Environmental Ethics

4. Global village and sustainability

4.1. Intended Learning Outcomes

By the end of the lessons, the students will be able to:

1. Understand multiple meanings of sustainable development
2. Examine the common goal and conflicts between economic development and environmental protection
3. Evaluate the need for a global perspective in solving environmental problems

*\*Prerequisite knowledge: Normative Ethics, the nature of morality, moral principles, moral reasoning, theory of conduct, theory of value & virtue (Refer to* [*‘NSS Ethics and Religious Studies Curriculum Support Materials - Compulsory Part: Ethics - Module 1: Normative Ethics’*](http://www.edb.gov.hk/en/curriculum-development/kla/pshe/references-and-resources/ethics-and-religious-studies/support-materials-compulsory-part-module-1-normative-ethics.html)*)*

4.2. Introduction

It’s a small, small world… small to an extent that whatever we do in a local context, it may cause global effect! Take driving as an example, the accumulation of greenhouse gas emissions may turn out affecting the climate in a global scale. Severe weather such as super typhoons sweeping across the Pacific Ocean, and hurricanes engulfing the American continent may have been chipped in by local power plants, factories located here and there, or even by the daily environmentally unfriendly acts done by you and me! ‘How to maintain sustainability?’ becomes a hot issue nowadays.

Sustainable development has three-folded aspects: economic, social and environmental. However, these aspects are sometimes appeared to be contradictory. This most noticeable contradiction goes to economic development and environmental conservation. As we all know, some developing countries like China, India, etc. take economic development (and fighting against poverty for social development) as their first priority, and in the processes, heavy emissions and pollutions follow. Environmental degradation in return hinders the social development.

Striving for balance of these aspects can hardly be achieved by one single country alone. Therefore, international corporations are needed to tap wisdom and seek enforcement for solving environmental problems all over the world.

In these lessons, relevant topics of sustainable development, the common goal as well as conflicts between economic development and environmental protection, and the need for a global perspective in solving environmental problems will be covered.

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| References:   |  | | --- | | * Jessica Nihle´n Fahlquist (2009), ‘Moral Responsibility for Environmental Problems—Individual or Institutional?’ in *Journal of Agricultural and Environmental Ethics* 22:109-124. * <http://0-go.galegroup.com.edlis.ied.edu.hk/ps/retrieve.do?isETOC=true&inPS=true&prodId=GVRL&userGroupName=hkioel&resultListType=RELATED_DOCUMENT&contentSegment=9780737752670&docId=GALE|CX3021100015> | | * http://assets.wwfhk.panda.org/downloads/eco\_vandalism\_how\_to\_guide.jpg | | * http://debatewise.org/debates/2918-economic-development-vs-the-environment/# | | * http://environment.about.com/od/pollution/a/cross\_border.htm | | * http://phys.org/news/2016-01-belgium-ageing-nuclear-neighbours.html | | * http://storyofstuff.org/wp-content/uploads/movies/scripts/SoElectronics\_Annotated\_Script.pdf | | * http://unfccc.int/essential\_background/convention/items/2627.php | | * http://unfccc.int/essential\_background/convention/items/6036.php | | * <http://unfccc.int/paris_agreement/items/9485.php> | | * http://www.cfr.org/china/chinas-environmental-crisis/p12608 | | * http://www.citylab.com/weather/2014/11/acid-rain-has-turned-canadian-lakes-into-a-kind-of-jelly/382922/ | | * http://www.conceptdraw.com/examples/sustainability-venn-diagram | | * <http://www.dubuquesmartplan.org/pdf/EconomicDevelopmentGoalsandObjectivesDraftApporved1-11-2011.pdf> | | * http://www.eolss.net/sample-chapters/c14/e1-37-04-01.pdf | | * <http://www.gdrc.org/sustdev/definitions.html> | | * http://www.greenpeace.org/hk/publications/reports/toxics/2003/guiyu-report/ | | * http://www.iisd.org/topic/sustainable-development | | * http://www.mei.edu/content/role-ngos-tackling-environmental-issues | | * http://www.nature.com/news/2005/050810/full/news050808-10.html | | * http://www.ourplanet.com/imgversn/85/barcena.html | | * <http://www.scmp.com/news/china/article/1348605/japan-south-korea-concerned-chinas-smog-will-affect-them> | | * http://www.smh.com.au/environment/climate-change/super-typhoons-to-increase-in-strength-with-climate-change-researchers-find-20150529-ghcbfs.html | | * <http://www.theguardian.com/world/2013/jun/19/singapore-pollution-haze-indonesia-air-quality> | | * http://www.theguardian.com/world/2013/jun/20/singapore-pollution-record-levels | | * http://www.un.org/sustainabledevelopment/economic-growth/ | | * http://www.worldbank.org/depweb/english/sd.html | | * https://en.wikipedia.org/wiki/Economic\_development | | * https://en.wikipedia.org/wiki/Kyoto\_Protocol | | * https://en.wikipedia.org/wiki/List\_of\_countries\_by\_carbon\_dioxide\_emissions | | * https://en.wikipedia.org/wiki/List\_of\_international\_environmental\_agreements#General | | * https://en.wikipedia.org/wiki/Paris\_Agreement | | * https://en.wikipedia.org/wiki/Typhoon\_Haiyan#Humanitarian\_crisis\_and\_population\_displacement | | * https://en.wikipedia.org/wiki/United\_Nations\_Framework\_Convention\_on\_Climate\_Change | | * https://jimmyhub.net/story/%E5%85%A8%E7%90%83%E9%9B%BB%E5%AD%90%E5%9E%83%E5%9C%BE%E5%9C%A8%E8%B2%B4%E5%B6%BC | | * https://supportinglocalentrepreneurship.wordpress.com/2010/12/26/the-goal-of-economic-development-to-create-hope-wealth-and-choices/ | | * https://wellsharp.wordpress.com/2009/09/22/ecological-citizenship-the-basis-of-a-sustainable-society/ | |  | |

