Plastic Bag
http://youtu.be/GLgh9h2ePYw

Video.
Ben Segall/The Algalita Marine Research Foundation: The Great Pacific Garbage Patch *http://vimeo.com/11704000*

Text Infographic Video.
5 Gyres: Understanding Plastic Pollution Through Exploration, Education, and Action
http://5gyres.org/

Text Infographic.
Greenpeace: The Great Pacific Garbage Patch
http://www.greenpeace.org/international/en/campaigns/oceans/fit-for-the-future/pollution/trash-vortex/

⬇ **Case study task: The plastic bag ban in Los Angeles**

A number of communities in California, as elsewhere in the U.S., have adopted laws to regulate the use of single-use plastic bags from their businesses or ban them completely. In a landmark decision in 2013, Los Angeles became the largest city in the U.S. to ban all single-use plastic bags from stores (source 1). In so doing, the city attracted activists and policy makers from all over the U.S. to follow their lead; cities like Seattle, Chicago, Portland, and Austin have done the same since.

Tasks

(1) *Research the situation in L.A. using the resources below. Search for more resources online as needed. Take detailed notes of your findings and the sources you used. Use these questions to structure your findings:*

— *Which reasons for a plastic bag ban are discussed in the resources? What are the overall economic, ecologic, and social reasons in favor of such a ban?*
— *What is the perspective of those who argue against the ban? Are there overall economic, ecologic, and social reasons against such a ban?*
— *What are the benefits and drawbacks of aplastic bag ban as implemented in Los Angeles? (source 1)*
— *Who approves and who disapproves it – and why? (source 1)*

(2) *In the follow-up to this development, state legislature in California passed a statewide law, "SB 270," that would ban carryout bags and force stores and businesses to sell multiuse plastic or paper bags for at least 10 cents instead. While the law was signed by Governor Jerry Brown in 2014, it did not immediately go into effect because of strong resistance by the plastic bag industry. Why? California state law allows referendums to be held about new laws if enough citizens sign a petition. A referendum signature campaign largely financed by the American Progressive Bag Alliance, the plastic bag industry's trade association, achieved exactly this, and so a referendum ("proposition 67") and an initiative ("proposition 65") were put on the ballot in California in the November 2016 election. Read source 2 and watch the video (source 3) and take detailed notes on these questions:*

— *How was the plastic bag ban law put on hold? (sources 2 and 3)*
— *Who wanted to stop the law and what are their reasons? (sources 2 and 3)*
— *Do you agree with them? Why (not)? (sources 2 and 3)*
— *What is your own opinion on this issue? Do you agree or disagree with the L.A. approach? Justify your arguments and be critical and fair.*

(3) *Report and discuss your findings in class.*

You can start your research from here. Search for more resources online as needed.

Text
State Plastic Bag Legislation (February 8, 2021)
https://www.ncsl.org/research/environment-and-natural-resources/plastic-bag-legislation.aspx

Video.
Los Angeles Times: Editorial. California banned plastic bags. Now it's up to the consumer to stop being wasteful (November 23, 2016)
http://www.latimes.com/opinion/editorials/la-ed-beyond-bag-ban-20161121-story.html

Video.
UC Hastings College Of The Law: CA Prop 65 & Prop 67: Regarding Carry-Out & Single-Use Plastic Bags (September 8, 2016)
https://www.youtube.com/watch?v=MGvqHCIzJnA

Eco-Challenge: Plastic and you

Now that you have learned about the challenges and measures in the case study, take a look at your own community:

Tasks

(1) Your guiding question should be: What are challenges that your community (family, friends, school, town/city) faces concerning the module topic? Or are there any best practices that you can share?

(2) Select a research method, plan your research, and carry it out. Remember, small is beautiful! These are some possible approaches and methods you might wish to apply:

— *Conduct a **questionnaire survey** among your classmates, your sports team, your school, your community.*
— *Do a **(self-) experiment**, e.g. avoid using a specific product or change your habits for a period of time.*
— *Do an expert **interview**, for example with people who work in the field under analysis (e.g. environmental activists, business owners, researchers, engineers, waste mangers, cleaning staff etc.).*
— *Think of **other creative ways** to identify and visualize the impact of a sustainability challenge in your community.*

*(3) **Document your approach and findings well**, for example in a short PowerPoint or Prezi presentation, a poster, a news report text, or a photo diary, a popplet, or a video.*

(4) Present your work in class (roughly 10 minutes).

Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE: Eco-challenges - Plastic//Recycle in the Virtual Town Hall. Review and comment on other groups' uploads.

Need some help? Here are some eco-challenge suggestions for Plastic//Recycle:

— Ask grocery store customers or other people in the street about their general habits concerning plastic waste and plastic materials. Write a newspaper article or a post for your school's blog.

— Take a look at the 30-day challenges by the Travel Well Magazine, for example the #WasteNot or #1TonLess challenges for some inspiration. Reproduce ideas you find there and present your findings (see *http://travelwellmagazine.com/chal-lenges/*).

— Take a look at 'The plastic free shopping challenge' for some inspiration. Reproduce ideas you find there and present your products (see *https://www.5gyres.org/*).

— Count the plastic bags given out at a supermarket for 30 minutes. Then interview some customers about their habits (but don't forget to ask for permission to do so). Produce a post for your school's blog, a poster, a presentation.

— Replicate the "Catch of the day" campaign by the Surfrider Foundation with trash found in a park, a busy street, or on your school campus. Present your findings (see *https://www.teachaboutus.org/mod/page/view.php?id=891*).

— Interview school officials (administration, ground keepers, cleaning or cafeteria staff, etc.) about plastic waste at your school. Contact your local waste disposal company to ask about average amounts of plastic waste, etc. Present your findings.

Warm-Up

Do you know where your clothes are produced, and by whom?

> (1) *Brainstorm and look it up: Do you know where your clothes were produced? Take a moment to check the tags on the clothes you are wearing right now.*
>
> (2) *Document your findings: Make a list of your and your group's findings and insert them into a map in order to visualize where your clothes come from (for example using Google maps).*

If you need some inspiration for this task, take a look at the Guardian's 'witness assignment' on fashion as well as the interactive map provided by Marketplace to map your clothes:

Article.
Who Made My Clothes? Stand up for workers' rights with Fashion Revolution week
https://www.theguardian.com/fashion/commentisfree/2019/apr/22/who-made-my-clothes-stand-up-for-workers-rights-with-fashion-revolution-week

Interactive.
Where were your clothes made?
https://www.marketplace.org/2013/05/30/where-were-your-clothes-made-map/

Interactive
National Geographic Education: MapMaker Interactive
https://mapmaker.nationalgeographic.org/

***Optional:** Detox My Fashion*
In 2011 Greenpeace initiated the Detox campaign. Have a look at the following links. Briefly explain what the Detox campaign is and what you could contribute to the movement.

Text
Greenpeace: Detox My Fashion
https://www.greenpeace.org/international/act/detox/

Video .
Greenpeace: How People Power is Cleaning Up Fashion
https://www.youtube.com/watch?v=uZucclsuKaU

Text
Greenpeace: Eine ganz große Null
https://www.greenpeace.de/engagieren/nachhaltiger-leben/grosse-null

QUIZ

1 During the fiscal year of 2013, the U.S. Bureau of Engraving and Printing (BEP) produced approximately 6.6 billion U.S. dollar notes at an average production cost of 10 cents per note. Over 90 percent of the notes that the BEP delivers each year are used to replace notes already in or taken out of circulation.

What does that have to do with the environment you are wondering? Well, think about the materials necessary to produce all the 'paper' money. Have you ever wondered what the U.S. dollar notes are made of? Which material (or combination of materials) is used?
   a. Cotton
   b. Silk
   c. Linen
   d. Cotton and linen
   e. Artificial fibers

(The correct answer is: Cotton and linen. The U.S. dollar bills are made of 75% cotton and 25% linen. This is what gives the U.S. currency its distinct look and feel. Ordinary paper that consumers use throughout their everyday life such as newspapers, books, cereal boxes, and so on is primarily made of wood pulp. Wood pulp is wood that has been grinded in order to create a usable raw material for different types of paper products. Due to the rise of cotton prices, the cost of producing a single dollar note increased in recent years. The government produced 6.4 billion new currency notes in 2010. Each one cost 9.6 cents in production, including the cost of paper and printing. In 2008, the price was only 6.4 cents per note. By the way, the European Euro note is made of 100 % cotton. >> Learn more about this topic and visit the
U.S. Bureau of Engraving and Printing (https://www.moneyfactory.gov/hmimpaperandink.html) and the European Central Bank (https://www.ecb.europa.eu/stats/euro/production/html/index.en.html).)

2 The U.S. generates an average of 25 billion pounds of textiles (clothing, footwear, bedding, towels etc.) every year. This is about 82 pounds per U.S. resident! Fast fashion has to do a lot with this development. Instead of four main fashion seasons (as it used to be until a few decades ago), we now have 52 seasons per year – thanks to fashion chains that produce an ever-growing number of fashion styles that are affordable at the same time.

Instead of quickly throwing away worn-out or seemingly outdated clothes, some people rather donate or recycle them. What do you think is the percentage of textiles that are not thrown away each year in the U.S. – but instead recycled or donated?
   a. 46%
   b. 72%
   c. 15%
   d. 31%
   e. 23%

(The correct answer is: 15%. Only 15% of the textiles that are sorted out by U.S.-Americans are donated or recycled. The remaining 85% end up in the country's landfills. Thus, the average U.S.-American produces 70 pounds of textile trash per year. This translates to 210 shirts, 630 pieces of kid's clothing and 70 pairs of shoes. Now, of course, the figures also include industrial garment production. (However, don't think that Germans are much better in this regard!) >> Learn more about this topic and visit the Council for Textile Recycling (https://www.weardonaterecycle.org).)

3 There are huge gaps in the cost of making clothes depending on the location where they are produced. Imagine a denim shirt being produced in the U.S. According to the Institute for Global Labour and Human Rights, the shirt's production would cost $13.22 in total. The labor cost, which is included here, would amount to $7.47. The math is simple: More than half the costs of the U.S. garment industry are used to pay for the workers in this industry. However, in other places of the world this is not necessarily the case. Let's take the example of Bangladesh – a country with a central role in the world's garment industry.

What do you think is the average percentage of labor cost in this country's garment industry? In other words, how much of a shirt's production costs are used to pay for the workers in this process?

a. 37%
b. 52%
c. 25%
d. 5%
e. 19%

(The correct answer is: 5%. The production of a denim shirt in the U.S. costs $13.22. On the other hand, the same denim shirt can be produced in Bangladesh for only a small share of this: $4.70. Why is that so? Some expenditures can be reduced because the resources and materials as well as industrial laundry are cheaper in this country. The most radical difference, however, concerns the cost of labor: Employees producing this shirt in Bangladesh earn much less than their American colleagues. In Bangladesh, only 5% of the shirt's total cost goes to the people who produce it. Per shirt, the Bangladeshi entrepreneur only has to pay 22 cents on labor – as opposed to the $7.47 his or her U.S. counterpart has to invest. This is of great importance, especially in such a labor-intensive industry. Of course, this also has tremendous consequences for the situation of these workers – sewers, cleaners, machine operators, helpers, packers, supervisors, and others. >> Learn more about this topic and visit the Institute for Global Labour and Human Rights website (http://www.globallabourrights.org/press/bangladesh-vs-the-u-s-how-much-does-it-cost-to-make-a-denim-shirt).)

Research task: Exploring Toxic Fashion

When it comes to fashion and sustainability, some very significant developments can be observed in the past two decades. You surely know about fast food, but have you also heard about fast fashion? It is a trend that has emerged in the garment industry and that is producing a growing number of alarming news. In this task, you will learn about the different aspects of fast fashion and some of its main causes and consequences.

Tasks

(1) *Investigate the issue of toxic fashion based on the resources given as well as other resources. Focus on these questions first:*

— *What is referred to as the 'true cost' of fashion production?*
— *What happened during the incident in Bangladesh and why is it so important for this topic?*
— *What were the reactions to this incident?*

(2) *Document your findings in the form of a poster or collage. Pin it to your classroom wall for your classmates and present your findings using this poster/collage.*

You can start your research from here. Search for more resources online as needed.

