

Adapting to Climate Change

Teacher Notes & Advice

The following notes have been prepared to guide teachers in the delivery of this unit in a way that maximizes student engagement and learning in this important social, environmental and curriculum area. The topics and activities offered represent a sequential series of multiple intelligence activities/worksheets that dovetail neatly into the requirements of the Victorian Essential Learning Standards at Levels 5 and 6.

The activities presented are intended to assist teachers in guiding their students through the science, issues and challenges surrounding the phenomenon of climate change. The ultimate goal of the unit is for students to consider how communities and individuals are/may be affected by climate change with a view to developing strategies that allow us to adapt to the changes that accompany climate change.

Most of the activities are designed to fit the time-frame of a single lesson. There are eight lessons/worksheets at each of VELS Levels 5 and 6. These are in no way intended to be exhaustive, and while they would ideally be treated sequentially, they may be interrupted by additional material prepared by the teacher, or form part of a broader curriculum theme taking in the environment and/or human impact on local and global ecosystems under consideration.

The Department of Sustainability & Environment video, **Adapting to Climate Change**, is the key resource upon which this curriculum material is founded. Several of the activities at both levels 5 and 6 are directly linked to the themes covered in the video. The first invitation for viewing occurs in the second of the series of activities. The first activity introduces the theme of climate change and asks students to recall and discuss what they already know about this phenomenon. These initial lessons form an important foundation upon which the use of the video rests as well as providing teachers with a meaningful starting point in terms of student knowledge about climate change.

Teachers can discriminate between the activities/worksheets at the different levels by checking the code in the left hand corner directly beneath the banner that heads each activity.

- L5A1 Level 5 Activity 1
- L6A3 Level 6 Activity 3, and so on.

Teacher notes for each activity/worksheet are set out in the tables below. These are offered to assist teachers in achieving the most effective outcomes for their students in each of the activities provided. These notes include relevant background information as well as specific advice about approaching the themes in a given activity, and useful information in relation to the treatment of particular items/questions. Resources such as relevant DSE web addresses and other resources are also provided here.

Most of the activities are designed with student access to the internet in mind, so computer access is presumed. Some of the activities ask students to click on a link or icon that will take them to a particular web-page. If computer access is not always possible alternative strategies might include use of an



electronic whiteboard or laptop & data projector so that relevant web-pages can be viewed by the class. Activity sheets can be printed prior to the lesson and completed in pen or pencil.

The key outcome anticipated as a result of engagement in this unit is to equip students with a deeper understanding of the current and future impact of climate change on our planet, our species and our lifestyle and to use this understanding as a basis for encouraging students to become pro-active in changing the way they do things for a more sustainable future. To this end the activities are designed to help students become more informed and to be able to express their own understandings and considered responses to the challenges of climate change. Teachers are therefore encouraged to use small group and class discussion as a means of delivering of this goal. Student responses to worksheets are often best written after some exploration and sharing of ideas so that they are best able to articulate their responses using the relevant terminology. Worksheet questions are not intended to be a test of student knowledge and understanding, but rather a vehicle that will help students shape and consolidate their own informed ideas about adapting to climate change.

Activity/worksheet solutions These are available in a separate document accompanying these Teacher Notes.

Further resources An extensive list of further resources is at end of this document.



Teacher Notes – Level 5 Activities

Activity		Notes
Code	Name	
L5A1	What is climate change?	<p>This activity is based on understanding climate change. Relevant information can be found at: Australian government website: Tackling the challenge of climate change http://www.climatechange.gov.au Australian Academy of Science http://www.science.org.au/nova/016/016key.htm Science in the news, which is published by the Australian Academy of Science, provides simple explanations of the greenhouse effect, greenhouse gases and climate change. http://www.science.org.au/reports/climatechange2010.pdf An updated questions and answers booklet about climate change science, published by the Australian Academy of Science in 2010. CSIRO http://www.csiro.org/science/Changing-Climate.html If you have facilities such as an electronic whiteboard available to open these web pages in class it is advisable to do so – you will have a visual focus for the group. It is advisable to use Figure 1: The greenhouse effect and the written information which follows, at different points of the lesson to provide further information and clarification, for example, explanation of greenhouse effect, changes in greenhouse gas levels. A diagram showing the greenhouse effect can be found online at http://www.science.org.au/nova/016/016key.htm.</p> <p>Q1 Relate the information to situations that are already familiar to students, for example, ask them to think about other situations they recognize as having a 'greenhouse' effect, eg. a car with closed windows can get very hot inside, even on mild days.</p> <p>Q2 & 3 It is advisable to have students working in small groups, ideally 3 or 4 per group, to discuss the themes of Q2 and 3 before inviting them to write their own answers on the worksheet. This will give students an opportunity to think, share, formulate and consolidate their own understandings of the themes raised. It will be useful to issue large sheets of paper and chunky felt pens for groups to record their ideas. This will provide a focus when they report back to the larger group. Use one side for Q2 and the reverse side of Q3. Suggest to the groups that different members take it in turns writing on the sheet and share the reporting back to the group.</p>