* 1. Teaching and learning process

Suggested teaching period: 4 lessons. Teachers may

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| 1. Introduction – Sustainable development    1. Ask students to form groups of 4-5 students. Each group is given some basic information of a particular district in Hong Kong and asks to judge whether that district is a sustainable community or not. Each student gives one point that s/he regards as a sound definition of ‘sustainable development’. Based on those points given, rephrase the definition as agreed within the group. Then, each group writes their own definition on the blackboard. Meanwhile, ask students to complete ‘Worksheet 1A: Meanings of sustainable development’. Discuss their answers afterwards.    2. Play the online video on ‘Sustainability easily explained’ at <https://www.youtube.com/watch?v=_5r4loXPyx8> (4 minutes) (or other related video in Chinese). Ask students to complete ‘Worksheet 1B: Meanings of sustainable development’ in pair. Then, facilitate a class discussion. 2. Common goal and conflicts between economic development and environmental protection    1. Write the 2 terms ‘economic development’ and ‘environmental protection’ on the blackboard. Ask students to write a word/sign in-between describing their relationships, and explain. E.g. ‘economic development’ VS/undermines/facilitates… ‘environmental protection’    2. Have students forming groups to work on ‘Worksheet 2: Common goals of economic development and environmental protection’. In the first round, students are given 3-5 minutes for brainstorming. In the second round, teacher plays the following online videos one by one on ‘Economic growth and Sustainable development’ (or other related video in Chinese) as a stimulus of this group activity. Allow time for discussing and compiling their answers in the intervals. Finally, ask each group to present their answers and do a class discussion.  |  |  |  | | --- | --- | --- | | Topic | URL | Duration | | 1. Introduction | https://www.youtube.com/watch?v=eT9Ykve18wg&index=1&list=PLRDc1E7fLTCiINpPENKKGSqK5b-xKOATu | 1:14 mins. | | 1. Economic growth | https://www.youtube.com/watch?v=aGMdwNvKJzA&list=PLRDc1E7fLTCiINpPENKKGSqK5b-xKOATu&index=2 | 3:00 mins. | | 1. Sustainable development | https://www.youtube.com/watch?v=wGPJ-d9yco8&index=3&list=PLRDc1E7fLTCiINpPENKKGSqK5b-xKOATu | 3:28 mins. |   2.3. ‘Thought Card’ activity  2.3.1. Let each student draw a ‘Thought Card’ randomly. Separate the classroom into 2 zones – (a) Economic development should enjoy higher priority than Environmental Protection; (b) Economic Development should advance with Environmental Protection. According to the contents of the card that they have drawn, students should go to the corresponding zones. Ask the students in the same zone finding the one(s) holding the same card. Have the one(s) holding ‘Thought Card 1’ to present (& elaborate) first, and then be responded by a student in the opposite group. Repeat the exercise until all 14 cards have been presented. (Remarks: For students with higher ability, numbering of the cards can be removed.)  2.3.2. Ask the students to write their own thought card. Let them change position as appropriate, and present their ideas.  2.3.3. To consolidate the learning from this activity, students have to complete ‘Worksheet 3’.  2.4. Case study – Global eWastes in Guiyu Town (貴嶼鎮), China  2.4.1. Scenario setting: Show students some pictures on eWaste industry in Guiyu Town. Brief them about the situation there (refer to the introduction in Worksheet 4).  2.4.2. Jigsaw storytelling: Ask students to form 5 groups, and assign each group with one episode. Give time for the groups to study the episode and design the drama presentation. To enhance the dramatic effect, teacher can prepare for a property on a notebook computer to pass around during the jigsaw storytelling process.  (Alternative activity): Play the online video on ‘追蹤洋垃圾’ at  <https://www.youtube.com/watch?v=_EpUnnN1XIc> (15 minutes)  2.4.3. Have students to discuss and complete Part 1 of Worksheet 4, and then facilitate a class discussion.  2.4.4. Play the online video on ‘The Story of Electronics’ at <https://www.youtube.com/watch?v=Cjqm6NeAodU> (~8 minutes). And then let students discuss and complete Part 2 of Worksheet 4. Invite some students to share the answers afterwards.   1. The need for a global perspective in solving environmental problems   3.1. Ask students to form 5 groups. Have the group representatives coming out to draw a ‘cross-border environment problem sheet’. Group members study the situation and discuss the questions on it, and then do a presentation. When listening to the presentations, students have to complete Worksheet 5.  3.2. Distribute ‘Worksheet 6: International cooperation and sustainable development’.  3.2.1. Ask them to complete the reading task (Task A) first, and then check their understanding by inviting a student to summarize the content verbally.  3.2.2. Then, play the online video on ‘The History of Climate Change Negotiations in 83 seconds’ at <https://www.youtube.com/results?search_query=kyoto+protocol+cartoon> (1:14 minutes) and work on Task B.  3.3. Hand out ‘Worksheet 7: Moral obligations in tackling environmental problems’. Students can work in pair or in group to complete it. Discuss their answers afterwards.  3.4”Worksheet 8” facilitate students’ enquiry into the values behind different stakeholders involved in environmental crises global level and the pluralist values behind. Students are also guide to contemplate the role of morality and moral communities in dealing with these crises.  4. Conclusion and students’ self-evaluation  4.1. Review the key learning points of the topic on ‘global village and sustainability’ with the students.  4.2. Ask students to consolidate their knowledge and evaluate their learning outcomes by completing ‘Worksheet 9: Summary & self-evaluation’. |

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| **Worksheet 1A: Meanings of sustainable development**  **Each individual students is then required to record the definitions of ‘sustainable development’ in the table below, and collect feedback from partners.**   |  |  |  | | --- | --- | --- | | **Group** | **Definitions of ‘Sustainable development’** | **Feedback** | | **1** |  | Score: 5 4 3 2 1 0  Comments: | | **2** |  | Score: 5 4 3 2 1 0  Comments: | | **3** |  | Score: 5 4 3 2 1 0  Comments: | | **4** |  | Score: 5 4 3 2 1 0  Comments: | | **5** |  | Score: 5 4 3 2 1 0  Comments: | | **6** |  | Score: 5 4 3 2 1 0  Comments: |   **What is/are the comment characteristic(s) in these definitions?** |