These resources introduce the concept of toxic fashion:

Video.
Andrew Morgan: The True Cost (official trailer)
https://www.kickstarter.com/projects/truecost/the-true-cost

Text
An interview with Andrew Morgan, director of "The True Cost"
http://listengirlfriends.wordpress.com/2013/11/08/andrew-morgan/

These resources focus more closely on the concept of fast fashion:

Audio Transcript
NPR All things considered: In Trendy World Of Fast Fashion, Styles Aren't Made To Last (March 11, 2013) *http://www.npr.org/2013/03/11/174013774/in-trendy-world-of-fast-fashion-styles-arent-made-to-last*

Infographic
PBS Newshour: Popular Brands React to Bangladesh Tragedy
http://www.pbs.org/newshour/extra/2013/05/popular-clothing-brands-react-to-bangladesh-tragedy/

Finally, these resources focus on the social and environmental consequences of fast fashion:

Video Audio Text
The Guardian: The shirt on your back
http://www.theguardian.com/world/ng-interactive/2014/apr/bangladesh-shirt-on-your-back

Video
The Ecologist: Hell for leather
http://www.youtube.com/watch?v=4A6siB9B4Ak

Video
Pumpkin Interactive: Textiles – Environmental impacts
http://youtu.be/NXTIfcfzSnE

Infographic
Greenpeace: Clothing and the global toxic cycle
https://storage.googleapis.com/planet4-international-stateless/2012/03/4621f8e5-dirtylaundryreloaded-execsum.pdf

Case study task: Toxic fashion – and its alternatives

How can we localize some of the sustainability challenges connected to the garment industry? One important aspect that can increase our understanding of this topic is how people and businesses have reacted to incidents like the Rana Plaza collapse. In this task you have two options: (a) Investigate the reactions to the Rana Plaza collapse, or (b) investigate a lesser-known incident that shocked the City of New York more than 100 years ago.

Option 1: Reaction to the Rana Plaza Collapse

The Rana Plaza collapse was such a dramatic event that many western media as well as politicians and businesses widely reacted to it. In the aftermath of the collapse, businesses in the garment industry were confronted with the ethical question of taking responsibility for grievances of these garment workers' situation. An interesting reaction came from the Walt Disney company:
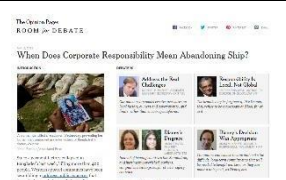
Tasks

(1) Research this case study using the resources below. Search for more resources online as needed. Take detailed notes of your findings and the sources you used. Use these questions to structure your findings:

— *Which arguments are discussed in the resources in favor of withdrawing business and factories from countries like Bangladesh? What other arguments can you think of?*
— *Which arguments are discussed in the resources in favor of continuing business and factories in countries like Bangladesh? What other arguments can you think of?*
— *How do you think about the responsibility of Western fashion labels for working and environmental conditions in countries like Bangladesh? Should they adopt a "stay and improve" strategy, thereby trying to promote positive change in these countries? Or should they apply a "cut and run" reaction to such tragedies, thereby ending workers' rights violations?*

(2) Report and discuss your findings in class.

You can start your research from here. Search for more resources online as needed.

Text
The New York Times: Some Retailers Rethink Role in Bangladesh (May 1, 2013)
http://www.nytimes.com/2013/05/02/business/some-retailers-rethink-their-role-in-bangladesh.html?pagewanted=1&_r=0&hp

Text
The New York Times: When does Corporate Responsibility Mean Abandoning the Ship? (May 2, 2013) *http://www.nytimes.com/roomfordebate/2013/05/02/when-does-corporate-responsibility-mean-abandoning-ship*

Option 2: The Triangle Waist Company factory fire

When most people think of the garment industry and workers' rights violations, developing or less industrialized countries come to their mind. However, in 2011, the City of New York commemorated the 100th anniversary of the Triangle Waist Company factory fire,

> a tragedy in Lower Manhattan that claimed the lives of 146 people, all but 23 of whom were young women. One of the landmark disasters in American history, it eventually inspired important shifts in the nation's laws, particularly those protecting the rights of workers and the safety of buildings.
>
> —*The New York Times*

Tasks

(1) *Research this case study using the resources below. Search for more resources online as needed. Take detailed notes of your findings and the sources you used. Use these questions to structure your findings:*

— *What happened in 1911 in New York when the Triangle Shirtwaist Factory burned down? Review the sources given below and take detailed notes about the incident.*
— *What measures and changes were implemented in the aftermath of the fire? What about women's history and rights, workers' rights, workplace safety, fire codes, and immigrant issues?*
— *Although the Triangle Shirtwaist Factory fire and the Rana Plaza collapse happened more than 100 years apart from each other, they do show some staggering similarities. Such incidents may not be likely to happen again in the U.S., but the problem only seems to have been dislocated to Southeast Asia. What do you think: Is it fair to compare both examples and, if so, what can be learnt from them?*

(2) *Report and discuss your findings in class.*

You can start your research from here. Search for more resources online as needed.

Text
The New York Times: Triangle Fire: A Half-Hour of Horror (March 25, 2011)
http://cityroom.blogs.nytimes.com/2011/03/21/triangle-fire-a-half-hour-of-horror/

Audio Transcript
NPR News: 100 Years After Triangle Fire, Are Workers Safer (March 24, 2011)
http://www.npr.org/2011/03/24/134814089/Triangle-Fire-Remembrance

Additional resources on the legacy of the Triangle fire:

— Women's history: *http://cityroom.blogs.nytimes.com/2011/03/22/one-woman-who-changed-the-rules/*
— Workers' rights: *http://topics.nytimes.com/top/reference/timestopics/subjects/l/labor/index.html*
— Workplace safety: *https://www.osha.gov/*
— Fire codes: *http://www.nytimes.com/2011/02/23/opinion/23wed4.html*
— Immigrant issues: *http://teacher.scholastic.com/scholasticnews/indepth/upfront/features/index.asp?article=f031411_triangle*

Eco-Challenge: Fashion and you

Now that you have learned about the challenges and measures in the case study, take a look at your own community:

Tasks

(1) *Your guiding question should be: What are challenges that your community (family, friends, school, town/city) faces concerning the module topic? Or are there any best practices that you can share?*

(2) *Select a research method, plan your research, and carry it out. Remember, small is beautiful! These are some possible approaches and methods you might wish to apply:*

— *Conduct a **questionnaire survey** among your classmates, your sports team, your school, your community.*
— *Do a **(self-) experiment**, e.g. avoid using a specific product or change your habits for a period of time.*
— *Do an expert **interview**, for example with people who work in the field under analysis (e.g. environmental activists, business owners, researchers, engineers, waste mangers, cleaning staff etc.).*
— *Think of **other creative ways** to identify and visualize the impact of a sustainability challenge in your community.*

(3) ***Document your approach and findings well**, for example in a short PowerPoint or Prezi presentation, a poster, a news report text, or a photo diary, a popplet, or a video.*

(4) *Present your work in class (roughly 10 minutes).*

Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE: Eco-challenges - Fashion//Toxic in the Virtual Town Hall. Review and comment on other groups' uploads.

Need some help? Here are some eco-challenge suggestions for Fashion//Toxic:

— Ask fashion store customers or other people in the street about their general habits concerning buying fashion products and fast fashion. Write a newspaper article or a post for your school's blog.
— Take a look at the 5 >Tips for Shopping Smarter on the True Cost website (*http://truecostmovie.com/learn-more/buying-better/*) for some inspiration. Try out some ideas in a self-experiment and present your findings.
— Take a look at the Uniform Project, where Sheena Matheiken developed her idea of wearing the same dress for an entire year. See how she did it and how you can replicate her idea (see *http://www.theuniformproject.com/*)

🍵 Warm-Up

Sustainable development requires creativity and innovative ideas. Sustainable urban development is no exception in this regard.

> (1) *Imagine a green city and create a blueprint by answering these questions:*
>
> — *How do you personally imagine such a city to look like?*
> — *Which options for transportation are available in your green city?*
> — *What do the buildings in such a city look like?*
> — *What about industry, business, housing, recreation?*
> — *What else is necessary to make a city sustainable?*
>
> *Be creative and brainstorm your ideas. What are your group's top 5 criteria for green cities?*

QUIZ

1   The general trend to urbanization and the further expansion of megacities seems stronger than ever before. Efficient energy supply and consumption are set to become central questions of the 21st century. Mankind's energy consumption is rising continuously and presents enormous challenges for climate protection and energy supply.

Although cities cover only 2% of the earth's surface, they are responsible for what percentage of the world's energy consumption?
  a. *17%*
  b. *75%*
  c. *31%*
  d. *43%*
  e. *56%*

(The correct answer is: 75%. Although cities cover only 2% of the earth's surface, they are responsible for approximately 75% of the global energy consumption! On the one hand, the concentration of people, housing, and businesses can help reduce the consumption of resources and energy: More people can be supplied using the same means of transportation, they share energy sources and space through modern planning and service concepts. However, at the same time an efficient distribution of energy, access to public transportation, and sustainable building and housing options need to be considered in order to minimize the damage and to control the risks of climate change. Weather extremes like floods, storms, droughts, and heat waves together with water scarcity are already today serious problems for rapidly growing cities. >> Learn more about this topic and visit the German Federal Ministry of Education and Research (http://future-megacities.org/index.php?id=48&L=1).)

2   Public transportation provides personal mobility and freedom. Access to public transportation allows people to get around in a sustainable way. However, many people in the U.S. and Germany rely on cars for transportation.

What do you think? How many cents of each dollar does and average U.S.-American household spend on transportation?
  a. *11*
  b. *3*
  c. *34*
  d. *16*
  e. *9*

(The correct answer is: 16. Owning a car is convenient but also quite costly. The average U.S.-American household spends 16 cents of every dollar on transportation. 94% of this share goes to purchasing, maintaining, and operating cars. This makes owning a car the largest expenditure after housing! Statistically speaking, a household could save approximately $9,700 by using public transportation and living with one less car. The high costs and the improved access to public transportation have already helped increase U.S. public transportation ridership by 35% between 1995 and 2012. >> Learn more about this topic and visit the American Public Transport Association (https://www.apta.com/research-technical-resources/transit-statistics/public-transportation-fact-book/).

3   Energy and material consumption in buildings contributes to global climate change significantly. Green architecture can reduce the tremendous impact that the design, construction, and maintenance of buildings have on both people and nature. According to the Center for Sustainable Development at the U.S. Department of Energy, buildings consume 25% of the world's wood harvest.

What percentage of the world's total energy use can be attributed to buildings?

    a.   34%
    b.   56%
    c.   40%
    d.   23%
    e.   14%

(The correct answer is: 40%. Sustainable architecture needs to go beyond energy and water conservation to incorporate environmentally sensitive planning, resource efficient building materials, and other aspects. According to the Center for Sustainable Development, buildings nowadays consume 40% of the world's energy need. 25% of its wood harvest, and 16% of its water. In the US, the construction industry is the nations' largest manufacturing sector, representing over 50% of the nation's wealth and 1% of its gross domestic product. >> Learn more about this topic and visit the Sustainable Cities Institute (https://sci.uoregon.edu/research).

Research task: What makes a city 'green'?

Progressive approaches to sustainability can be found in particular on the local level in cities and towns that commit to green reform policies. Many experts argue that, in fact, the cities in the U.S. can be regarded as policy laboratories for potential national approaches: Solutions that prove to be successful in communities and attract support of the population can become models for state and national policies.

Tasks

(1) a. *Before you review the materials below, brainstorm with your partners how you imagine a sustainable city of the 21st century. Think about aspects of transportation, architecture and housing, business, recreation, and any other aspects that come to your mind. Make detailed notes.*

b. *Investigate the topic of sustainable urban development based on the resources given as well as other resources. Focus on these questions first:*

— *Which aspects and criteria of sustainable cities are new? Note them down.*

— *Are some aspects more important than others? Decide on your top 5 criteria that make a sustainable city. Add more aspects that you can think of to these 5 core criteria.*

(2) *Document your findings in the form of a poster or collage. Pin it to your classroom wall for your classmates and present your findings using this poster/collage.*

You can start your research from here. Search for more resources online as needed.

Video.
Alstom: What is an eco-city?
http://youtu.be/7ygw2L-Qi0c

Text
Linstroth, Tommy & Bell, Ryan (2011): Local Governments Take the Lead on Climate.
https://static.america.gov/uploads/sites/8/2016/05/Climate-Action-Goes-Local- Series_Local-Governments-Take-the-Lead-on-Climate_English_508.pdf

Video Text Infographic.
Earth Day Network: Learn about green cities
http://www.earthday.org/campaigns/green-cities/

If you like, you can also take a look at these additional resources:

Video Transcript
Jeff Speck: The walkable city
http://www.ted.com/talks/jeff_speck_the_walkable_city

📍   **Case study task: Minneapolis, Minnesota – A Sustainable City?**

As you have seen in the previous tasks, there can be many aspects that make a city green. It is now time to 'add some flesh to the bones' and explore one particular U.S. city that could be seen as a model of green city planning and urban development Minneapolis, Minnesota You will explore the central question: Can Minneapolis, Minnesota be considered a green city?