		<p>Q2 Invite students to discuss what causes greenhouses to become warm inside, despite it sometimes being quite cool outside.</p> <p>Q3 Your students will have heard of the term 'greenhouse gases' before, but may not be clear about what this really means. Some shared discussion will offer an opportunity to ensure all students feel equipped to participate in discussion of the topic and to construct a reasonable response to the question.</p> <p>Q4 This match-maker activity challenges students to connect key terms with their meanings. It is not as simple as it looks. Some of the terms are similar and students will need to read carefully to accurately match terms with definitions. Mismatching terms and definitions at first should not present a problem – rather, it will lead students through the skill of self evaluation and correction; to look more carefully at the definitions they are reading, recognizing the differences between related but different terms. In this way students will develop more confidence with the language, consolidate ideas and thereby lay the foundation for more complex tasks in the activities that follow.</p>
L5A2	Climate Change – The Movie	<p>This lesson is based on students viewing the DSE short film, Adapting to Climate Change, which can be found at the following link: http://www.climatechange.vic.gov.au/adapting-to-climate-change/adapting-to-climate-change-video</p> <p>The film is very short – only five minutes – so it will be easy to allow more than one viewing. An interesting approach is to have the class view the film the first time without much introduction, then issue the activity sheet and share recollected information in response to the questions 1 – 3. Now that the questions are lodged in the minds of students, ask would they like to see it again. This time they will be more focused on the specific information they are need to answer.</p> <p>Q1 – 2 are simple comprehension questions, with relevant information provided by the first two presenters.</p> <p>Q3 extends student thinking beyond some of the factors contributing to increased levels of greenhouse gases, challenging them to identify and express causal relationships. Invite students to discuss their ideas before having them write them down. This is an important step in establishing and validating logical pathways and prepares students with information and confidence to independently express the information.</p> <p>Q4 asks students to recall information that is offered in the film but they will also have seen and heard in the media – it is a consolidation of observations about the impact of global warming on climatic and seasonal events that demonstrates emerging patterns of change. Students are asked to identify an increase or decrease in relation to each event; there is no requirement to provide explanations to account for these changes.</p>

		<p>Q5 shifts the focus from the facts of climate change to ways we can change our behavior to manage climate change in our everyday lives. The most effective discussions will guide students down pathways that demonstrate changes in our everyday behaviors as simple to do and easy to continue. This is important because it focuses on achievable outcomes and a positive future rather than ideas that are too daunting to tackle in the first place.</p>
L5A3	Climate Change – The Movie Part II	<p>During the first viewing of the film Adapting to Climate Change students were asked to consider information about the science and impacts of climate change as outlined by CSIRO climate change scientist Kevin Hennessy. The focus for this second viewing is the effect of climate change on human communities, particularly more vulnerable members of society, as well as the potential consequences for species of plants and animals. The speakers are Jess Fritze from the Victorian Council of Social Services and Christine Forster representing the Victorian Ministerial Reference Council for Climate Change Adaptation. It is advisable to read the questions with the class before viewing, so that relevant information can be identified by students as it is addressed in the film.</p> <p>Q1 – 5 are simple comprehension items that require students to identify and record specific information outlined by the presenters in relation to the impact of climate change on vulnerable and resilient plants and animals as well as a range of community groups in our society including the agricultural sector and the elderly, disabled and sick.</p> <p>Q6 is an extended thinking/problem-solving item – students are challenged to make links between human activities and the future consequences in relation to climate change. In part b students need to think about how we could change the way we manage some aspects of our society – transport systems, building structure, water use – to reduce negative social and environmental impact while still enjoying our current quality of life (living with aspects of climate change that we can't avoid). An opportunity for small group discussion preceding this question is advisable.</p>
L5A4	The little things are the big things!	<p>The first part of this activity (Q1) takes a look at some scientific data on climate change. Students analyze data related to greenhouse gas emissions for Victoria over the period 1990 – 2007. This is an opportunity to consider some of the evidence for climate change and look for patterns of change.</p> <p>Q2 This second activity is an interactive and engaging way for students to link human behaviours, especially their own, to the data considered in Q1. Students use a Carbon Calculator and are guided through various questions that are designed to provide some relative feedback about their family's estimated greenhouse emissions. They will need a copy of their home energy bills to get an accurate measure</p> <p>While the activity is a fun way of looking at individual family's contributions to greenhouse emissions, it is noteworthy to emphasize the point that while each family's contribution may be relatively small, households as a group actually contribute a massive 20% of the volume of these emissions. The activity</p>