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| **Worksheet 1A: Meanings of sustainable development**  ***(For teachers’ reference)***   1. **Each group is given some basic information of particular districts in Hong Kong on a paper and asks to evaluate the sustainability of a district community. (Or students can browse the given link of a particular district on a digital device if appropriate)** 2. **Link to various districts of Hong Kong** [**http://www.districtcouncils.gov.hk/cindex.html**](http://www.districtcouncils.gov.hk/cindex.html)🡪 **choose a district such as Yau Tsim Mong District** 🡪 **District information** 🡪 **District highlights** 3. **Other suggested districts include: Shatin, Shamshuipo, North, Central, Wanchai, Islands…** 4. **When students report their findings, teacher may show the contents from the web for audience’s easy reference.**   **Each individual student is then required to record the definitions of ‘sustainable development’ in the table below, and collect feedback from partners.**   |  |  |  | | --- | --- | --- | | **Group** | **Definitions of ‘Sustainable development’** | **Feedback** | | **1** |  | Score: 5 4 3 2 1 0  Comments: | | **2** |  | Score: 5 4 3 2 1 0  Comments: | | **3** |  | Score: 5 4 3 2 1 0  Comments: | | **4** |  | Score: 5 4 3 2 1 0  Comments: | | **5** |  | Score: 5 4 3 2 1 0  Comments: | | **6** |  | Score: 5 4 3 2 1 0  Comments: |   **What is/are the comment characteristic(s) in these definitions?** |
| **Worksheet 1B: Meanings of sustainable development**  ***Part A.*** *Watch the online video on ‘****Sustainability easily explained’*** *at* [*https://www.youtube.com/watch?v=\_5r4loXPyx8*](https://www.youtube.com/watch?v=_5r4loXPyx8)*, and complete the following tasks.*   1. **Name the 3 pillars of sustainability.** 2. **Give some practical ways that people can promote sustainable development under these 3 pillars.**  |  |  | | --- | --- | | Environment |  | | Economy |  | | Society |  |  1. ***Challenging level (optional):*  Host a Low Carbon Footprints Christmas class party. Provide opportunities for student participants to explain how the goods or services they have chosen to fulfill the requirement. Evaluate how it contributes to sustainable development using the 3-pillar model.**   ***Part B.*** *Read the following passage and the complete the tasks underneath.*   |  | | --- | | **Definitions of ‘sustainability’**  There are over 100 definitions of sustainability and sustainable development, but the best known is by the World Commission on Environment and Development (WCED). In the Brundtland Report entitled ***Our Common Future***, the most frequently quoted definition goes to the followings:  *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within its two key concepts:*   * *the concept of****needs****, in particular the essential needs of the world's poor, to which overriding priority should be given; and* * *the idea of****limitations****imposed by the state of technology and social organization on the environment's ability to meet present and future needs."*   Another definition shows that *“sustainable development is maintaining a delicate balance between the human need to improve lifestyles and feeling of well-being on one hand, and preserving natural resources and ecosystems, on which we and future generations depend”.*  https://conceptdraw.com/a99c3/p1/preview/640/pict--venn-diagram-venn-diagram---path-to-sustainable-development.png--diagram-flowchart-example.png  Sources:  <http://www.gdrc.org/sustdev/definitions.html>  <http://www.iisd.org/topic/sustainable-development>  http://www.conceptdraw.com/examples/sustainability-venn-diagram |   **4. What are the “needs of the present”? Write 10 needs in your own life in the diagram below.**    **5. Are there any needs (both yours and your fellow classmates’) that conflict with one another? Draw a line to link them up in the above diagram. How can you resolve such dilemma(s)?**  **6. *Challenging level (optional):*  Imagine that you are human from the future who suffers from ecological, economic and social problems created by the present generation. Write a letter to the present generation telling them what ‘future’ problems you are facing, and suggest sustainable ways to reverse the plight.** |
| **Worksheet 1B: Meanings of sustainable development**  **(For teachers’ reference)**  ***Part A.*** *Watch the online video on ‘****Sustainability easily explained’*** *at* [*https://www.youtube.com/watch?v=\_5r4loXPyx8*](https://www.youtube.com/watch?v=_5r4loXPyx8)*, and complete the following tasks.*   1. **Name the 3 pillars of sustainability.**  * Environment * Economy * Society  1. **Give some practical ways that people can promote sustainable development under these 3 pillars.**  |  |  | | --- | --- | | **Environment** | Protect of resources & biodiversity by:   * Growing food organically and stop using pesticides * Using natural resources (e.g. petrol) more sparingly, and to develop renewable energy alternatives (e.g. ‘environmentally friendly [electric] cars’) | | **Economy** | * Reduce carbon footprint by buying local seasonal food   • Promote low carbon economy | | **Society** | * Provide better education and training opportunities to all humankinds * Promote equal rights for men and women * Fight poverty * Promote prosperity for the whole of humanity |   (Or other reasonable answers)   1. ***Challenging level (optional):* Host a Low Carbon Footprints Christmas class party. Provide opportunities for student participants to explain how the goods or services they have chosen fulfill the requirement. Evaluate how it contributes to sustainable development using the 3-pillar model.**   ***Challenging level (optional):* Host a Lo Footprints Christmas class party. Provide opportunities for student participants to explain how the goods or services they have chosen fulfill the requirement. Evaluate how it contributes to sustainable development using the 3-pillar model.**(Any reasonable answers)   1. (Any reasonable answers) 2. (Any reasonable answers) 3. Any acceptable answers from students |

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| Worksheet 2: Common goals of socio-economic development and environmental protection  Why do we need socio-economic development and environmental protection? What are the common goals of them?  **Goals of  environmental protection**  **Goals of  socio-economic development**  **Common goals** |
| Worksheet 2: Common goals of socio-economic development and environmental protection  **(For teachers’ reference)**  Why do we need socio-economic development and environmental protection? What are the common goals of them?    **Goals of  socio-economic development**  **Goals of  environmental protection**  **Goals of  economic development**    To:   * raise quality of quality of life * ensure human activities do not trigger natural disasters (economic consideration: to enhance profit and minimize loss. Environmental consideration: to preserve biodiversity & natural resources)   To:   * conserve natural resources for current & future generations * preserve biodiversity * prevent from upsetting the ecosystem * prevent different kinds of pollution (e.g. soil, water, air, nuclear…) and global warming   **Common goals**  To:   * Increase GDP * create decent job * reduce income [poverty](https://en.wikipedia.org/wiki/Poverty) * improve [education](https://en.wikipedia.org/wiki/Education) – literacy rates * improve [health](https://en.wikipedia.org/wiki/Health) and  [nutritio](https://en.wikipedia.org/wiki/Nutrition)n - life expectancy   **Common goals** |

**Thought Cards**

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| **Economic Development**  **should enjoy higher priority than**  **Environment Protection** | **Economic Development**  **should advance with**  **Environment Protection** |
| **Thought Card 1**  Taking care of millions of people who are starving is more important than saving natural resources, most of which are renewable anyway. We cannot expect developing nations to share the green concerns of developed countries when they are faced with dire poverty and a constant battle for survival. | **Thought Card 2**  We have already wasted and destroyed vast amounts of natural resources, and in so doing have put earth at risk. We must preserve the earth for our children and grandchildren. In any case, poverty and environmental damage are often linked. Destroying the rainforest gives native peoples nowhere to go except urban slums. Polluted water can lead to crop failures. Climate change will turn fertile fields into desert and flood coastal areas where hundreds of millions live. Developing countries have to choose sustainable development if they want a future for their people. |
| **Thought Card 3**  The industrialized world’s emphasis on green issues holds back developing countries. Because this is seen as interference in their affairs, it also contributes to a greater division between the First and Third worlds. Many also believe it is a deliberate attempt to stop possible economic competitors. After all, the USA and EU already put high tariffs (import taxes) on products made cheaply in developing countries (e.g. canned tomatoes, shoes) which could be sold in America or Europe. By limiting the development of profitable but polluting industries like steel or oil refineries we are forcing nations to remain economically backward. | **Thought Card 4**  No one wants to stop economic progress that could give millions better lives. But we must insist on sustainable development that combines environmental care, social justice and economic growth. \*The Earth cannot support unrestricted growth. Companies in developed countries already have higher costs of production because of rules to protect the environment. It is unfair if they then see their prices undercut by goods produced cheaply in developing countries at the cost of great pollution. |