Tasks

(1) Research this case study using the resources below. Search for more resources online as needed. Take detailed notes of your findings and the sources you used. Use these questions to structure your findings:

— *What does/does not make Minneapolis a green city?*
— *Compare the facts about Minneapolis to your list of sustainable city criteria. Can we call Minneapolis a "sustainable city"? Why – or why not? Be critical.*
— *Based on this case study, what could your own community learn from Minneapolis? Are there any aspects you would like to introduce to your hometown? Or, on the other hand, is there anything Minneapolis could learn from your hometown?*

(2) Report and discuss your findings in class.

You can start your research from here. Search for more resources online as needed.

Text
Minneapolis: Environmental Programs
https://www2.minneapolismn.gov/government/programs-initiatives/environmental-programs/

Text
Minneapolis Climate Action
https://www.mplsclimate.org/

Text
Minnesota Environmental Partnership
https://www.mepartnership.org/about/minnesotas-environmental-community/

Optional

Now that you are familiar with criteria of 'green' cities in the United States, take a closer look at a European example of what a green city can look like.

In 2021, the Finnish city of Lahti takes center stage in the promotion of environmentally friendly urban living in Europe. Once one of the dirtiest cities in Europe, the city of Lahti has transformed into a city that aims to be carbon-neutral in 2025. In 2021, Lahti was awarded the title "European Green Capital".

Tasks

(1) *Explore the central question: Can Lahti, Finland be considered "Europe's green capital"? Review the materials about the city of Lahti and consult additional resources as needed to answer the question what makes Lahti a 'green capital'. Which criteria did the jury for the "European Green Capital Award" consider?*

(2) *Compare these data with the criteria of the city of Minneapolis.*

(3) *Report and discuss your findings in class.*

Text
Lahti 2021 Facts: "European Green Capital 2021"
https://greenlahti.fi/en

Text
Six climate-friendly ideas to learn from Lahti in Finland
https://www.euronews.com/2021/05/31/european-green-capital-2021-six-climate-friendly-ideas-to-learn-from-lahti-in-finland

Text
Interview with a Politician from Lahti
https://www.spiegel.de/ausland/finnland-lahti-will-bis-2025-vollstaendig-co2-neutral-werden-wie-kann-das-klappen-a-fa6f529e-6d4a-4ffd-9222-100c38374d6d

Text
Optional: Das weltweit einzige Land mit negativer CO2-Bilanz
https://utopia.de/bhutan-das-weltweit-einzige-land-mit-negativer-co2-bilanz-67154/

Eco-Challenge: Green cities and you

Now that you have learned about the challenges and measures in the case study, take a look at your own community:

Tasks

(1) *Your guiding question should be: What are challenges that your community (family, friends, school, town/city) faces concerning the module topic? Or are there any best practices that you can share?*

(2) *Select a research method, plan your research, and carry it out. Remember, small is beautiful! These are some possible approaches and methods you might wish to apply:*

— *Conduct a **questionnaire survey** among your classmates, your sports team, your school, your community.*
— *Do a **(self-) experiment**, e.g. avoid using a specific product or change your habits for a period of time.*
— *Do an expert **interview**, for example with people who work in the field under analysis (e.g. environmental activists, business owners, researchers, engineers, waste mangers, cleaning staff etc.).*
— *Think of **other creative ways** to identify and visualize the impact of a sustainability challenge in your community.*

(3) ***Document your approach and findings well**, for example in a short PowerPoint or Prezi presentation, a poster, a news report text, or a photo diary, a popplet, or a video.*

(4) *Present your work in class (roughly 10 minutes).*

Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE: Eco-challenges - City//Transport in the Virtual Town Hall. Review and comment on other groups' uploads.

Need some help? Here are some eco-challenge suggestions for City//Transport:

— Start an interview survey at your school about transportation. Interview your fellow students about how they get to school each day, that is, which means of transport they use, do they share it, how far do they commute? Ask them also about their reasons for a certain means of transportation and against another. Write a newspaper article or a post for your school's blog.

— Take a look at the Bike Commuter Challenge by the Chicago-based Active Transportation Alliance (see *http://bikecommuterchallenge.org/*) for some inspiration. Together with your group and other likeminded students and teachers, start your own bike commuter challenge week. Document your experience and findings and present them.

— Read about Earth Day activities in green cities all over the globe (see *http://www.earthday.org/greencities/action/*).

Warm-Up: Youth Participation Matters!

Youth form an important part of society. They are the hope and future of their country. Therefore, their participation matters for a healthy democracy. But is it enough to participate?

1. Watch the TED Talk video with Jakhini Bisselink. She talks about "Why Youth Participation is Key." Take detailed notes on the following questions:

- *What is the difference between "Youth Participation" and "Meaningful Youth Participation"? Explain the misconception.*
- *Why is it a moral obligation to involve youth in decision-making?*
- *What action did Jakhini Bisselink take when she got interested in climate change issues? Did she take action individually or collectively?*
- *Youth need "knowledge" to make good recommendations. "Knowledge" consists of two main pillars. What are they?*
- *What is the central challenge youth are facing and how are UN Youth Delegates addressing it?*

Video.
Why Youth Participation is Key | Jakhini Bisselink | TEDxYouth@Maastricht
https://youtu.be/tOpqMWj25AE

2. Discuss one of the questions below and post your contribution on the FORUM: Youth Participation Matters!

- *Have you ever been to a climate action demonstration before? If yes, what was your experience, and would you do it again? If not, does Bisselink's talk motivate you to participate in the future? Why or why not?*
- *Are protests the only way to participate? Can you think of different ways through which youth can have a say in society?*
- *In your opinion, what factors might prevent youth from participating in society?*

Research task: Shell Youth Study: "A generation speaks up!"

Tasks:

Youth's political participation is vital for a healthy democratic system. To increase youth participation, it is crucial to understand what motivates young people most to engage in society. Do they engage in political life out of sheer interest or curiosity? What encourages them to participate?

1. Read the two sections of the Shell Youth Study, underline key information. Summarize what you learned from the text and write it down in your project journal:

- *Section 1: Politics and society*

- *Section 2: Environmental and climate protection have become top issues of concern*

Text
Summary 18. Shell Youth Study
https://www.shell.de/ueber-uns/initiativen/shell-jugendstudie.html
Text available for download here

3. Watch the video below, pause it when necessary and take notes:
Use your notes to discuss the question:

- *How could local, state or the federal government empower youth and facilitate their community engagement?*

Video.
How can we meaningfully engage young people? Lessons from the Symposium on Political Participation
https://youtu.be/q-GvKWZy8Wo

QUESTIONNAIRE: Youth Participation and Sustainability

How can youth actively and effectively participate in society and make their voices heard in decision-making processes? Take the questionnaire below to learn more about concrete forms of participation. In this questionnaire, there are no right or wrong answers. Discuss your answers with your group members and talk about how your interests in sustainability issues overlap or possibly differ from each other.

1. How important is the topic of sustainability and climate change to you?

   ☐ Extremely important

   ☐ Very important

   ☐ Slightly important

   ☐ Neutral

   ☐ Relatively important

   ☐ Somewhat important

   ☐ Not important at all

2. Have you heard of "Fridays for Future" (#fridaysforfuture) before?

   ☐ Yes

   ☐ No

3. Have you ever tried to search for organizations promoting sustainability and learn more about their activities?

   ☐ Yes

   ☐ No

4. Have you ever tried to reach out to and/or join organizations promoting sustainability?

   ☐ Yes

   ☐ No

5. Did you participate in events arranged by organizations promoting sustainability and advocating climate change issues?

   ☐ Always

   ☐ Often

   ☐ Sometimes

   ☐ Seldom

   ☐ Never

6. Who do you think can make the most important contributions to achieve environmental and climate protection? Multiple answers are allowed.

   ☐ Government
   ☐ City councils
   ☐ Industries
   ☐ NGOs
   ☐ Schools and universities

   ☐ Businessmen and investors
   ☐ Media
   ☐ Individuals
   ☐ Scientists and researchers
   ☐ Communities

📍 **Case study: Youth Lead the Change: From Boston to Germany!**

Youth Lead the Change Germany (YLCG) is a new initiative that aims to give young people the opportunity to participate in democratic decision-making processes and bring their ideas directly into their community, city, or neighborhood. It is inspired by Youth Lead the Change Boston. Have a look at the YLCG website *for more information.*

1. *Watch the interview with Martin Auer, YLCG's founder and CEO in Germany, and answer the questions below:*

   - *What and where did Martin learn about the Youth Lead the Change organization?*
   - *What are the two concrete steps Martin suggests young people could take to get involved?*
   - *In his opinion, do you need skills to participate and engage in society? What do you think?*
   - *Would you take action individually or collectively to convince local authorities to adopt the "Youth Lead the Change" initiative? Which one do you prefer and why?*

2. *Have a look at the section* "Winning Projects" *that have been implemented in the City of Boston since 2014. Which projects do you find most interesting and why? Which projects could possibly be implemented in your city? What problems did these projects come to solve?*

3. *Post your answer in the FORUM: YLC Boston Winning Projects!*

	Video. **Going Green Interviews Martin Auer: Tell us more about YLCG** *http://e.pc.cd/NwPotalK*

Tasks

Take Action!

Participation has many facets. It might mean sharing your thoughts, identifying problems and discussing possible solutions. This might even lead you to help implement brilliant ideas to improve living conditions for humans and non-humans in your city and/or community.

1. *Review the materials below and reflect on the areas of activism you find most relevant today.*

Then discuss with your group members:

   - *Where do you want to start and acquire experience in participation? (at school, in your community, or with an NGO?)*
   - *What is the most effective form of participation? (lobbying, demonstrations, signing petitions, boycotts, campaigns, ...)*
   - *Do you prefer individual activism or collective activism?*

🗐　**Materials:**

Text
The Four Roles of Social Activism
https://commonslibrary.org/the-four-roles-of-social-activism/

Text
The 5 Types of Activism - Human Rights Career
https://www.humanrightscareers.com/issues/types-of-activism/

Video.
How to be an activist | The Economist
https://youtu.be/R1yNnmHvukw

Video.
The Greta generation - youth activism around the world
https://youtu.be/6NaqdvSphaU

Video.
Want to be a youth activist? Here are some tips | CBC Kids News
https://youtu.be/I1Fx3m2oPC4

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2. Now it is time to identify problems that your school or community are facing in relation to climate, energy and sustainability:

a. Identify problems

Identifying problems is an act of leadership. Look around you and ask yourself: what might people need? What should be changed or improved?

- *List them on the board.*
- *Discuss how urgent and relevant they are and prioritize them.*
- *Which one would you tackle?*

b. Study the problem to understand it in depth.

Frame the problem by figuring out its origin, causes and effects. Discuss how you could refine the solution so the problem becomes clearly scoped and manageable.

Post the outcome of your discussion on the board! We highly encourage you to create a board and post your texts, posters, and graphics on it.

🛠️ **Eco-challenge: Youth // Participation**

What you already know:

1. You have learned about the characteristics of leadership
2. You understand what it takes to foster youth participation and engagement in social and political life
3. You have identified a problem/problems you would like to tackle as your **Eco-Challenge.**

Now that you have learned about the challenges and measures in the case study, take a look at your own community.

☁️ **Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE:** Eco-challenges - Food//Local in the Virtual Town Hall. Review and comment on other groups' uploads. Compare them to your own eco-challenge.

SEVEN STEPS TO REFINING, RESEARCHING, DOCUMENTING, PLANNING AND SHARING YOUR ECO-CHALLENGE

1. Refine and research your Eco-Challenge

- *Have other schools/communities dealt with this problem?*
- *Are there any best practices that you could share?*
- *What do the experts say? Consult with people who work in the city council, NGOs, local politicians, parliament representatives, etc.*

Always remember to take detailed notes of what you do for later.

2. Plan a campaign to raise awareness

What steps can we take to raise awareness of the problem?