		<p>is intended to make this point and encourage students to recognize this and to make some changes in the way they do some things in an attempt to reduce this figure.</p> <p>Q3 The focus here is to offer a broader benefit than just an environmental one – there are tangible benefits for the family, such as reduced costs, that mean money is available for other pursuits. When students are able to foresee that there may be advantages for themselves further incentives are put in place to act.</p>
L5A5	Handle with care!	<p>This activity requires students to research information. Some suggested internet sites are:</p> <p>Australian government website: Tackling the challenge of climate change http://www.climatechange.gov.au</p> <p>Wikki – How to take action to reduce greenhouse gas emissions http://www.wikihow.com/Take-Action-to-Reduce-Global-Warming</p> <p>United Nations – gateway page to climate change related activities. As well as a section for youth, it also contains relevant 'take action' pages highlighting actions people can undertake in the home to reduce greenhouse gas emissions. http://www.un.org/wcm/content/site/climatechange/pages/gateway/take-action</p> <p>The CSIRO Home Energy Saving Handbook</p> <p>The handbook includes energy-saving tips and information on home heating and cooling, building and renovating, shopping, transport and more. While the book is available for purchase, much of the information (including worksheets) is available online. http://www.csiro.au/resources/Energy-Saving-Handbook--ci_pageNo-1.html</p> <p>Students will need to go to the relevant menu items and read the suggestions outlined. They use this information to complete the worksheet, summarizing ways in which they can change the way they do things at home for a more sustainable future.</p> <p>As well as describing actions they can take, students extend their thinking to consider the costs and benefits of these actions. Noting the actions that can be taken is a rather academic exercise and students are unlikely to implement as many as ten changes, and they may not be empowered to make all of these changes at home, as some will be dependent on adults taking responsibility to enact some of them. Inviting students to use a highlighter pen or colored pencil to color in two or three of the easier or more manageable actions is likely to be more effective in assisting them to take this step. These may be the ones that they try and commit to. Other actions are likely to have a heightened profile and may well be the subject of conversations at home that lead to families sharing the decision to take actions that will help them adapt to climate change.</p>