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| **Thought Card 5**  Economic development is vital for meeting the basic needs of the growing populations of developing countries. If we do not allow them to industrialize, these nations will have to bring in measures to limit population growth just to preserve vital resources such as water. | **Thought Card 6**  Unchecked population growth has a negative impact on any nation, as well as on the whole planet. Both the poverty and the environmental problems of sub-Saharan Africa are largely the result of rapid population growth putting pressure on limited resources. At the same time China has become wealthy while following a “one-child” per couple policy. Limiting population growth will result in a higher standard of living and will preserve the environment. |
| **Thought Card 7**  Obviously the world would be better if all nations stuck to strict environmental rules. The reality is that for many nations such rules are not in their interests. For example, closing China’s huge Capital Iron and Steelworks, a major source of pollution, would cost 40 000 jobs. The equal application of strict environmental policies would create huge barriers to economic progress, at a risk to political stability. | **Thought Card 8**  Nations are losing more from pollution than they are gaining from industrialization. China is a perfect example. Twenty years of uncontrolled economic development have created serious, chronic air and water pollution. This has increased health problems and resulted in annual losses to farmers of crops worth billions of dollars. So uncontrolled growth is not only bad for the environment, it is also makes no economic sense. |
| **Thought Card 9**  Rapid industrialization does not have to put more pressure on the environment. Scientific advances have made industries much less polluting. And developing countries can learn from the environmental mistakes of the developed world’s industrial revolution, and from more recent disasters in communist countries such as China and the USSR. For example, efficient new steelworks use much less water, raw materials and power, while producing much less pollution than traditional factories. And nuclear generating plants can provide more energy than coal while contributing far less to global warming. We are also exploring alternative, renewable types of energy such as solar, wind and hydro-power. | **Thought Card 10**  Scientific progress has made people too confident in their abilities to control their environment. In just half a century the world’s nuclear industry has had at least three serious accidents: Windscale (UK, 1957), Three Mile Island (USA, 1979), and Chernobyl (USSR, 1986). In addition, the nuclear power industry still cannot store its waste safely. Hydro-power sounds great but damming rivers is itself damaging to the environment. It also forces huge numbers of people off their land – as in China’s 3 Gorges project. |
| **Thought Card 11**  It is hypocritical (two-faced and unfair) for rich developed countries to demand that poorer nations make conservation their priority. After all, they became rich in the first place by destroying their environment in the industrial revolution. Now that they have cut down their own trees, polluted their water sources and poured billions of tons of carbon into the air, they are in no position to tell others to behave differently. In any case, as countries become richer they become more concerned about the environment, and can afford to do something about it. For developing countries conservation can therefore wait until they are richer. | **Thought Card 12**  Looking after our fragile world has to be a partnership. Climate change will affect the whole planet, not just the developed world. In fact it is likely to have particularly terrible effects on developing countries as sea levels rise, deserts advance, and natural disasters become more common. It is no use Europe trying to cut its emissions into the atmosphere if unchecked growth in China and India leads to much greater overall pollution. Instead, developed countries need to transfer greener technologies to the developing world, paying for environmental protection and making sustainability a condition for aid. |
| **Thought Card 13**  The “Green Revolution” has doubled the size of grain harvests. Thus, cutting down more forests to provide more space for crops is no longer necessary. We now have the knowledge to feed the world’s increasing population without harming the environment. Genetically modified crops can also benefit the developing world by requiring much less water, fertiliser or pesticide use while giving better yields. This is another example of economic development leading to environmental benefits. | **Thought Card 14**  The Green Revolution is threatening the biodiversity of the Third World by replacing native seeds with hybrids. We do not know what the long-term environmental or economic consequences will be. We do know that in the short run, such hybrid crops can cause environmental problems by crowding out native plants and the wildlife which relies on them. The farmer growing hybrid crops must buy costly new seed every year because it cannot be saved to plant the following year’s crops. Farmers using hybrid seeds in what was the richest part of India went bankrupt. As a result, fertile lands lay idle and unploughed, resulting in droughts and desertification. |

Source: [http://debatewise.org/debates/2918-economic-development-vs-the-environment/#](http://debatewise.org/debates/2918-economic-development-vs-the-environment/)

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| **Worksheet 3: Relationships between ‘economic development’ and ‘environmental Protection’**   1. **Recap the key points from the class activity in the table below.**  |  |  | | --- | --- | | **Economic development  should enjoy higher priority than  Environmental Protection** | **Economic Development**  **should advance with**  **Environmental Protection** | |  |  |   **2. Which side do you take? Why?** |

**Pictures on eWaste industry in Guiyu Town, China**

<http://www.rhythmsmonthly.com/?p=6755>

http://jinjingminzhizi.blog.hexun.com.tw/76645537\_d.html

**Guiyu, Guangdong, China**

Burial of global eWaste

Piles of eWaste are being transported to Guiyu, China for the dismantling process. Every year over one million tons of eWaste are sent across the world to the town, seriously polluting the environment and affecting local creatures.

<http://www.time-weekly.com/html/20090709/1616_1.html>

https://www.cool3c.com/article/69453

<http://news.163.com/photoview/00AN0001/24133.html>

<http://jinjingminzhizi.blog.hexun.com.tw/76645537_d.html>

<http://discover.news.163.com/09/0606/12/5B4GEKMA000125LI_4.html>

<http://discover.news.163.com/09/0606/12/5B4GEKMA000125LI_4.html>

<http://renniaofei.com/internet/zhongguo-guiyu-zuidade-dianzilaji-huishouzhan.html>

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**Jigsaw storytelling - Global eWastes in Guiyu Town, China**

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| **1. High-tech, resource-consuming manufacturing industry**  Afterschool, whilst 2 students are chatting in a fast food restaurant about the smart phone and notebook computer models that they plan to buy, they see a TV documentary programme on ‘Global eWastes in Guiyu Town’ as follows:  Here is an “exciting” news from the Massachusetts Institute of Technology which intends to design a notebook computer costing only US$100 for the people of the third world or poverty-stricken countries with an aim to narrow the digital “gap” Quanta Computer, the largest contract manufacturer of notebook computers in China, has recently signed a contract initiated by the Massachusetts Institute of Technology for an opportunity of mass production in the future. It is a huge market that targets China, India and, Southeast Asian countries with a large population and low national income. For companies who want to make money with low costs, certain quantity must be fulfilled to win the price battle.  Another news is that Guiyu Town, Shantou City, Guangdong Province, China, is attracting more attention from the world. But what makes the town under the spotlight is not something “good”, but the fact that 80% of its people make a living by dismantling eWastes, which has become a peculiar industry in Guiyang, filling the streets, rivers with mountains of wastes and, heavily polluting the land and rivers. |
| **2. Production of electronic products and consumption of resources**  eWastes has caused serious pollution in such countries as China and India. In absence of a clear system for recycling and disposal at the end of a product’s life cycle, it is hard to imagine the social impact of the mass production of US$100 notebook computers  The production process of electronic products is too complicated to imagine. First components such as capacitors, resistors, circuit boards, plastic panels, are largely produced by secondary manufacturers in China and Southeast Asia and are made of raw materials, such as copper, tin and, plastic, imported from around the world. Finished products are then exported to various component distributors who either keep stocks or serve only as a trading platform.  Second, for mid-range products such as hard disk drives and, optical disc drives,. manufacturers obtain a list of model numbers from electronic and acquire essential components from distributors around the world for hoarding to facilitate immediate production as soon as receiving orders from clients.  Finally, high-end products include bigger items, such notebook computers, digital cameras, and smaller ones, such as mobile phones and, PDAs, all of which are end products. A notebook computer, for instance, is an assembly of optical disk drive, RAM, main board, hard disk, etc. to be imported from various manufacturers of mid-range products, and must be tested before sold to distributors around the world.  Generally speaking, it takes only three3 days (one for transport of components one for assembly and one for shipment) to deliver 3,000 notebook computers to a client. However, such a high efficiency has to be warranted by the transportation of raw materials several times across the globe which consumes a lots of energy. Moreover, the exponential growth of annual shipment, the growing global demand and, the launch of new products on a quarterly basis make it difficult to estimate the consumption of resources. |