- *Document the problem by taking photos, recording interviews or quote from your expert findings.*
- *Think of a possible campaign to inform the school or the community that there is a problem that needs to be fixed.*

3. Develop an action plan

- *What does it take to fix the problem?*
- *What resources do we have?*
- *What resources do we need?*
- *How can we get these resources?*
- *What can we actually contribute to solving the problem?*

4. Document your eco-challenge - be creative!

Document your approach and findings well, e.g. in a

- *One-minute video*
- *Short PowerPoint presentation*
- *Poster*
- *Photo diary*

5. Present your Eco-Challenge to your class

- *Be brief (roughly 10 minutes)*
- *Get feedback*

6. Upload your Eco-Challenge into the DATABASE

DATABASE: Eco-challenge - Youth // Participation in the Virtual Town Hall.

7. ALL: Vote on ONE Eco-Challenge to submit to the competition.

- > *Which is the best? The most realistic to implement? The one you would join?*
- > *Review the eco-challenge everybody agrees upon and suggest final changes*
- > *Go to "Section 3. Your sustainability action plan" and follow the instructions to upload your courses action plan: TASK: Sustainability project*

☕ **Warm-Up: "A resolution for the whole planet"**

On October 8, 2021, the UN General Assembly passed a resolution recognizing access to a healthy and sustainable environment as a universal right. This historic step was followed by a resolution passed on July 28, 2022, in which the UN General Assembly declared access to a clean, healthy and sustainable environment, a universal human right.

This resolution was 50 years in the making, ever since in 1972, the United Nations Conference on the Environment in Stockholm for the first time placed environmental issues at the forefront of international concerns. It marked the start of a dialogue between industrialized and developing countries stressing "the link between economic growth, the pollution of the air, water and the ocean, and the well-being of people around the world." (Source: The right to a healthy environment: six things you need to know). Civil society groups, among them many young activists, played a major role in achieving this milestone.

While the resolution is not legally binding on the 193 UN Member States, it sends a strong signal prompting countries to include the right to a healthy environment in national constitutions and regional treaties, and encouraging states to implement those laws

1. Answer the following question:

- *What states chose not to vote in favor of the resolution? Search on the internet for the reasons behind their abstention.*

***Need Help?** Have a look at this article.*

Article

With 161 Votes in Favour, 8 Abstentions, General Assembly Adopts Landmark Resolution Recognizing Clean, Healthy, Sustainable Environment as Human Right

https://press.un.org/en/2022/ga12437.doc.htm
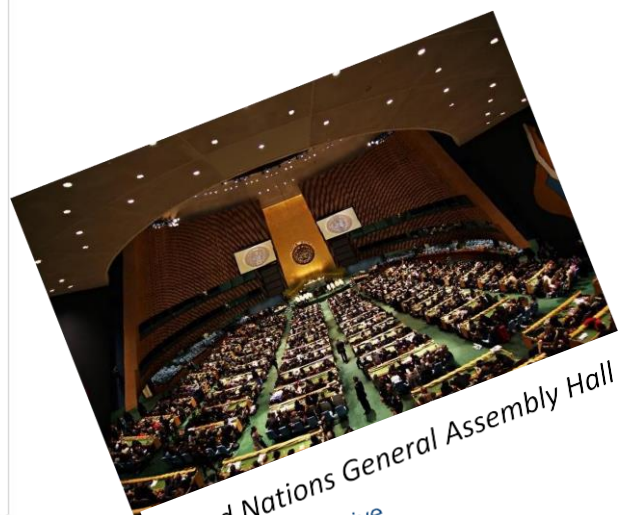
United Nations General Assembly Hall

© GPA Photo Archive

2. Watch the following video posted by the US Special Rapporteur on Human Rights and the Environment (UNSR), take notes, and answer the following questions:

- *What does the right to a healthy environment include? List the six areas included in the resolution.*
- *The resolution includes three tools needed to exercise the right to a healthy environment. List what is included in the "toolkit" and explain their meaning and importance.*
- *In your opinion, how do these areas and tools apply to your country?*

Video.
Recognizing the human right to healthy environment
https://youtu.be/ytDeHt6u374

What is Environmental Justice?

The Environmental Protection Agency (EPA) defines Environmental Justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies."

1. What does the EPA mean by "fair treatment" and "meaningful involvement"? Have a look at the website below and post your answer in the FORUM: Discussing Environmental (In)Justice. Do not copy/ paste the answer directly from the website. Try to understand the text and write your answer in your own words.

Website.
Learn about Environmental Justice
https://www.epa.gov/environmentaljustice/learn-about-environmental-justice

Video.
Environmental Justice, explained
https://youtu.be/dREtXUij6_c

2. Watch the following video and answer the questions below:

- *How is environmental justice defined in the video? Does this definition differ from the EPA's definition? Justify your answer.*
- *According to the video, what causes environmental injustice? List the different causes in the FORUM: Discussing Environmental (In)Justice and explain which one, in your opinion, is the most important cause.*

FORUM: Discussing Environmental (In)Justice

In the previous activities, you learned more about the foundations of environmental justice and the issues around it.

Use your notes and the body of knowledge you accumulated to discuss the following topics:

1. *The first discussion topic should be about the meaning of "fair treatment" and "meaningful involvement" in the EPA's definition of environmental justice.*
2. *The second discussion topic should be about the main causes of environmental injustice.*

Research task: Racial Disparities and Climate Change

Climate change disproportionately affects those who suffer from socio-economic inequalities, including many people of color. As the United States becomes increasingly diverse, understanding how the current crisis impacts people of different racial and ethnic backgrounds is important. This following article provides a brief overview of the climate challenges faced by communities of color and the steps taken to address the existing disparities.

The following text is an excerpt from a publication by PSCI

Text
Racial Disparities and Climate Change
https://psci.princeton.edu/tips/2020/8/15/racial-disparities-and-climate-change

August 15, 2020
Contributors: Aneesh Patnaik, Jiahn Son, Alice Feng, Crystal Ade
Source: psci.princeton.edu

1. *Environmental Justice and Environmental Racism*

Environmental Racism

Environmental racism refers to the unequal access to a clean environment and basic environmental resources based on race. Communities of color are disproportionately victimized by environmental hazards and are far more likely to live in areas with heavy pollution. People of color are more likely to die of environmental causes, and *more than half of the people* who live close to hazardous waste are people of color. Some activists call environmental racism *the new Jim Crow* as it subjects communities of color to inequitable living conditions. This goes back to beliefs initially perpetuated by the institution of slavery when enslaved Africans were considered "*disposable*" because they were sent to work in conditions deemed too dangerous for white workers. The authorities in the United States, as well as the institutions in place, often treat areas that are home to minority residents as of less value than wealthy and predominantly white neighborhoods. The burdens of pollution, toxic waste, and poisoned resources are not distributed equally across society.

Environmental Justice

Environmental justice is a social justice movement that seeks to dismantle the flawed environmental policies that have long harmed low-income communities and communities of color, and instead pursue policy and development that work to create a sustainable, cooperative, and equitable future for the environment. It rests on the principle that everyone has a right to a clean and healthy environment, and the environmental justice movement strives to attain that. It also seeks to remedy the ills of environmental racism and to give everyone a liveable future. This movement initially began in the late 1980s, when a report was published (*Toxic Waste and Race*) that proved communities of color were subject to environmental degradation and dangerous pollution.

Questions:
- What is the difference between environmental justice and environmental racism?
- Why is the author comparing environmental racism to the institution of slavery?

2. *How are people of color disproportionately affected?*

Air Quality

Annually, the United States Oil and Gas Industry releases about *9 million* tons of methane gas and other toxic chemicals into the atmosphere. African American and low-income communities are disproportionately affected by air pollution in the United States. For example, more than one million African Americans live within a half-mile of natural gas facilities, over one million African Americans face a "cancer risk above EPA's level of concern" due to unclean air, and more than 6.7 million African Americans live in the 91 US counties with oil refineries. In total, African Americans are 75% more likely than White people to live in "fence-line" communities (areas near commercial facilities that produce noise, odor, traffic, or emissions that directly affect the population). Additionally, exposure to poor air quality can cause numerous health problems such as asthma. Approximately 13.4% of African American children suffer from asthma as compared to only 7.3% of White children.

Government response to concerns over air quality is also vastly different between communities of different races and ethnicities. *From* October 2015 to February 2016, the affluent, suburban Los Angeles neighborhood of Porter Ranch experienced the worst reported methane leak in the United States." Porter Ranch is a predominantly White neighborhood with house prices in the $400,000 range and above. Shortly after the leak, a state of emergency was declared and over 4,000 homes were evacuated. Additionally, the city of Los Angeles ordered the gas company to provide temporary housing for the evacuated individuals. On the other hand, Jefferson Park, a neighborhood in south Los Angeles, is located near an oil-drilling site and contains a population that is over 90% African American or Latinx. "The AllenCo drilling site in Jefferson Park...was finally closed in 2013" after EPA officials became sick after investigating the site. However, since the site's opening in 2010 up until its closing, 251 complaints have been filed to the South Coast Air Quality Management by community members. In response, only 15 citations were filed by the agency against AllenCo.

Ocean Acidification

Ocean acidification occurs when the natural pH of ocean water is lowered due to increased CO2 levels. The ocean absorbs about *30% of CO2* released into the atmosphere. These molecules then undergo a series of chemical reactions that release a surplus of hydrogen ions, which lowers the pH of the water. Ocean acidification affects natural plant and animal life which can negatively impact humans who rely on the ocean for food, economic, and other purposes. For example, oysters, clams, and scallops accounted for nearly *$400 million in the United States*, and an increase in ocean acidification can cost the industry nearly $480 million.

These risks are amplified in communities such as coastal Native American tribes, whose diet and economy rely on seafood. For example, *the Quinault tribe of Washington* own the Quinault Pride Seafood, Land, and Timber Enterprises. The tribe has detailed accounts of an increased number of dead fish washing ashore due to low oxygen levels in the rivers.

Additionally, tourism and hunting in the Arctic are *large contributors* to the economy and greatly help indigenous communities. The sportfishing industry is affected by ocean acidification, which causes a decline in revenue for indigenous populations.
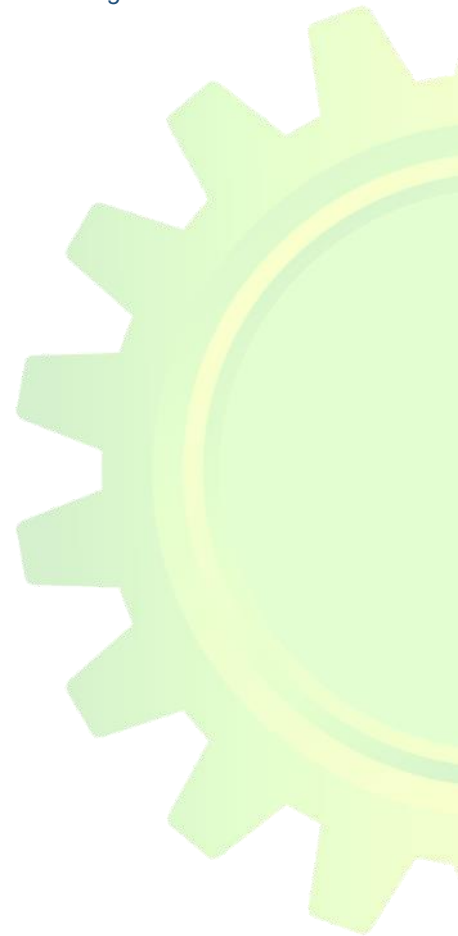
Natural Disasters

One of the most noticeable effects of climate change is the occurrence of natural disasters. As global temperatures rise, more water vapor is stored in the atmosphere, resulting in more rain and powerful storms. Warmer air, another factor of rising temperatures, also causes faster wind speeds during tropical storms. After a natural disaster hits a community, government aid is typically sent to the area to rebuild infrastructure and restore the city. However, the dispersal of aid is one way in which minorities and low-income communities are hurt by natural disasters.

In a study done by Rice University and the University of Pittsburgh, it was found that white counties saw an increase in average wealth after natural disasters while predominantly

Questions:

- *What are "fence-line" areas? Why do many people of color live there?*
- *Compare the government's response to a major methane leak in Porter Ranch and to contamination due to oil drilling in Jefferson Park (both neighborhoods in Los Angeles). Is environmental racism or environmental discrimination at play here?*
- *How could ocean acidification be economically harmful to native American tribes living on the coasts?*

- *After natural disasters such as floods, earthquakes or fires, affected communities receive government aid to rebuild. According to the study conducted by Rice University and University of Pittsburgh, such aid is often not distributed equally. Explain their findings. What are the consequences for low-income neighborhoods with a high percentage of minorities or people of color?*

minority counties saw a wealth decrease. The study notes that white communities saw higher levels of reinvestment in their communities after natural disasters in comparison to their minority counterparts.