L5A6	There's so much more...	<p>Q1 invites students to think beyond the first base of climate change impact. By using the flow charts presented they are challenged to consider the possible domino effect of consequences and the interrelatedness of these consequences. Allowing time for students to compare notes about their flow charts will be important in helping them to draw more links and see direct and indirect consequences.</p> <p>Q2 takes students directly to the government's Energy Rating website (found at URL: http://www.energyrating.gov.au/con3.html) where they learn about the star rating system used to indicate the energy efficiency of different household appliances. Students will have differing levels of familiarity with this as the labels are displayed on many electrical items purchased by their families and through exposure to some media advertising. This exercise crystallizes the intent and significance of the energy rating labels and this is important in giving students informed choice in the future – it offers them a further strategy in changing the way we do things for a sustainable future.</p> <p>Q3 is an invitation for students to respond creatively and positively to the information covered not only in the first two items on this worksheet, but also from previous worksheets and themes discussed. The poster activity is designed to encourage strategic thinking and planning with students producing a poster to inform and engage other students in their school about responding appropriately to the challenges of climate change. This activity will be most effective when preceded by a thorough shared discussion about the desirable outcomes. Students need to understand that encouraging change in the behavior of others should be seen as manageable and not inconvenient. Challenge students to deliver a simple message about changing the way we do things. Encourage them to think about the best way to do this on a poster. For example, the use of bright colors or particularly relevant colors, simple and large graphics, catchy phrases and not too much writing. Effective messages also demonstrate a personal benefit, for example, it's fun to ride to school with a friend.</p> <p>Having each student select a different theme for their poster will maximize the number of messages the class is able to deliver. When the posters are completed they can be posted in different locations around the school to attract the greatest exposure and reach the widest audience.</p> <p>A good starting point may be for students to work in pairs or small groups to brainstorm their own list of actions that could be taken in small ways everyday or that could be taken at home or at school to make a difference without compromising lifestyle or convenience. Then invite members of the class to share their ideas which can be listed on the board before individual students select their theme.</p>
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L5A7	The future is in your hands!	<p>This final activity brings the unit to its conclusion in two ways. Students revisit the film Adapting to Climate Change one last time, with a view of drawing all the themes addressed throughout the unit together. Q1 asks students to record one key piece of information outlined by each of the presenters. Students will take in different pieces of information with an expected wide range of notes made across the whole class. Invite students to share what they have recorded. This will be a useful way of bringing back into focus the very many different ideas addressed in the film and covered in the unit. You may wish to display the different points made to provide a visual reference for the class – this could be done using PowerPoint, electronic white board, overheads or posters.</p> <p>This first activity sets the foundation for the second – students have an opportunity to write their own thoughts in a reflective piece of writing that focuses on the themes they have considered during the different activities related to climate change and our need to adapt to the effects of climate change that we cannot avoid. The worksheet (Q2) lists some prompts for students who are more confident with an initial guide, but the exercise is intended to be open-ended with students responding to the material from their own individual perspectives.</p>



Teacher Notes – Level 6 Activities

Activity		Notes
Code	Name	
L6A1	Understanding Climate Change	<p>This activity is based on understanding climate change. Relevant information can be found at: Australian government website: Tackling the challenge of climate change http://www.climatechange.gov.au Australian Academy of Science http://www.science.org.au/nova/016/016key.htm Science in the news, which is published by the Australian Academy of Science, provides simple explanations of the greenhouse effect, greenhouse gases and climate change. http://www.science.org.au/reports/climatechange2010.pdf An updated questions and answers booklet about climate change science, published by the Australian Academy of Science in 2010. CSIRO http://www.csiro.org/science/Changing-Climate.html It will be ideal to have netbooks/laptops/PCs available to students if possible. If this is not possible you will be well served by the availability of an electronic whiteboard or data projector with Internet access so that the webpage shown above can be viewed by the class. Printing the online document is a further option.</p> <p>Q1 This activity is designed to stimulate some thinking and sharing of ideas students have previously heard about in relation to the greenhouse effect and climate change. Students recall information and through discussion formulate relationships between cause and effect that will form the basis of further exploration in this unit.</p> <p>Give the teams about five minutes to complete the brainstorm activity. Have large sheets of poster paper and chunky felt pens on hand to facilitate the task. Then invite students to report their pooled information to the class. It will be useful to mount the posters on the walls of the classroom where they will form a visual reminder of the terms and ideas raised in this initial discussion. Encourage students to compare the posters and identify the common terms, eg. greenhouse effect, carbon dioxide, burning of fossil fuels. You might engage some students to highlight the common words/phrases on the different posters so that patterns of terms and ideas emerge.</p> <p>Q2 Students use the online resources at DSE directly to find relevant information and formulate their own answers. Parts a, b and c recap ideas that students will have heard about before and provide a platform on which further activities in this unit are based. These are comprehension type items with answers available to students directly from the web page. Part d is an extension item that challenges students to formulate 'cause & effect' relationships.</p>