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| **3. eWastes of high pollution and high economic values**  A ton of circuit boards can be dismantled into 286 pounds of copper, one1 pound of gold and, 44 pounds of tin. One1 pound of gold is worth US$6,000 . Furthermore, eWastes is often bought at a price as low as that of wastes. With a lower labour cost, eWaste has becomes a highly sought-after treasure.  However, the disposal takes process is almost as much time as manufacturing process, and may even cost high dear due to the complicated composition of eWastes. eWastes consists oftain heavy metal, plastic, etc. The complexity of numerous components requires such highly polluting method as burning, cleansing or drying for dismantling and may do great harm to workers and the local environment in absence of proper treatment. For example, the case of Guiyu gives rise to some problems:  During the dismantling of eWaste, workers have little protection and adopt only the most traditional way of dealing with these complicated things.  “I am a machine operator in the yard. It is a hard time now in summer. The plastic we deal with contains toxic formaldehyde, which means wearing masks is useless. In summer when daytimes is longer, the factory is all filled with bad smell.”  In consideration of lowering costs, the wastes is often dumped in the environment without any treatment:  Mr. Li is engaged in recycling circuit boards whose components have been removed and selling the boards to those specialising in extracting metals from such waste. In the past, such circuit boards were usually just burnt off and sometimes even directly dumped into the river to save trouble.  Since the 1980s, eWaste has become a primary industry in the town and started to show a long-term impact on the local environment and hence living conditions :  Giving an example, Mr. Tian said: “With heavy pollution, the local underground water is no longer suitable for cloth washing clothes, as the polluted water would turn the white clothes into yellow Therefore, we all to the stinky sewers out there to get a better wash.”  This case demonstrates the highly polluting nature of eWastes, whose treatment is very dependent on technology, protection and investment, but with concern over costs, such waste ends up in workers’ bodies and the surrounding environment.  Guiyu residents speak it all: “We are all doing this (eWastes recycling)., We live on it, so we can do nothing with the pollution. ” |

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| **4. eWastes “industry” in Guiyu**  New buildings are seen everywhere in Guiyu. They look just as luxurious as those in developed towns. Goods available in supermarkets also prove the spending power of local people. It seems that Guiyu is a big, affluent town. However, Guiyu’s economic strength is attributable to the local industry. Used electrical appliances and plastic wastes are piling up in both urban and rural areas, with workers bustling around Millions of tons of eWaste are swallowed here, 80% of workers are engaged in eWaste dismantling and have become a major driver of Guiyu’s economy.  Moreover, there is a long history of struggle among clans. At the time when the eWaste dismantling industry evolved, clans often fought over sources of eWastes.  One may find it quite difficult to adapt to the air and water in Guiyu Town, which is filled with irritant smell. Neither surface water nor underground water is suitable for drinking. One has to pay for clean water, making water sale another key industry. There used to be a large number of rivers in Guiyu, but since the end of the 1980s when local residents engaged themselves in dismantling hardware and electrical appliances, the town has buried wastes for nearly 20 years, turning the rivers into stinky sewers. Furthermore, derelict land in the outskirts is also accumulating various kinds of garbage. The Farms have been left uncultivated for years, and areis no longer cultivable due to heavy pollution.  In Guiyu’s eWastes market, the raw materials is the waste delivered from all over the world;, the employer is Guiyu residents;, the employees are non-residents; the products are various kinds of metal and valuable raw materials;, the consumers are manufacturers of primary products or distributors of raw materials. From the perspective of the global electronic industry, Guiyu is the very end of the stages of production, consumption, disposal and recycling.  It was not until the end of the 1980s that the global electronic industry started to boom. In the mid-1990s, computers and the interne became common, and in the late 1990s, the mobile market reached its peak. While it is a huge market, businesses with strong distribution networks give little consideration to waste disposal. As electronic products have complicated composition and the recycling profit is hard to estimate, the waste are is often considered a trouble and exported by western countries. Businesses take place and the industry emerges when there is sufficient profit. Over the life cycle of electronic products, manufacturers seldom bother about this segment giving a chance to Guiyu, which has transformed from a rural town, to fill this gap. The market promises attractive profit for local residents, who could move on from a poverty-stricken agricultural society. |

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| **5. Way out of eWaste**  As reported by BBC in 2003, 80% of eWaste was transported to Asia as a result of industrial globalisation, and 90% of it was shipped to China, which now plays an important part in the world’s manufacturing industry with largest output of many goods. Over 50% of cameras, over 30% of air conditioners and TV sets and, over 25% of washing machines are produced in this country.  Contradiction is thus created. On one hand, China plays a core role in global contract-manufacturing industry producing electronic products. On the other hand, the country is inevitably the destination of global eWaste. Development is like a tiger under government control, often attacking people and communities to bring huge benefit to a country. In Guiyu, given the lucrative nature of eWastes recycling as well as favourable access, a sizable dismantling industry has been established together with the effort of migrant workers, at the cost of polluting the environment. If China does not play a part, other countries will be more than happy to take this valuable opportunity. In this profit model driven by capitalism, there will always be someone willing to make money at the cost of polluting the environment.  *(After watching the above TV documentary programme in the fast food restaurant, the 2 students start thinking about whether they should replace their smart phones and notebook computers so frequently.)* |

Adapted from <https://jimmyhub.net/story/%E5%85%A8%E7%90%83%E9%9B%BB%E5%AD%90%E5%9E%83%E5%9C%BE%E5%9C%A8%E8%B2%B4%E5%B6%BC>

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| **Worksheet 4: Case study – Global eWaste in Guiyu Town, China**  **Part 1**   |  | | --- | | **Introduction**  In the late 1980s and early 1990s, Guiyu Town, Guangdong Province, began to see the booming business of dismantling used hardware and electronicc appliances. The industry gradually expanded the scale as a result of its attractive profits.At the same time, a large amount of eWaste was transported from overseas to Guiyu via Shenzhen, Guangzhou and Nanhai. As the traditional recycling industry has practically developed into athe major industry of Guiyu , many farms have been left idle., 80% of local households are engaged in this industry and make money very quickly. However, in a bid to reduce costs, those family workshops in Guiyu often dismantle eWastes using a direct, primitive way. While the industry generates lucrative profits for local residents, it has inevitably cause  d serious pollution in the environment, especially the air, land and underground water. The air is awfully dirty, and, the underground water polluted by heavy ions is no longer suitable for drinking.  Source: http://www.greenpeace.org/hk/publications/reports/toxics/2003/guiyu-report/ |  1. **Base on the information above, from the previous class activity and your own knowledge, make a balance sheet for the following parties in the case of Guiyu Town.**  |  |  |  | | --- | --- | --- | |  | **Gain** | **Loss** | | **eProduct Manufacturers** |  |  | | **Guiyu Residents** |  |  |  1. **Taken into account of all outcomes, whom do you think is the winner and loser? Why?** 2. ***Challenging level (Optional):* Do you think the eWaste industry in Guiyu is sustainable? Explain your answer.**   **Part 2. Proposal on greener e-products**  **Watch the online video on ‘The Story of Electronics’ at** [**https://www.youtube.com/watch?v=Cjqm6NeAodU**](https://www.youtube.com/watch?v=Cjqm6NeAodU)**, and then write a proposal on the following:**   |  | | --- | | **How to protect the environment by reducing e-waste?**  **Governments can…**  **Customers can…**  **Manufacturers can…** | |