Additionally, it was found that white families in communities with significant damage from natural disasters saw an increase in wealth due to generous reinvestment initiatives. However, minority families in communities with similar damage from natural disasters saw a smaller increase in wealth or they actually saw a decrease in wealth. White families living in areas with about $100,000 in damage saw a wealth increase of about $26,000. White families living in areas with about $10 billion in damages saw a wealth increase of nearly $126,000. Conversely, black families living in areas with about $100,000 in damages saw a wealth increase of $19,000. Black families living in areas with about $10 billion saw a wealth decrease of about $27,000.

Furthermore, low-income Americans are more likely to suffer from the consequences of tropical storms due to inadequate infrastructure and lack of proper insurance. Low-income and minority populations are also more likely to live near industrial facilities and are therefore at a higher risk for chemical spills and toxic leaks resulting from tropical storms. For example, 60% of African Americans in Baltimore live within one mile of a Toxic Release Industry, and 70% percent of African Americans live within two to four miles of one.

3. Why are people of color disproportionately affected?

The impacts of climate change are largely determined by the population's vulnerability and resilience. Hence, they are more likely to be felt disproportionately by those who suffer socioeconomic inequalities. In the United States, people of color are found to be particularly more vulnerable to heatwaves, extreme weather events, environmental degradation, and subsequent labor market dislocations.

Looking back in time, the establishment of slavery is a precursor to more recent discriminatory policies and social, political, and economic inequalities. Lower income level, limited access to education, and poorer health status are found to be more prevalent in African American communities than non-Hispanic white communities. The historical discriminatory practices in housing, education, employment, and healthcare all played a role in the manifestation of these inequalities that contribute to greater vulnerability to climate impacts.

Two critical components of climate vulnerability are pre-existing health status and living conditions. For example, although African Americans make up 13 percent of the US population, a startling 68 percent live within 30 miles of a coal-fired power plant, compared to 56 percent of Whites. Residents near these plants breathe in the most resultant pollutants, which can cause a range of health problems, from heart attacks to birth defects to asthma. But ultimately in the US, these factors are oftentimes beyond the control of the individual. The economic power, social policies, and political influences differ by place, race, and income as a result of historical disinvestment, discriminatory practices and policies over time, structural racism, higher pollution burdens, and inadequate access to healthcare resources. As communities of color face more challenges brought by climate change, effective policies and programs are thus crucial to improve the current condition. " "

Questions:

- *What are the main factors behind environmental injustice? Make a quick list. How do these factors increase risks for low-income neighborhoods in the context of climate change?*
- *Brainstorm potential solutions to improve the living conditions of harmed communities*
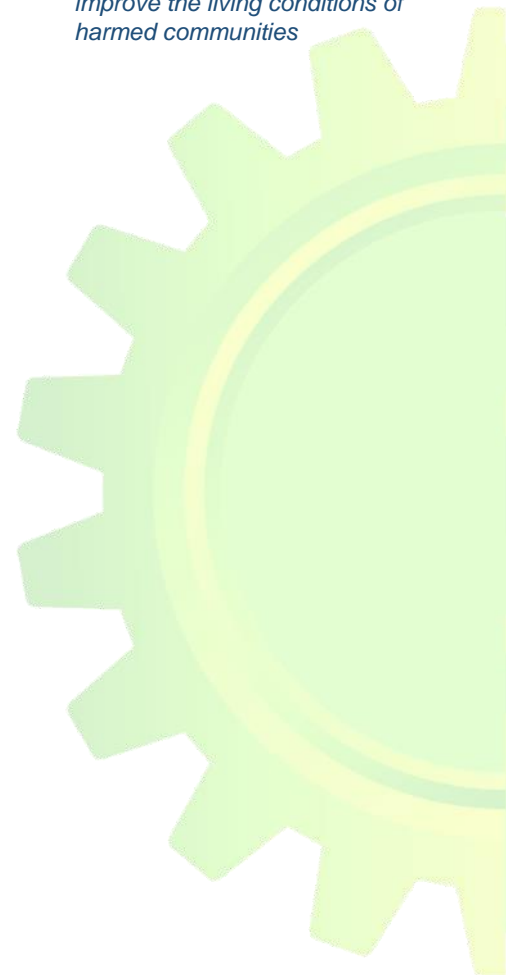
Affected Minority Groups? Let's Listen to Indigenous Activists

One group most affected by climate injustice and environmental racism are indigenous people in the U.S. and around the world. Let's take a look at two activists.

In this activity, we will meet Sherri Mitchell, an Indigenous rights lawyer and activist who has fought for environmental justice for more than 25 years. Mitchell was born and raised in the Penobscot Nation, a federally recognized native tribe in Maine.

"Environmental justice is a term that is thrown around quite frequently. And I think that a lot of people have this idea that it's this separate component that people need to be working on. But for us, environmental justice is really about harmonized relationship, what we call Psilde N'dilnabamuk. It's about living in kinship with the rest of creation, with all life. So we understand that we have a certain responsibility to honor the right, that all other living beings have to continue to exist, uninhibited, unmolested in their natural environment, just as we do in ours." — Environmental lawyer Sherri Mitchell

1. Watch the video, take notes and answer the questions below:

- *What does environmental justice mean to indigenous people and in what terms does it differ from the mainstream view?*
- *What solution does Sherri Mitchell suggest to address indigenous environmental issues?*
- *Why does Sherri Mitchell suggest that indigenous issues should be of concern to everyone and should not remain for indigenous communities alone to solve*
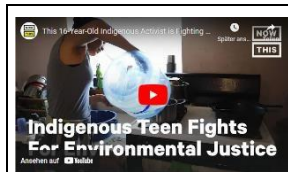
Video.
 Why All Americans Should Care About 'Environmental Racism' | NowThis
 https://youtu.be/CeNqlqFLW8A

And now, let us meet Mikayla Johnson, an indigenous activist who is advocating for environmental justice. Native American activists are facing challenges in sustaining a safe environment in their communities. Mikayla Johnson is a member of the Diné Tribe in Black Mesa, AZ. Mikayla Johnson's community is located approximately 1 mile from the Navajo Generating Station, one of the nation's largest coal plants. Mikayla, who grew up without running water or electricity, has been persistent in her water conservation efforts. Additionally, she and her mother Nicole Horseherder are advocating for 100% renewable energy in their community.

2. Watch the video, take notes and answer the questions below:

- *"Everything that I am, there is a lot that is against me [in this country]." What does Mikayla mean? Support your answer with examples from the video.*
- *What did Nicole and Mikayla do to advocate for environmental justice? How did they inspire people around them to change their mindset?*

Video.
 This 16-Year-Old Indigenous Activist is Fighting for Environmental Justice | NowThis
 https://youtu.be/LJog0VAWVas

📍 **Case study: Redlining Policies & Environmental Injustice**

Environmental Injustice occurs more often in communities of color and low income. To understand how these disadvantages arose and how past governmental decisions still influence affected neighborhoods today, have a look at the website "The lines that shape our cities - Connecting present-day environmental inequalities to redlining policies of the 1930s"

1. *Read the part "Drawing the lines" below and answer the questions below:*

- *What are redlining policies and where does the term "redlining" come from?*
- *What was the reason behind creating color-coded residential security maps?*
- *How did redlining policies foster environmental racism?*

The following text is an excerpt from a publication by the Digital Scholarship Lab at the University of Richmond in cooperation with the Science Museum of Virginia and Esri.

Website.
The lines that shape our cities – Connecting present-day environmental inequalities to redlining policies of the 1930s
https://storymaps.arcgis.com/stories/0f58d49c566b486482b3e64e9e5f7ac9
Contributors: Digital Scholarship Lab (University of Richmond), Science Museum of Virginia, ESRI
*Text preview printed from the website*

Drawing the lines

During The Great Depression, President Franklin Delano Roosevelt immediately started implementing social assistance programs at an unprecedented scale. One noteworthy result of his New Deal federal stimulus programs was the creation of a new agency: the Home Owners Loan Corporation (HOLC).

The HOLC gave over one million emergency refinancing loans to homeowners between 1933 and 1936, including to people of color and immigrants. But the HOLC also hired real estate assessors to create color-coded, residential security maps. These maps used a rating scale to assign grades to neighborhoods reflecting their "residential security"—the supposed relative riskiness of a neighborhood to mortgage lenders like banks.

Evidence suggests that these HOLC maps were used by banks for decades after the emergency funding program ceased. Lenders used the maps to determine which neighborhoods would be safest for financial investment, but these assumptions were based solely on neighborhood descriptions, not information about individual borrowers.

Historian Kenneth Jackson described in his book, *Crabgrass Frontier*, that the HOLC maps *"undervalued neighborhoods that were dense, mixed, or aging,"* and *"applied [existing] notions of ethnic and racial worth to real-estate appraising on an unprecedented scale."* While the maps didn't create racism, they quickly became a tool for upholding racist systems and policies.
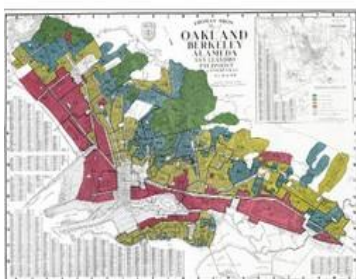
A HOLC map of Oakland, California showing neighborhoods graded into four different categories.

HOLC-backed assessors were generally older White males who made assessments based on their perceptions. Racism, nativism, and class privilege are clear in the grades as they possessed a clear pattern. They recorded their descriptions and designations on forms that are now available to view online. Green areas, given grade "A," were believed to be inhabited by the upper classes, such as businessmen and wealthy White people. Blue areas, given grade "B" ratings, meant the assessor classified the area as having "good people" like white-collar families. Yellow areas, given grade "C," were considered declining areas with working-class people. Finally, grade "D" meant significant levels of detrimental influences. Assessors referred to these areas as "hazardous;" they were home to mostly foreign-born people, lower-class Whites, and Black people. The grade "D" neighborhoods were identified by the red lines drawn around them— hence the origin of the term "redlining."
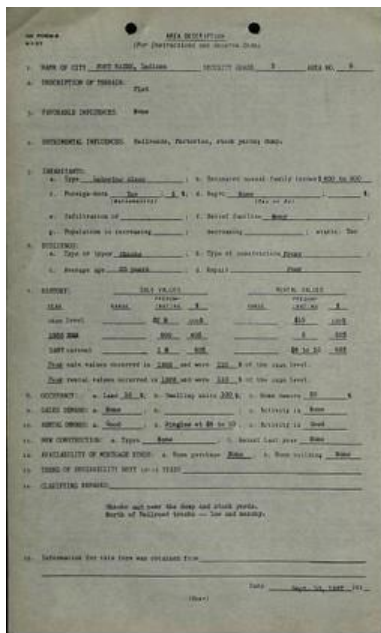
An example of an assessment form created on September 10, 1937 for a neighborhood in Oakland, California.

The HOLC maps may have expedited the loan process for lenders by recording some objective information about neighborhoods, such as proximity to rail yards and industrial areas. However, many of the beliefs that government assessors applied when creating the maps were entirely subjective, explicitly racist, and created or codified adverse conditions that still affect cities today.

Nearly a century later, redlined neighborhoods continue to be affected by decades of divestment, and they still experience segregation in many ways. Public housing projects were designed to keep Black Americans in specific neighborhoods, while literal barriers including the Interstate Highway System bulldozed and displaced redlined and Black neighborhoods and separated them from urban cores. These nefarious practices likely created and amplified challenges for communities of color, including lower education rates, higher crime rates, lower home prices, lower credit scores, and absent city services for residents. The social effects of redlining are clear, but what about the effects of these maps on the physical environment?

2. On the website, you will find several environmental factors having a severe impact on people living within redlined areas.