L6A2	Climate Change – The Movie	<p>This lesson is based on students viewing the DSE short film, Adapting to Climate Change, which can be found at the following link: http://www.climatechange.vic.gov.au/adapting-to-climate-change/adapting-to-climate-change-video</p> <p>The film is very short – only five minutes – so there is opportunity to view twice in succession or twice during the lesson time, for greatest benefit. You may choose to have your students view the film the first time without much introduction, then challenge them on what information is outlined. Then after some discussion watch again, this time with worksheet in hand and ready to answer.</p> <p>Q1 – 3 are simple comprehension items, but students will have to listen carefully if they are to gather the relevant information as it is presented.</p> <p>Q4 is an extended thinking challenge that asks students to consider some typical causes of increased greenhouse gas concentrations and then invites them to suggest ways in which we can change the way we do things to reduce this impact while still enjoying our current quality of life. An opportunity for small group discussion preceding this item may be useful.</p>
L6A3	Climate Change – The Movie Part II	<p>During the first viewing of the film Adapting to Climate Change students were asked to consider information about the science and impacts of climate change as outlined by representatives from the Ministry for Environment & Climate Change, the CSIRO and Monash University’s climatology department. The focus for this second viewing is the effect of climate change on human communities, particularly more vulnerable members of society, as well as the potential consequences for species of plants and animals. The speakers are Jess Fritze from the Victorian Council of Social Services and Christine Forster representing the Victorian Ministerial Reference Council for Climate Change Adaptation. Students are advised to read the questions before viewing the film so that relevant information can be identified as it is addressed.</p> <p>Q1 requires students to identify and record specific information outlined by the presenters in relation to the impact of climate change on vulnerable and resilient plants and animals as well as a range of community groups in our society including the agricultural sector and the elderly, disabled and sick.</p> <p>Q2 challenges students to construct a concept map that includes at least 12 listed terms and then link these to illustrate their interconnectedness. Writing on the link lines further demonstrates an understanding of the relationships that exist between these. You might decide to have students collaborate in teams to prepare a rudimentary concept map on poster paper before attempting to construct their own version on the worksheet. This is a useful way of getting the students thinking, sharing ideas and forming meaningful links. It will be especially fruitful in engaging less able students.</p>



		<p>When the group work is complete, take up the posters and ask students to prepare their own concept maps independently. This approach gives students a shared foundation from which to initiate the task, but then challenges them to demonstrate their own understanding. The linking of ideas in a concept map can be a complex task, and such an introduction may offer a useful roadmap.</p> <p>Q3 This item shifts the focus from the causes and effects of climate change to the ways that we can change the way we do things in response to the unavoidable changes in climate and the environment. Encourage students to think about simple things that we can do that help us to manage and that mean our lifestyle isn't undermined in any significant way.</p>
L6A4	A Scientific Stock Take	<p>This activity focuses attention on scientific evidence about climate change. The three graphs included here summarise trends in Victoria's greenhouse emissions over the period 1990 – 2007 and contrast greenhouse emissions between Victoria's energy industries and its transport systems. Students analyze the data and draw conclusions about the sustainability of this pattern of greenhouse emissions into the future as well as suggest ways of changing the way we do things to turn this around while still maintaining the benefits inherent in these essential services.</p> <p>Most of the questions are easily answered by reading from the graphical data presented; solutions are also provided in the SOLUTIONS document accompanying these Teacher Notes. However, the data can be downloaded from the National Greenhouse Gas Inventory, available from http://www.ageis.greenhouse.gov.au/</p> <p>This site provides a great deal of data that will be useful for teachers and students looking to further extend this theme.</p>
L6A5	No room for complacency!	<p>This activity links Victoria's increasing greenhouse gas emissions with its potential consequences and focuses attention on a major source of these emissions – households. Students use a Carbon Calculator to estimate their own family's contribution to greenhouse gas emissions. This is an interactive and engaging way for students to link human behaviours to the data considered in the previous activity sheet. Once inside the site students are guided through questions designed to estimate their family's greenhouse gas emissions. They will need a copy of their home energy bills to get an accurate measure.</p> <p>The activity is intended to be a fun way of looking at individual family's contributions to greenhouse emissions, but it is noteworthy to emphasize the point that while each family's contribution may be relatively small, households as a group actually contribute a massive 20% of the volume of these emissions. The activity is intended to make this point (Q1), consider some consequences (Q2) and encourage students to recognize this and to make some changes in the way they do some things in an attempt to reduce this figure (Q3).</p>