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| **Worksheet 4: Case study – Global eWaste in Guiyu Town, China**  **(For teachers’ reference)**  **Part 1**   |  | | --- | | **Introduction** *(Please help translate. Thanks!)*  In the late 1980s and early 1990s, Guiyu Town, Guangdong Province, began to see the booming business of dismantling used hardware and electronicc appliances. The industry gradually expanded the scale as a result of its attractive profits.At the same time, a large amount of eWaste was transported from overseas to Guiyu via Shenzhen, Guangzhou and Nanhai. As the traditional recycling industry has practically developed into athe major industry of Guiyu , many farms have been left idle., 80% of local households are engaged in this industry and make money very quickly. However, in a bid to reduce costs, those family workshops in Guiyu often dismantle eWastes using a direct, primitive way. While the industry generates lucrative profits for local residents, it has inevitably cause  d serious pollution in the environment, especially the air, land and underground water. The air is awfully dirty, and, the underground water polluted by heavy ions is no longer suitable for drinking.  Source: http://www.greenpeace.org/hk/publications/reports/toxics/2003/guiyu-report/ |  1. **Base on the information above, from the previous class activity and your own knowledge, make a balance sheet for the following parties in the case of Guiyu Town.**  |  |  |  | | --- | --- | --- | |  | **Gain** | **Loss** | | **eProduct Manufacturers** | **Economic**   * Huge revenue * Skills & knowledge of technological improvement via frequent updates of product models * Expending market shares * Political influence on government policies in favour of the economic development of the manufacturers | **Economic**   * Custom duty   Fine for pollution imposed by some governments  **Social**   * Loss of reputation due to exfoliation of labour, and causing pollution | | **Guiyu Residents** | **Economic**   * Great fortune for the clan leaders (bosses of eWaste industry) * Easy job opportunity for unskilled labourers * Luxurious houses and goods for the rich | **Environmental**   * Heavy soil, water, air and environmental pollution * Large area of abandoned agricultural lands   **Social**   * Serious health problems caused by the toxic substances of the eWaste * Heavy dependency on imported food & water * Increasing conflicts among clans for competing business * Loss of traditional culture and values * Disparity between the rich and the poor * Exfoliation of non-local workers |  1. **Taken into account of all outcomes, whom do you think is the winner and loser? Why?**   (Any reasonable answers)   1. ***Challenging level (Optional):* Do you think the eWaste industry in Guiyu is sustainable? Explain your answer.**   (Any reasonable answers)  **Part 2. Proposal on greener e-products**  **Watch the online video on ‘The Story of Electronics’ at** [**https://www.youtube.com/watch?v=Cjqm6NeAodU**](https://www.youtube.com/watch?v=Cjqm6NeAodU)**, and then write a proposal on the following:**   |  | | --- | | **How to protect the environment by reducing e-waste?**  **Governments can…**   * Enforce the ‘Extended Producer Responsibility’ or ‘Product Takeback’ laws. * Impose restrictions on exporting/importing e-waste. * Nurture citizens’ sense of environmental protection through education (e.g. 3Rs- Reduce, Reuse, Recycle ; anti- ‘Big Waster’ campaign) * Encourage green e-product innovations by providing research-and-development funds, green product awards, green corporate awards, tax remission…   **Customers can…**   * Implement the 3Rs in daily life. * If necessary, buy greener e-products. * Demand stronger laws on toxic chemicals and on banning e-waste exports.   **Manufacturers can…**   * With takeback laws and citizen actions to demand greener products, shift the ‘designed for the dump’ strategy to ‘design to last’. * Make modular e-product, so that when one part broke, they could just send customer a new piece, instead of taking back the whole broken mess. * Adopt e-product designs which are longer lasting, less toxic, and more recyclable.   (Or other reasonable answers) | |

**Cross-Border environmental problems**

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| **1. SO2 released by coal plants in the American Midwest fall as acid rain in Canada**  **Your role: Canadian**  **The situation:**  Acid rain is caused largely by sulphur dioxide (SO2) and oxides of nitrogen emitted by industrial activities such as coal burning. The gases dissolve in rainwater to form acids. Much of this industry is based in the United States, but the weather exports pollution north of the border. Between 50% and 70% of Canada's acid rain comes from the United States, while only 2-10% of America's pollution in this area comes from Canada.  The Clean Air Act (1990) reduced US sulphur dioxide emissions from 16 million tonnes a year in the 1980s to 11 million tonnes in 2000. Rain is less acidic, but Ontario's lakes are not recovering. Many of the province's 31,000 small lakes have a pH value of about 5, making them dangerously acidic for fish and plants.  Swimmers who dive into a number of Canadian lakes might not emerge clean and refreshed, but dripping with globs that resemble slimy fish eggs. A legacy of industrial pollution has caused great changes in the country's water chemistry, creating a boom in tiny organisms that transform lakes into "jelly". The marching masses of jelly might also damage populations of larger animals—including fish that people eat—as they diminish the amount of nutrients moving up the food chain.  Sources:  <http://www.nature.com/news/2005/050810/full/news050808-10.html>  http://www.citylab.com/weather/2014/11/acid-rain-has-turned-canadian-lakes-into-a-kind-of-jelly/382922/  **Group discussion:**   1. **Who are you going to accuse? For what?** 2. **What are your requests?** 3. **How can these be fulfilled?** |

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| **2. Fatal super typhoons across the Philippines**  **Your role: Filipino**  **The situation:**  A warming planet is already stoking the intensity of tropical cyclones in the north-west Pacific and their ferocity will continue to increase even with moderate climate change over this century, an international research team has found. A study covering 850 typhoons in the region found the intensity of the damaging storms has increased by about 10% since the 1970s  Carbon dioxide emissions from countries like China, US, European Union, India, Russia, Japan and Germany etc. push forth climate change, which intensify the strength of typhoons. In 2013, Super Typhoon Haiyan tore through the Philippines and left more than 6200 people dead and 1785 missing in the Philippines alone.  The Philippines faced a humanitarian crisis days after the typhoon hit much of the [Visayas](https://en.wikipedia.org/wiki/Visayas" \o "Visayas) with 1.9 million homeless and more than 6,000,000 displaced. In [Tacloban](https://en.wikipedia.org/wiki/Tacloban" \o "Tacloban) alone, 90% of the structures are either destroyed or damaged while other cities, such as [Ormoc](https://en.wikipedia.org/wiki/Ormoc" \o "Ormoc), are reporting similar damage. Spread of disease was high due to the lack of food, water, shelter, and medication.  Sources:  <http://www.smh.com.au/environment/climate-change/super-typhoons-to-increase-in-strength-with-climate-change-researchers-find-20150529-ghcbfs.html>  <https://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions>  <https://en.wikipedia.org/wiki/Typhoon_Haiyan#Humanitarian_crisis_and_population_displacement>  **Group discussion:**   1. **Who are you going to accuse? For what?** 2. **What are your requests?** 3. **How can these be fulfilled?** |