- *Have a look at one of the case studies mentioned below.*
- *Take notes on the relationship between the residential district's location and their respective environmental characteristics.*
- *Post your answers on the FORUM: Redlining Policies & Environmental Injustice and discuss your findings with your group members.*

Work with your group members on one of the following case studies:

Urban heat islands – St. Louis, Missouri
- *Briefly explain the meaning of an "urban heat island" and determine its effects on the city of St. Louis*

Tree coverage – Montgomery, Alabama
- *Briefly explain the meaning of "tree coverage" and determine its effects on the city of Montgomery, Alabama*

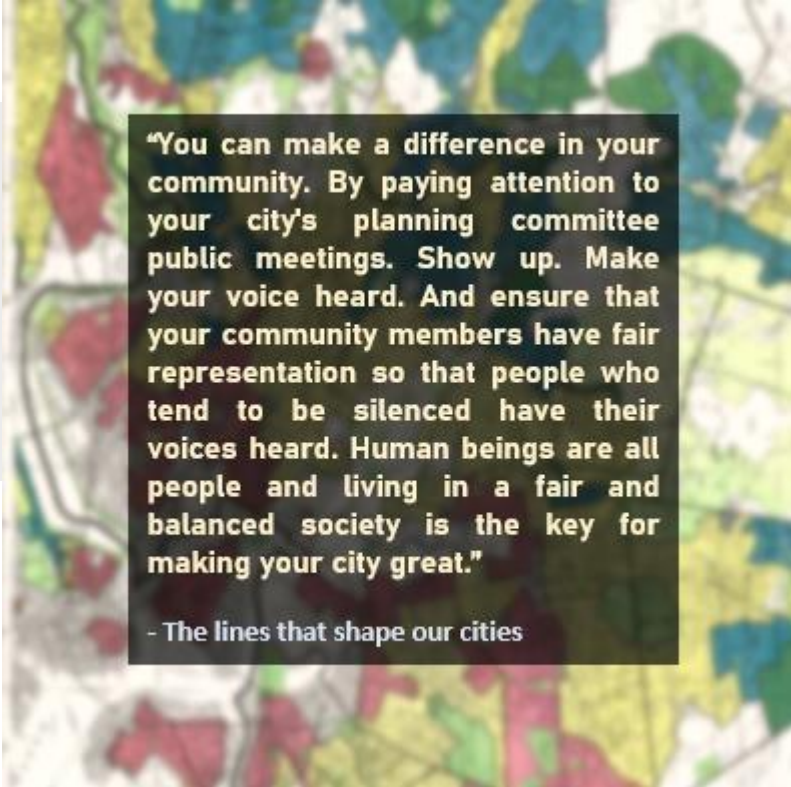*Impervious surfaces – Fort Wayne, Indiana*
- *Briefly explain the meaning of "impervious surfaces" and determine their effects on the city of Fort Wayne, Indiana*

Topography – Oakland, California
- *Briefly explain the meaning of "topography" and determine its effects on the city of Oakland, California*

Environmental Injustice occurs more often in communities of color and low income. To understand how these disadvantages arose and how past governmental decisions still influence affected neighborhoods today, have a look at the website "The lines that shape our cities - Connecting present-day environmental inequalities to redlining policies of the 1930s"

1. Post your findings from the case study you selected in the previous activity in a new discussion topic below. Comment on your classmates' work as well. In your comments, try to figure out whether your city is experiencing similar environmental problem.

"You can make a difference in your community. By paying attention to your city's planning committee public meetings. Show up. Make your voice heard. And ensure that your community members have fair representation so that people who tend to be silenced have their voices heard. Human beings are all people and living in a fair and balanced society is the key for making your city great."

- The lines that shape our cities

© *Image adapted from Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," American Panorama, ed. Robert K. Nelson and Edward L. Ayers, accessed January 12, 2023,* https://dsl.richmond.edu/panorama/redlining/

Environmental Injustice in my Neighborhood!!?

Environmental injustice is a global phenomenon and might very well be happening around you.
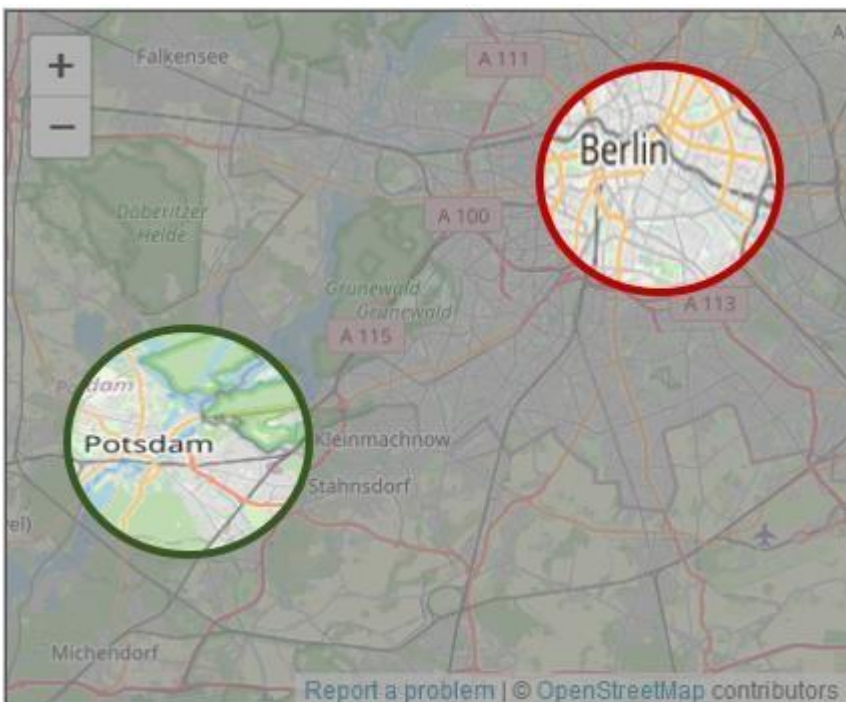
1. Search for a satellite view of your school's neighborhood on the map. How green is it?

- *Are there enough green spaces (e.g. parks, trees, forests, lakes, botanical gardens, etc.) in your school's neighborhood?*
- *Do you cross highways to get to school?*
- *How far is your school's neighborhood from industrial zones?*
- *How is the condition of green areas in or near your school's neighborhood?*

Refine your neighborhood assessment on a poster, try to include screenshots, pictures or videos, and post them on a board.

Eco-Challenge: Environmental Justice and you

What you already know:

1. You have learned about the different concepts around Environmental Justice.
2. You understand the impact of the different social, economic and political factors on the environment.
3. You have identified a problem/problems you would like to tackle as your **Eco-Challenge.**

Now that you have learned about the challenges and measures in the case study, take a look at your own community.

How to plan your research step- by step:
Following these steps will help you plan your research together with your group members.

1. ***Research topic: What is the topic or issue?***

   Decide on the general topic of your research first. It may help to do a brainstorming of possible topics, a quick web-research or talk to an expert first. Some possible topics could be "plastic pollution on our school campus", "environmental justice in our city", "plastic dependence of our household(s)" etc.

2. ***Research question: What do we want to find out?***

   Now decide what it is that you want to find out. Formulate a question that addresses your issue. Your question must be specific enough so that you can answer it. A possible research question could be "Do pollution data and health problems in our city correlate with each other?" or "What are people's opinions on raising the price of plastic bags?"

3. ***Research method: How will we find out?***

   Decide what you will do to answer your question. This will include collecting evidence like interviews, survey answers, photographs and videos, experiment results, and so on. Also think about who is going to do what and when, and what tools and resources you will need.

4. ***Research hypothesis: What results do we expect?***

   Briefly note what results you think you will get. This is called a hypothesis. Your research may confirm your hypothesis or it may produce different results.

5. ***Research report: How will we document and present our findings?***

   Note how you will document your findings and present them later on in class and online. For example, if you do an online survey, you could create a PowerPoint presentation with diagrams, you could write a blog entry about your research, or even produce a video or photo story with interesting findings.

For more help, review the *TIP: Conducting research*.

Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE: Eco-challenges – Environmental // Justice in the Virtual Town Hall. Review and comment on other groups' uploads.

SEVEN STEPS TO REFINING, RESEARCHING, DOCUMENTING, PLANNING AND SHARING YOUR ECO-CHALLENGE

1. Refine and research your Eco-Challenge

- *Have other schools/communities dealt with this problem?*
- *Are there any best practices that you could share?*
- *What do the experts say? Consult with people who work in the city council, NGOs, local politicians, parliament representatives, etc.*

Always remember to take detailed notes of what you do for later.

2. Plan a campaign to raise awareness

What steps can we take to raise awareness of the problem?

- *Document the problem by taking photos, recording interviews or quote from your expert findings.*
- *Think of a possible campaign to inform the school or the community that there is a problem that needs to be fixed.*

3. Develop an action plan

- *What does it take to fix the problem?*
- *What resources do we have?*
- *What resources do we need?*
- *How can we get these resources?*
- *What can we actually contribute to solving the problem?*

4. Document your eco-challenge - be creative!

Document your approach and findings well, e.g. in a

- *One-minute video*
- *Short PowerPoint presentation*
- *Poster*
- *Photo diary*

5. Present your Eco-Challenge to your class

- *Be brief (roughly 10 minutes)*
- *Get feedback*

6. Upload your Eco-Challenge into the DATABASE

DATABASE: Eco-challenge - Environmental // Justice in the Virtual Town Hall.

7. ALL: Vote on ONE Eco-Challenge to submit to the competition.

- > *Which is the best? The most realistic to implement? The one you would join?*
- > *Review the eco-challenge everybody agrees upon and suggest final changes*
- > *Go to "Section 3. Your sustainability action plan" and follow the instructions to upload your courses action plan: Task: Sustainability Project*

✋ **Warm-Up: What is Energy?**

We all know that energy is highly essential to our movements and daily actions. But its nearly intangible aspects make it all the more intriguing. For example, people often tend to confuse "energy" with "power". So, let's take a closer look: What is energy? What are its main forms and sources?

1. Watch the video below and answer the following questions:

- *What are the main forms of energy?*
- *Why can energy neither be created nor destroyed?*
- *What processes does primary energy undergo to turn into its final and usable form?*

Video.
Energy 101
https://youtu.be/WY52jHW59No

The Landscape of Energy Sources:

1. Watch the following video on fossil fuels. Take detailed notes around the following questions:

- *What are the applications of fossil fuels?*
- *What are the advantages and disadvantages of using fossil fuels?*
- *Why are fossil fuels considered non-renewable?*

Video.
Fossil Fuels 101
https://youtu.be/zaXBVYr9Ij0

2. Watch the following video on renewable energy. Take detailed notes around the following questions:

- *What are the applications of renewable energy?*
- *What are the advantages and disadvantages of using renewable energy?*
- *Are all renewable energies considered green?*

Optional: Why is nuclear energy not considered a renewable?

3. Using your notes from the videos above, review the additional materials, collect information on each energy source and summarize them on the board.

Video.
Renewable Energy 101
https://youtu.be/T4xKThjcKaE

Materials*:*

	Video. **Energy Sources | Energy | Physics | FuseSchool** *https://youtu.be/jo_IRDLLSNU*

	Video. **GCSE Physics - Introduction to Energy Sources #9** *https://youtu.be/AOhQ4gj4Ng8*

	Video. **Different Sources of Energy, Using Energy Responsibly, Educational Video for Kids** *https://youtu.be/wMOpMka6PJI*

	Video. **Types of Energy | Energy Forms | Energy Sources and Uses** *https://youtu.be/63t0Y2ACoh4*

	Optional Texts. **Energy Reality – Essays** *https://energyeducation.ca/encyclopedia/Energy_density_vs_power_density*

	Text. **Energy density vs power density** *https://www.postcarbon.org/publications/energy-reader/*

	Text. **Energy Literacy - Essential Principles and Fundamental Concepts for Energy Education** *https://www.energy.gov/sites/default/files/2017/07/f35/Energy_Literacy.pdf*

FORUM: Which energy source is most energy efficient?

You have learned more about the different energy sources and enhanced your knowledge on energy concepts such as "energy efficiency", "net energy ratio" and "energy conservation." Now apply your knowledge and reasoning to discuss which energy source could be most efficient.

1. Watch the following video, use your notes from the previous activities and discuss the questions below:

- *Which energy source is most efficient in terms of energy production?*
- *Research on the web which energy source is most effective in terms of costs and profitability. Discuss your findings with your group members and justify your answer. Pay attention and be critical of the internet sources you use to justify your opinion.*

Video.
Which Power Source is Most Efficient?
https://youtu.be/0c4xk5dB014

📄 **Materials and resources:**

Video.
Energy Efficiency 101
https://youtu.be/D11iFUw_ImU

Video.
GCSE Physics - Efficiency #8
https://youtu.be/7hcv_mxcA-g
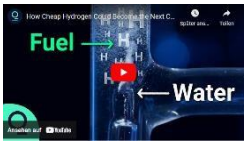
Research task: Mapping Energy Systems

Energy is a broad topic. The embedded map below might very well illustrate the diversity of energy topics (e.g. energy production, conversion, sources, uses, forms, etc.) The ENERGY SYSTEM presents an interactive map including a network of several concepts, each one is accompanied with an overview and detailed explanation.