		<p>Allow time for students to compare notes about their family's result in Q1 and their flow charts in Q2. This will be especially important in Q2 to help students to draw more links and see the domino effect of consequences. Ending the session by drawing the threads of these two items together will be useful in highlighting the need to change the way we do some things to reduce the impact of some of our behaviours. When students recognize these links they are more likely to make decisions to make some of these changes and commit to them.</p> <p>Q3 The focus here is to offer a broader benefit than just an environmental one – there are tangible benefits for the family, such as reduced costs, that mean money is available for other pursuits. When students are able to foresee that there may be advantages for themselves further incentives are put in place to act.</p>
L6A6	Taking Stock!	<p>This activity requires students to research information. Some suggested internet sites are:</p> <p>Australian government website: Tackling the challenge of climate change http://www.climatechange.gov.au</p> <p>Wikki – How to take action to reduce greenhouse gas emissions http://www.wikihow.com/Take-Action-to-Reduce-Global-Warming</p> <p>United Nations – gateway page to climate change related activities. As well as a section for youth, it also contains relevant 'take action' pages highlighting actions people can undertake in the home to reduce greenhouse gas emissions. http://www.un.org/wcm/content/site/climatechange/pages/gateway/take-action</p> <p>The CSIRO Home Energy Saving Handbook</p> <p>The handbook includes energy-saving tips and information on home heating and cooling, building and renovating, shopping, transport and more. While the book is available for purchase, much of the information (including worksheets) is available online. http://www.csiro.au/resources/Energy-Saving-Handbook--ci_pageNo-1.html</p> <p>As well as identifying actions they can take, students are challenged to consider the costs and benefits of these actions.</p> <p>Q2 takes students directly to the government's Energy Rating website (found at URL: http://www.energyrating.gov.au/con3.html) where they learn about the star rating system used to indicate the energy efficiency of different household appliances. Students will have differing levels of familiarity with this as the labels are displayed on many electrical items purchased by their families and through exposure to some media advertising. This exercise is intended to clarify the importance of the energy rating labels as a tool in selecting energy efficient electrical appliances in a win/win situation for both consumers and the environment. It is important in giving students informed choice in the future – it offers them a further strategy in changing the way we do things for a sustainable future and to help combat the unavoidable effects of climate change.</p>



L6A7	Conferring on Climate Change	<p>The worksheet offers teachers a contemporary approach to meeting the VELS standard requiring students to consider <i>ethically</i> based science-related issues of broad community concern. The facts of climate change and the way we respond to its challenges offer a wide range of issues for consideration.</p> <p>In Q1 students will draw on information from the Adapting to Climate Change film, other activities in this series, class discussion and their wider experiences to identify issues of community concern in relation to climate change. There are various approaches to this, but it will be interesting to have students write as many as they can think of on their own, then share in pairs, then small groups and finally a wider class discussion to identify a broad list. Invite students to add issues to their list as they arise.</p> <p>Q2 is a conferencing activity. Students take on a particular role as outlined in the activity and they research the position this person/interest group is likely to have in relation to climate change and how they/their interests are likely to be affected. Conferencing activities such as this are effective on a class level because they are all inclusive, with plenty of latitude for adding and streamlining roles. Students can work alone or in small groups. All students should be given a voice at the conference table. The conference should be facilitated by a nominated chairperson who must take on an objective role. This role could be taken by the teacher or a student who is confident to do so. All participants at the conference table can only speak in turn through the chair.</p> <p>Conferencing in this way is not necessarily intended to achieve a particular outcome or any consensus on the issues raised. Rather, it should serve to raise issues and give a voice to the different points of view, with all points of view given respectful validation. Seeing the same issues from many different perspectives will help students to shape their own views and develop their own informed responses. In this instance, students would see the issues surrounding climate change from the perspectives of different individuals and groups in the community, and begin to form strategies that would best serve the wider community and the plants and animals that share the environment. This activity will be an important forerunner to the next and final in this series, where students reflect on the issues and challenges related to climate change and their informed responses to these challenges.</p> <p>Q3 This item is an invitation to students to draw together the threads of the conference in which they have participated as well as the broad range of issues explored during the previous lessons on adapting to climate change. Encourage students to cast a wide net in order to consider the breadth of implications and needs in the community and the environment, before preparing a charter of recommendations. Students can negotiate with the teacher about the presentation of their charter; for example, as a word document, an advertising flyer, a poster or multi-media presentation such as PowerPoint. Charters in appropriate form could be posted around the school to inform and encourage other members of the school community</p>
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about ways of changing the way we do things for a more sustainable future.