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| **3. China Pollution Threatens Environment & Public Health in Nearby Nations**  **Your role: Japanese**  **The situation:**  Coal is largely to blame for the degradation of air quality. China is the world’s largest coal producer and accounts for [about half](http://www.eia.gov/countries/country-data.cfm?fips=CH) of the global consumption. Mostly burned in the north, coal provides around two thirds of China’s energy mix. Emissions from China’s export industries are [worsening air pollution](http://www.nature.com/articles/ngeo2493.epdf?referrer_access_token=Tp1DYxOmsEtd3hrT0SPA9NRgN0jAjWel9jnR3ZoTv0MgzYRYszC1yT1WstEI--MP9eBbm1HtGQLC3BJoU6i0XGyup2N3KjYoPCj1FslIo_61B63GQ5soK4ZRA76nen65Fb_XULerQXo3Gy0gbYdR2crb7J2QKCzBcyO4VdhcvSNhVB8mheSLILQOPaKepGBpxwGXZHbwRaiDql06URe-5w%3D%3D&tracking_referrer=thinkprogress.org). China’s neighbors, including Japan and South Korea, have also [expressed concern](http://www.scmp.com/news/china/article/1348605/japan-south-korea-concerned-chinas-smog-will-affect-them) over acid rain and [smog](http://www.nbr.org/research/activity.aspx?id=397) affecting their populations.  Schools in southern Japan and South Korea have had to suspend classes or restrict activities because of toxic chemical smog from China’s factories or sand storms from the Gobi Desert, which are either caused or made worse by severe deforestation. In addition, on the slopes of Mount Zao in Japan, the famous juhyo, or ice trees—along with the ecosystem that supports them and the tourism they inspire—are at risk of serious damage from acid caused by sulfur produced at factories in China's Shanxi province and carried on the wind across the Sea of Japan.  In 2013, parts of northern China, particularly Harbin, have all but ground to a halt because of smog containing contaminant levels up to 50 times that deemed safe by the World Health Organization. Japanese government ordered local authorities to issue warnings to residents about dangerous levels of pollution.  Sources:  <http://environment.about.com/od/pollution/a/cross_border.htm>  <http://www.cfr.org/china/chinas-environmental-crisis/p12608>  <http://www.scmp.com/news/china/article/1348605/japan-south-korea-concerned-chinas-smog-will-affect-them>  **Group discussion:**   1. **Who are you going to accuse? For what?** 2. **What are your requests?** 3. **How can these be fulfilled?** |

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| **4. Singapore pollution from Indonesian forest fires hits record levels**  **Your role: Singaporean**  **The situation:**  Smog from Indonesian forest fires has hit Singapore and Malaysia many times, often in the middle of the year. It was due to plantation owners and farmers in Jakarta usually start fires to clear land cheaply on Sumatra island.  In 2013, Singaporeans were urged to stay indoors as smoky haze from forest fires in neighboring Indonesia has worsened dramatically, causing unprecedented levels of air pollution. Singapore's pollutant standards index hit a record reading of 371, above the "hazardous" classification that can aggravate respiratory ailments. The haze has shrouded the city-state's skyscrapers and some Singaporeans complained of coughs and covered their faces with handkerchiefs while walking outdoors. Air traffic controllers at Changi airport were told to take precautions because of lower visibility, and McDonald's said it had suspended its delivery service to protect its workers' health. Some hospitals shut windows in wards caring for elderly patients, and a number of football matches and sailing competitions scheduled were cancelled.  In neighbouring Malaysia, 200 schools were ordered to close for several days until the air quality improved. Malaysia's environment department banned open burning and made it punishable by up to five years in prison in three states separated from Sumatra by the Malacca strait. However, Indonesian officials have defended their response to the haze, saying the government is educating farmers about alternatives to traditional slash-and-burn agriculture. There have also been suggestions that some of the fires might be blamed on Singaporean and Malaysian companies involved in Indonesia's plantation industry.  Sources:  <http://www.theguardian.com/world/2013/jun/20/singapore-pollution-record-levels>  <http://www.theguardian.com/world/2013/jun/19/singapore-pollution-haze-indonesia-air-quality>  **Group discussion:**   1. **Who are you going to accuse? For what?** 2. **What are your requests?** 3. **How can these be fulfilled?** |

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| **5. Belgium's ageing nuclear plants worry neighbours**  **Your role: Dutch**  **The situation:**  As the two cooling towers at Belgium's Doel nuclear power belch thick white steam into a wintry sky, people over the border in the Dutch town of Nieuw-Namen are on edge. They are part of a groundswell of concern in the Netherlands, Germany and Luxembourg over the safety of Belgium's seven ageing reactors at Doel and at Tihange, further to the south and east.  Belgium's creaking nuclear plants have been causing safety concerns with its neighbours for some time now after a series of problems ranging from leaks to cracks and an unsolved sabotage incident. "If the reactor pressure (vessel) fails, then we have a Chernobyl and a Fukushima-type accident," Eloi Glorieux, Greenpeace's nuclear campaigner for Belgium warned.  Glorieux warned that any catastrophe in Belgium would be far worse than in Fukushima or Chernobyl, because its plants are near such densely populated areas. Tihange is 20 kilometres from the Belgian city of Liege, 40 kilometres from the Dutch city of Maastricht and 60 kilometres from the Germany city of Aachen.  The authorities in Maastricht and Aachen have hired lawyers to consider possible legal action against Belgium to ensure plant safety, or even make them close down.    Source:  <http://phys.org/news/2016-01-belgium-ageing-nuclear-neighbours.html>  **Group discussion:**   1. **Who are you going to accuse? For what?** 2. **What are your requests?** 3. **How can these be fulfilled?** |

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| **Worksheet 5: Cross-border environmental problems**  Listen carefully to the presentations by the fellow classmates. Jot notes and write down your comments (if any) in the table below.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Group** | **The accused & reasons** | **The requests** | **Ways to fulfill** | **Your comment (optional)** | | (1) **Canadian** |  |  |  |  | | (2) **Filipino** |  |  |  |  | | (3) **Japanese** |  |  |  |  | | (4) **Singaporean** |  |  |  |  | | (5) **Dutch** |  |  |  |  |   Peer evaluation   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | Peer-evaluation (3=good, 2=average, 1=poor) | | | | | | **Group 1 (Canadian)** | **Group 2 (Filipino)** | **Group 3 (Japanese)** | **Group 4 (Singaporean)** | **Group 5 (Dutch)** | | Clarity of presentation | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | | Understanding of the problem | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | | Reasonable requests | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | | Valid ways to solve the problem | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 | 3 2 1 |   **Discussion**  **Can the above environmental problems be solved by a single nation? Why or why not? What should be the proper and effective ways to solve them?** |