1. Select two concepts or more of your own choice (e.g. "energy efficiency" and "energy storage") and read their texts carefully. Underline key sentences and relevant information about the concepts and use them in your summary.

2. Summarize the concepts and present them in the forum to your fellow groupmates.

Innovations for a Greener World

Using fossil fuels is harmful to the atmosphere, and by extension, to the environment. When fossil fuels are burned, large amounts of CO2 are emitted into the atmosphere, causing atmospheric pollution and accelerating the process of climate change. Therefore, climate scientists call for massive investments into key green energy technologies to accelerate the transition towards sustainability and avoid climate disaster. Furthermore, start-ups stress the importance of green Hydrogen for sustainability and sustainable technology. Let us have a look at two examples: H2PRO and C-Zero, two promising start-ups innovating in the field of Hydrogen production. Both seek to produce Hydrogen effectively at low cost.

1. Watch the following video, review the materials below and take notes around the following questions:

- *What is the difference between grey and blue Hydrogen?*
- *What makes green Hydrogen more interesting than other types of Hydrogen in the rainbow spectrum?*
- *How is H2PRO producing green Hydrogen?*
- *What difficulties did H2PRO face in the beginning and how did the start-up overcome the difficulties?*
- *What is turquoise Hydrogen and how is C-Zero producing it?*

Video.
How Cheap Hydrogen Could Become the Next Clean Fuel
https://youtu.be/JGe8R0N20ps

2. Have a look at the website below, read the text and do the following activities:

- *Use the tool on the website to guess how much each sector contributes to Greenhouse Gas emissions. Compare your answers to the facts and rank sectors from highest to lowest in terms of Greenhouse gas emissions.*
- *The Breakthrough Energy website states:*

   "Humans have been innovating in all these areas for thousands of years—but energy transitions can take centuries, and we don't have time to wait. Right now, we need the most ambitious innovation program the world has ever seen to build and scale clean technologies that can compete with the ones we're using now."

   Discuss this approach with your group members. To enrich your discussion, further investigate the main challenges within each sector and how is the Breakthrough Energy Team proceeding to tackle them on the website.

Website.
Our Approach: Getting to Zero – The Most Ambitious Innovation Effort in Human History
https://breakthroughenergy.org/our-approach/getting-to-zero/

Optional   ***Hydrogen and decarbonization***

Why is Hydrogen vital to decarbonization, and why is decarbonization necessary to transition to clean energy supply?

1. Watch the video below and answer the questions that follow:

- *Does Hydrogen exist in a pure form? In what substances do we find Hydrogen?*
- *Why is Hydrogen considered "clean" energy?*
- *What are the main advantages and disadvantages of Hydrogen?*
- *What problem is Europe facing concerning the supply of carbon neutral Hydrogen, and what are the solutions suggested in the video?*

After reading this text and watching the video, you should know the relevance of Hydrogen to decarbonization and the latter's importance to the transition to clean energy supply. Discuss your findings with your group members.

Video.
Why hydrogen is seen as a key to success of the energy transition
https://youtu.be/hlSf6AX213I

Text
Clean Hydrogen: A Versatile Tool for Decarbonization
https://rhg.com/research/clean-hydrogen-decarbonization/

📍 **Case study: Building Sustainable Cities**

California's economy is in the process of overtaking Germany and becoming the 4th largest economy in the world. Nonetheless, rather than relying on fossil fuels, the state of California has set itself an ambitious goal: to build a 100% renewable power system that not only maintains a reliable and cheaper supply of energy but also minimizes land use and reduces CO2 emissions. But how is California using sustainable technologies to meet its 100% clean energy-supply goals?

1. Have a look at the following website and answer the questions below:

- *What is the difference between carbon-free fuel and carbon-neutral fuel? Provide one example for each type of fuel.*
- *Why are Hydrogen and Methane considered "sustainable fuels"?*
- *Why are sustainable fuels important to the process of decarbonization?*

Website.
How to use sustainable fuels to meet 100% renewable power goals
https://www.pathto100.org/optimize/sustainable-fuels/

California breaks record!
California breaks record by achieving 100% renewable energy for the first time

2. Read the article "California breaks record by achieving 100% renewable energy for the first time" and answer the following questions:

- *What turning point does California's achievement of producing 103% of its energy needs imply?*
- *How did local governments in California contribute to this achievement?*
- *Does this achievement mean that California can opt out of using fossil fuels? What still needs to be done?*

The following text is an excerpt from a publication by Earthday

Article.
California breaks record by achieving 100% renewable energy for the first time
https://www.earthday.org/california-breaks-record-by-achieving-100-renewable-energy-for-the-first-time/

Author: Evan Raskin
Publication date: June 10, 2022

As Earth Month drew to a close, the state of California was recently able to produce virtually *all of their energy needs* from renewable sources for the first time ever.

In early April, the state achieved a new record at 97.6% renewable power, and on May 2 they were able to reach 99.9%. On May 8 the record was broken yet again, with *103% of the state's power needs being met* by renewables for a few hours.

This landmark moment highlights the viability of renewable energy on a large scale, proving that governments of all sizes have the capability to Invest in Our Planet. If it were an independent nation, California's $3.14 trillion economy would be the *fifth largest in the world.*

While state leadership played a significant role in this accomplishment, local governments made important contributions that led to California's success this spring. City leadership on renewable energy hit an all time high in the last year, having more than *doubled the amount of clean power deals* made in the previous year.

To set our sights on a fully carbon-free future, however, there is still work to be done to ensure that clean power is available at all times; when the sun is not shining and the wind is not blowing, California must still rely on fossil fuels to meet its energy demands.

Large-scale battery projects are essential to providing clean energy around the clock, allowing solar power generated during the day to be stored and used after sunset. The state has invested in massive efforts to scale up the grid's storage capacity in recognition of this need, and battery storage in California has already increased 20-fold since 2019. These efforts have been aided by a *97% decrease* in the production cost of batteries over the last 30 years, a trend that continues to accelerate year after year. The US is also home to one of the largest deposits of lithium (an essential mineral for battery production), of which only 1% is currently being used; *sustainably extracting this resource will be necessary* to achieve the speed and scale needed for the US to meet its climate goals.

For California to achieve 24/7 carbon-free energy by 2045, solar and wind projects will need to be built 3 times faster and battery storage expansion will need to be developed 8 times faster. In addition to the trends in battery production described above, the renewable energy industry is evolving to bring this goal well within reach. Clean power production in California has tripled since 2005, largely due to increased cost efficiency in renewable energy. Over the last decade, the price of renewable energy has plummeted: wind has become 3 times more affordable and solar has become 10 times more affordable, making it *more cost effective than any fossil fuel-burning power source.*

Recognizing the benefits to the economy and national security, President Biden *announced new executive orders* on June 6th to Invest in Our Planet by accelerating the transition to renewable energy in the US. The President authorized the Department of Energy to use the Defense Production Act to increase production of key components for solar panels, while also lifting tariffs that formed significant barriers to expanding the US solar industry. This action is a significant and direct investment from the federal government to meet its climate commitments, which is likely to further fuel the progress seen recently in California and localities nationwide.

Momentum is on our side. The more we *Invest in Our Planet*, the more these trends will accelerate.

Local governments play a vital role!

> *"Building sustainable cities - and a sustainable future - will need open dialogue among all branches of national, regional and local government. And it will need the engagement of all stakeholders - including the private sector and civil society, and especially the poor and marginalized"*
>
> - Remarks at *"Sustainable Cities Days",* Ban Ki Moon

1. Read the following text to learn about the initiatives and efforts that the City of Philadelphia is taking to precipitate the transition to renewable energy. American Cities Renewables Accelerator: Philadelphia, PA

Provide an overview of the local initiative covering the biggest challenges, advice, lessons learned, community commitments and goals on climate and sustainability. Use the ECO-CHALLENGE: Green // Energy *to document the Philadelphia success story and take advantage of it as a food for thoughts and ideas to be implemented in your city, if applicable. Suggest and discuss the Philadelphia success story (or other local government initiatives found below) with classmates working on the module Youth Participation in the* FORUM: Youth Participation Matters!

To expand your knowledge on efforts taken by different other local governments in the U.S., have a closer look at:
- *City Stories & Videos*
- *City Stories Video Library*

YOLO County goes green!
Mainspring announces 100% landfill biogas pilot project

The following text is an excerpt from a publication by Biomassmagazine

Article.

Mainspring announces 100% landfill biogas pilot project

https://biomassmagazine.com/articles/19387/mainspring-announces-100-landfill-biogas-pilot-project

Author: Mainspring Energy Inc.
Publication date: September 29, 2022

Clean power generation provider Mainspring Energy announced on Sept. 28 that it has entered into an agreement with Yolo County, California, to pilot a Mainspring Linear Generator running biogas at the Yolo County Central Landfill. In its first 100 percent landfill biogas pilot project, to be deployed in the upcoming weeks, the Mainspring product will run on biogas produced by the landfill to generate electricity that can be used for site operations or exported to the grid.

Landfill biogas, a natural byproduct of the decomposition of organic material in landfills, when not controlled, produces significant amounts of methane emissions. Municipal solid waste landfills are the third-largest source of human-related methane emissions in the U.S. These landfills provide an important opportunity to capture and sustainably use this significant energy resource to generate renewable electricity. In turn, this can reduce emissions and prevent methane from migrating into the atmosphere and contributing to local smog and global climate change.

"One big advantage of a fuel-agnostic generator design is the ability to convert biogas from a number of agricultural and waste management operations into useful, renewable electricity," said Shannon Miller, CEO and Founder of Mainspring. "We are honored to be working with an innovative municipality like Yolo County to unlock the potential of Mainspring's technology in this important global use case."

The pilot project will provide important real-world system experience as Yolo County evaluates the fuel-flexible linear generator technology in its biogas system.

"We are excited to partner with Mainspring and continue to demonstrate production of renewable electricity using a new and innovative technology that has the potential to increase efficiency of electricity production and reduce air emissions*,"* said Ramin Yazdani, director of integrated waste management at Yolo County.

Yolo County Central Landfill (YCCL)

The YCCL has made significant innovative strides over the last 30 years to reduce the amount of waste going into the landfill, to capture emissions, and to provide a myriad of recycling and reuse services for the surrounding community. The YCCL operates with an average annual budget of $39 million that encompasses landfilling operations, green & food waste composting, landfill gas control and electricity production, environmental compliance, capital improvements, and administration. The Mainspring project is the latest in a series of efforts by the YCCL to increase power generation and reduce greenhouse gas emissions.

Biogas Systems and the Mainspring Linear Generator

Landfills represent just one type of biogas system. Biogas systems recycle organic waste of many kinds into renewable energy, while reducing greenhouse gas emissions. According to the *American Biogas Council*, the U.S. today has 2,300 biogas-producing sites in 50 states, including landfills, farms, wastewater treatment facilities, and systems that digest food scraps. The U.S. currently has the potential to build 15,000-plus new biogas systems, creating an infrastructure capable of producing enough electricity to power nearly 10 million homes.

The Mainspring Linear Generator's fuel-flexible, modular design is ideally suited for biogas system use to help meet this tremendous potential. It is dispatchable so it can ramp up and down with changing power requirements, modular so it can be easily sited and scaled to different capacities, and fuel-flexible to run any gaseous fuel. The fuel flexibility is particularly helpful in biogas operations, as biogas streams and energy content can change over time depending on feedstock variability and ambient conditions.