Discuss with students the most effective way of engaging the attention and actions of their audience. This might include the use of graphics or an engaging layout.

Some examples of inclusions in such a charter are set out below:

- New homes must be built away from coastal areas or above a minimal distance above current sea-level
- All new homes must be designed to make best use of natural sunlight, maximize number and size of north-facing windows
- New buildings must include double-glazed windows to maximize insulation in summer and winter
- Mandate hybrid motor vehicles
- Increase renewable energy sources such as wind farms
- Further develop public transport systems to attract the public and reduce traffic congestion
- Reduce logging to maximize carbon-fixing capacity of forests
- Increase tree-planting programs
- Collect and re-use 'waste' water

Students are encouraged to demonstrate in their charter ways in which the community might benefit from the strategies they have incorporated. This is an important measure in consolidating the positive message for students and for the charter audience.

NOTE that this activity will require more time. Suggested time frame for Q2 – one lesson of preparation and one lesson for conference activity. A further lesson to complete the charter in Q3.



L6A8	The future is in your hands!	<p>This final activity brings the unit to a conclusion by drawing together the facts of climate change, the impacts of climate change and students' response to the very many themes addressed in the unit. The activity begins with students revisiting the film Adapting to Climate Change one last time, and recording just one key piece of information outlined by each presenter in relation to climate change (Q1) followed by one suggestion made by each about how we might address the challenges of climate change (Q2). Students will take in different pieces of information with an expected wide range of notes made across the whole class. Invite students to share what they have recorded. This will be a useful way of bringing back into focus the different ideas addressed in the film and covered in the unit. You may wish to display the different points made to provide a visual reference for the class – this could be done using PowerPoint, electronic white board, overheads or posters.</p> <p>In Q3 students have an opportunity to write their own thoughts in a reflective piece of writing that focuses on the themes they have considered during the different activities related to climate change and our need to adapt to climate change. This exercise is intended to be open-ended with students responding to the material from their own individual perspectives.</p>
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Resources

Further resources are available from a number of websites. Some of these are listed below - they provide further useful information on the themes of climate change and adapting to climate change.

1. Australian government website: Tackling the challenge of climate change

This site provides information on reducing greenhouse gas emission, promoting energy efficiency and adapting to climate change impacts

<http://www.climatechange.gov.au>

2. CSIRO

A variety of related pages which include understanding climate change science, frequently asked questions and greenhouse gas emissions.

<http://www.csiro.au/science/climate-change.html>

www.csiro.org/science/Changing-climate.html

3. Bureau of Meteorology

As well as the brochure on The Greenhouse Effect and Climate Change this website also provides useful information on observed changes to Australia's climate.

<http://www.bom.gov.au/climate/change/>

<http://www.bom.gov.au/info/GreenhouseEffectAndClimateChange.pdf>



4. Climate Change in Australia

<http://www.climatechangeinaustralia.gov.au/>

The most recent climate change projections for Australia produced by CSIRO and the Bureau of Meteorology.

5. The CSIRO Home Energy Saving Handbook

http://www.csiro.au/resources/Energy-Saving-Handbook--ci_pageNo-1.html

The handbook includes energy-saving tips and information on home heating and cooling, building and renovating, shopping, transport and more. While the book is available for purchase, much of the information (including worksheets) is available online.

6. The Green Vehicle Guide

<http://www.greenvehicleguide.gov.au/>

This interactive online resource will be a popular site for older students, particularly those in Year 10 who may already have their learner's permit and looking forward a couple of years towards the purchase of a car. The calculator lets students compare the fuel consumption of a range of different vehicles, and encourages them to really consider environmental issues when making choices as significant as the purchase of a motor vehicle. Vehicles are rated according to fuel efficiency and greenhouse gas emissions based on Australian standards for motor vehicles. The site encourages young people to make choices that make a difference. It fits in with the theme of this unit because it offers young people the opportunity for informed choice that lets them change the way we do things for a more sustainable future.

7. CSIRO

<http://www.csiro.au/science/Climate-Change.html>

Extensive website includes pages related to understanding climate change, reducing greenhouse emissions and adapting to climate change.