📄 **Additional materials and resources:**

Text
EPA: Basic Information about Landfill Gas
https://www.epa.gov/lmop/basic-information-about-landfill-gas

#ReadyFor100: Successful Communities Going Green

Several communities, cities and states across the United States have set themselves a clear goal: to move away from fossil fuels and commit to 100% clean and renewable energy. How are they transitioning? How are they benefiting from it?
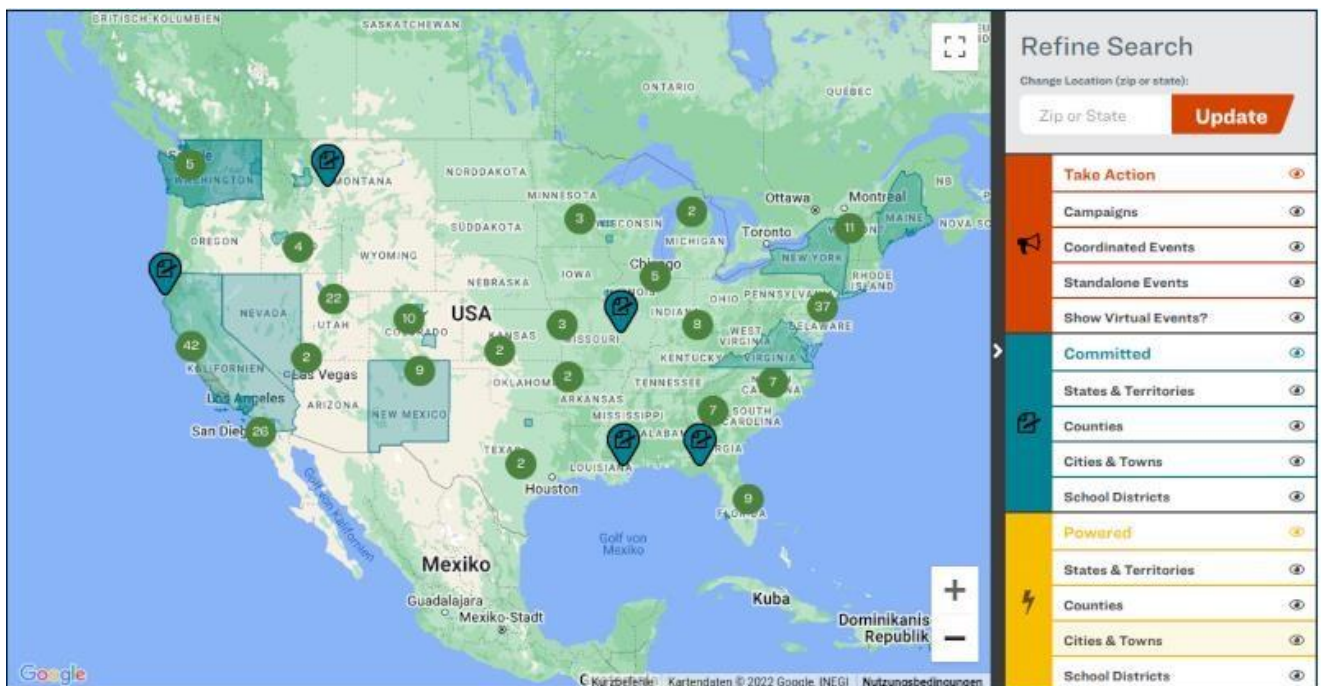
The map shows the current status of states, cities and towns regarding their energy sustainability commitment. Some have already made their way to using 100% clean energy sources. Some others are fully committed to the goal and they are still on their way to achieve it.

Website.
Check Out Where We Are Ready For 100%
https://www.sierraclub.org/climate-and-energy/map

Note: *"Sierra Club created this map as part of the Ready For 100 campaign, which sunsetted in April 2022. As of April 22, we will not update the data on this map, but we left it as a testament to how many cities, counties, and states are committed to transitioning to 100% clean energy.*

- *Change what you see by zooming in/out or by selecting one of the numbered circles (these locations have a lot of activity nearby).*
- *Refine your search by updating the zip or state and using filter views (via the eye icon)."*

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1. Let us take a closer look at East Hampton, a city in the state of New York. Use the interactive map and the materials below to learn more about East Hampton's commitment to 100% clean energy. Take notes on the following questions:

- *What type of city is East Hampton? Main facts like population size, geographical location, and climate*
- *Why has the city decided to combat climate challenges? Background and motivation for local climate action.*
- *What are the specific climate action targets? E.g., GHG reduction goals, renewable energy targets.*
- *What are the specific methods to achieve the goals? E.g., financial incentives, local policies, public-private partnerships, local-state partnerships, etc.*
- *What is the set time frame for the overall plan? How far are along is the city in achieving its goal? Current situation / evaluation (if possible).*

📄 **Materials:**

Document.
CITIES ARE READY FOR 100% CLEAN ENERGY 10 CASE STUDIES
https://www.sierraclub.org/sites/www.sierraclub.org/files/blog/RF100-Case-Studies-Cities-Report.pdf

Website.
100% Renewable Energy Atlas - Practical Steps Towards a Sustainable World
https://www.100-percent.org/target-achieved/

Optional   *The Climate Leaders Playbook: Yukon Supplement*

What can you do as a local government to reduce carbon emissions and save your community?

1. Skim through the Climate Leaders Playbook and summarize the "big moves" and main "strategies" to achieve the transition towards Zero Carbon community and highlight the ideas you would like to implement in your community in a poster. Present your poster to your groupmates.

📄 **Materials:**

Video.
The Climate Leaders Playbook: Solutions for a Zero Carbon Community
https://youtu.be/zD-coESUBJg

Textbook
The Climate Leaders Playbook: Yukon Supplement
https://bcclimateleaders.ca/wp-content/uploads/2021/05/Yukon-Playbook-Supplement-Apr-2021.pdf

🛠️ **Eco-challenge: Energy and you**

What you already know:

1. You have learned about the different concepts around the topic of Energy.
2. You understand the impact of the different social, economic and political factors on the environment.
3. You have identified a problem/problems you would like to tackle as your **Eco-Challenge.**

Now it is your time to take action!

Given your knowledge of the importance of sustainability and renewable energies, have a look at your surroundings (e.g., community, school, city, your home) and identify a problem. For example, is your school using sustainable light bulbs and solar panels? Search in your city's website and/ or ask the responsible authorities if they have a plan for renewable energy supply. Unleash your creative potential and come up with bright ideas to encourage your community to use renewable energy technologies. You could create a channel on social media and publish content about tips and tricks on how to save energy. Here is an action plan example you could take:

Alternatively, have a look at the different materials below as well as the small steps you can do to structure and implement your project initiative.

The Small Steps We Can Do…

The long journey to transition to 100% clean energy begins with some simple and single steps. Small actions achieve big goals, indeed. In the Eco-Challenge, you will seize the opportunity to step forward and take action in your community or school to lead the change and move forward towards sustainability. Let's have a look at how American cities are running on 100% clean energy and let's learn from their experience and see how they're taking advantage from the transition to sustainable energies.

Source: https://youtu.be/sQLZkw7jnvQ

NOW, it's your turn to "start working on a plan". You could look for tutorials on the internet on how to recycle old CDs and turn them into a solar panel or how to create a homemade energy generator. Alternatively, you could carry out a survey as in the Global Youth Energy Outlook and summarize your findings in a poster. Check out the links below for guided energy projects and actions you could take.

GET INVOLVED IN GUIDED ENERGY PROJECTS

GET INVOLVED IN DAILY AND ONE-TIME ACTIONS

This poster has been designed using icons from "Flaticon.com"

ACTION PLAN

1 **Research Green energy companies and start-ups near your living area**

You can look up energy companies, dams or museums on sustainability in your city.
The following questions might be helpful:
- How long has the company/start-up been in your city?
- How big is the company/start-up?
- What are its sustainability goals and commitments?

2 **Plan an interview**

Use the information you have found out and come up with 8-10 questions. Try finding out as many information about the company or start-up as possible. Formulate questions and get feedback from your teacher.

3 **Organize a school trip**

Contact the start-up/company ask for an interview and a guided trip on a specific date. You can ask to record the interview in advance.

4 **Document your trip in a poster**

Organize the pictures and information you collected from interview on a poster. Decorate your classroom with the poster to inspire other students. If you were allowed to record the interview, present it to the class as well!

How to plan your research step- by step:
Following these steps will help you plan your research together with your group members.

1. ***Research topic: What is the topic or issue?***

   Decide on the general topic of your research first. It may help to do a brainstorming of possible topics, a quick web-research or talk to an expert first. Some possible topics could be "energy supply and consumption in our school campus", "sustainable energy technologies in our city", "energy dependence of our household(s)" etc.

2. ***Research question: What do we want to find out?***

   Now decide what it is that you want to find out. Formulate a question that addresses your issue. Your question must be specific enough so that you can answer it. A possible research question could be "How much energy does our household produce/ consume over a week?" or "What are people's opinions on raising the price of electricity?"

3. ***Research method: How will we find out?***

   Decide what you will do to answer your question. This will include collecting evidence like interviews, survey answers, photographs and videos, experiment results, and so on. Also think about who is going to do what and when, and what tools and resources you will need.

4. ***Research hypothesis: What results do we expect?***

   Briefly note what results you think you will get. This is called a hypothesis. Your research may confirm your hypothesis or it may produce different results.

5. ***Research report: How will we document and present our findings?***

   Note how you will document your findings and present them later on in class and online. For example, if you do an online survey, you could create a PowerPoint presentation with diagrams, you could write a blog entry about your research, or even produce a video or photo story with interesting findings.

For more help, review the *TIP: Conducting research*.

⬆ **Extra: Visit the TeachAboutUS.org website and upload (or link) your product into the DATABASE:** Eco-challenges – Environmental // Justice in the Virtual Town Hall. Review and comment on other groups' uploads.

📄 **Additional materials and resources:**

STUDENT ENERGY	Website. **Student Energy Guided Projects** *https://studentenergy.org/program/guided-projects/*

CLIMATE + SPORT INITIATIVE	Website. **Climate and Sport Eco-challenge** *https://climateandsport.ecochallenge.org/challenges/energy*

	Website. **The Sierra Club Skill-Building Guides: Activists Toolkit** *https://www.sierraclub.org/clean-energy-toolkit*

Website:

Green Energy Skills for Youth

http://green4uproject.eu/project-green-skills-for-youth/

Website:

Plenergy: Ein Projekt der Klimaschutzagentur Region Hannover

https://plenergy.de/

Article:

Jugendliche entwickeln eigene Energiewende im Landkreis Harburg

https://kommunalwirtschaft.eu/tagesanzeiger/detail/i47821

SEVEN STEPS TO REFINING, RESEARCHING, DOCUMENTING, PLANNING AND SHARING YOUR ECO-CHALLENGE

1. Refine and research your Eco-Challenge

- *Have other schools/communities dealt with this problem?*
- *Are there any best practices that you could share?*
- *What do the experts say? Consult with people who work in the city council, NGOs, local politicians, parliament representatives, etc.*

Always remember to take detailed notes of what you do for later.

2. Plan a campaign to raise awareness

What steps can we take to raise awareness of the problem?

- *Document the problem by taking photos, recording interviews or quote from your expert findings.*
- *Think of a possible campaign to inform the school or the community that there is a problem that needs to be fixed.*

3. Develop an action plan

- *What does it take to fix the problem?*
- *What resources do we have?*
- *What resources do we need?*
- *How can we get these resources?*
- *What can we actually contribute to solving the problem?*

4. Document your eco-challenge - be creative!

Document your approach and findings well, e.g. in a

- *One-minute video*
- *Short PowerPoint presentation*
- *Poster*
- *Photo diary*

5. Present your Eco-Challenge to your class

- *Be brief (roughly 10 minutes)*
- *Get feedback*

6. Upload your Eco-Challenge into the DATABASE

DATABASE: Eco-challenge – Green // Energy in the Virtual Town Hall.

7. ALL: Vote on ONE Eco-Challenge to submit to the competition.

> *Which is the best? The most realistic to implement? The one you would join?*
> *Review the eco-challenge everybody agrees upon and suggest final changes*
> *Go to "Section 3. Your sustainability action plan" and follow the instructions to upload your courses action plan: Task: Sustainability Project*

Task

Design, plan, conduct, and document your course's or group's sustainability project and upload it onto the Virtual Town Hall on *Teach About US* to participate in the student competition.

For your project development, follow the six steps of future problem solving:

Six steps of future problem solving:
1. Identifying possible causes and effects of a problem
2. Identifying the underlying problem
3. Brainstorming potential solutions
4. Developing criteria for evaluating solutions
5. Evaluating solutions to determine the best one
6. Developing an action plan

In order to take part in the Going Green competition, your course needs to upload their sustainability action plan or project onto the Virtual Town Hall by March 24. More information on *http://www.teachaboutus.org/* in the Going Green section.

It is your decision which challenge or problem you want to tackle and how. You are free to choose your own creative format for presenting your outcome: a screen presentation with PowerPoint or Prezi, an article or a blog, a website, a video, an animation, a poster, a song—be creative and impress us and yourselves!

Additional tools and resources

We have prepared a rich selection of useful web-tools for presenting your sustainability action plans. Visit the section More links, tools, and resources in the Virtual Town Hall for some inspiration.

Feel free to take a look at action plans from previous Going Green competitions and projects that were created by students in Germany and the USA
(*https://www.teachaboutus.org/mod/glossary/view.php?id=17504*).