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| **Worksheet 6: International cooperation and sustainable development**  **Task A:** *Read the following article.*   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **International cooperation on environmental issues**  International cooperation and sustainable development are interwoven. International cooperation is a necessary factor in the pursuit of sustainability when dealing with global environmental issues. Such cooperation involves difficult distributive issues within and across countries, and over time.  Until the early 1970s international cooperation was meant to focus on war prevention and economic growth. In 1972, with the United Nations (UN) Conference on the Human Environment held in Stockholm, environment protection began developing as another major focus of international cooperation. This was, for instance, the case in relation to the problem of ‘acid rain’, which was a main concern for the host country and which became the focus of major effort in East-West European cooperation leading to the Convention on Long Range Transboundary Air Pollution.  20 years after the Stockholm Conference, over 900 bilateral and multilateral environmental agreements could be counted.  Some major **multilateral environment agreements** include:   |  |  |  | | --- | --- | --- | | **Topic** | **Example** | **Year** | | Atmosphere | Convention on Long-Range Transboundary Air Pollution (LRTAP), Geneva | 1979 | | Freshwater resources | Convention on the Protection and Use of Transboundary Watercourses and International Lakes (ECE Water Convention), Helsinki | 1992 | | Greenhouse gases | United Nations Framework Convention on Climate Change (UNFCCC), Rio de Janeiro  Kyoto Protocol, Japan  Emission Trading Scheme  Paris Agreement | 1992  1997  2005  2015 | | Hazardous substances | European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways (AND), Geneva | 2000 | | Marine environment – global conventions | International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS), London | 1996 | | Marine living resources | Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), Canberra, | 1980 | | Nature conservation and terrestrial living resources | Convention on Biological Diversity (CBD), Nairobi | 1992 | | Noise pollution | Working Environment (Air Pollution, Noise and Vibration) Convention | 1977 | | Nuclear safety | Convention on Nuclear Safety, Vienna | 1994 | | CFC | Montreal Protocol on Substances that Depletes the Ozone Layer | 1992 |   References:  <http://www.eolss.net/sample-chapters/c14/e1-37-04-01.pdf>  https://en.wikipedia.org/wiki/List\_of\_international\_environmental\_agreements#General |   **Tell your neighbour the summary of the above article.**  **Task B: Brief history of climate change negotiations**  *Read the following articles.*   |  | | --- | | **United Nations Framework Convention on Climate Change (UNFCCC) (1992)**  UNFCCC is an international environmental treaty negotiated at the **Earth Summit** in Rio de Janeiro from 3 to 14 June 1992, then entered into force on 21 March 1994. The UNFCCC objective is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "Agreements") may be negotiated to set binding limits on greenhouse gases.  Source: <https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change> | | **Kyoto Protocol (1997)**  The Kyoto Protocol is an international treaty which extends the 1992 UNFCCC that commits State Parties to reduce greenhouse gases emissions, based on the premise that (a) global warming exists and (b) man-made CO2 emissions have caused it. The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005.  The Protocol is based on the principle of common but differentiated responsibilities: it puts the obligation to reduce current emissions on developed countries on the basis that they are historically responsible for the current levels of greenhouse gases in the atmosphere.  Source: <https://en.wikipedia.org/wiki/Kyoto_Protocol> | | **Paris Agreement (2015)**  The Paris Agreement is an agreement within the framework of the UNFCCC dealing with greenhouse gases emissions mitigation, adaptation and finance starting in the year 2020. Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.  177 UNFCCC members signed the treaty, 15 of which ratified it. Each country could set her own targets of "nationally determined contributions"(NDCs). The 'contributions' themselves are not binding as a matter of international law, and there will be no mechanism to enforce them. It is only a "name and encourage" plan.  Sources:  <https://en.wikipedia.org/wiki/Paris_Agreement>  http://unfccc.int/paris\_agreement/items/9485.php |   **Watch the online video on ‘The History of Climate Change Negotiations in 83 seconds’ at** [**https://www.youtube.com/results?search\_query=kyoto+protocol+cartoon**](https://www.youtube.com/results?search_query=kyoto+protocol+cartoon)**, and then fill the following table (optional challenging level: supplementing with the information you find from the Internet):**   |  |  |  | | --- | --- | --- | |  | **Attitudes towards cutting CO2 emissions** | | | **Developed Countries** | **Developing Countries** | | **United Nations Framework Convention on Climate Change (UNFCCC) (1992)** |  |  | | **Kyoto Protocol (1997)** |  |  | | **Paris Agreement (2015)** |  |  |   ***Challenging level (optional):* Evaluate the effectiveness of the international agreements on solving global environmental problems.** |

**Task B: Brief history of climate change negotiations**

**(for teachers’ reference)**

|  |  |  |
| --- | --- | --- |
|  | **Attitudes towards cutting CO2 emissions** | |
| **Developed Countries** | **Developing Countries** |
| **United Nations Framework Convention on Climate Change (UNFCCC) (1992)** | Given the framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms, in 1992, 154 nations signed the UNFCCC, that upon ratification committed signatories' governments. | Under the Convention, governments launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries. So, developing countries welcome the Convention in general. |
| **Kyoto Protocol (1997)** | The Protocol puts the obligation to reduce current emissions on developed countries on the basis that they are historically responsible for the current levels of greenhouse gases in the atmosphere, and set the binding targets for cutting CO2 emissions. Later on, 37 developed countries like Australia, EU, Norway and Switzerland, etc., intended to withdraw from the Protocol. | Since there was no limitation in greenhouse gas emissions for developing countries in the Protocol, they do not have much interest in it.  For developing countries, economic development and fight against poverty come before the problems of climate change and reducing emissions. |
| **Paris Agreement (2015)** | 175 Parties signed the treaty on the first date it was open for signature.  Later on, US and China (developing country), which jointly represent almost 40% of global emissions, issued a joint statement confirming that both countries will sign the Paris Climate Agreement. | Developing countries were reluctant to sign the Paris climate agreement and urged for assurances on finance, technology and compensation for damage from extreme weather. |

(Or other reasonable answers)

References:

https://en.wikipedia.org/wiki/Kyoto\_Protocol

http://unfccc.int/essential\_background/convention/items/6036.php

<http://unfccc.int/essential_background/convention/items/2627.php>

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Worksheet 7: Moral obligations in tackling environmental problems**  What moral obligations do the following parties have in tackling environmental problems?   |  |  | | --- | --- | | **Responsible parties** | **Moral obligations** | | **Governments**  (both developed/rich and developing/poor countries) |  | | **IEnvironmental Non-governmental organizations (NGO)**  e.g. Green Peace, WWF |  | | **Global environmental citizens** |  | | *Challenging level (optional):*  **Others, such as faith groups (please specify)** |  | |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Worksheet 7: Moral obligations in tackling environmental problems**  **(For teachers’ reference)**  What moral obligations do the following parties have in tackling environmental problems?   |  |  | | --- | --- | | **Responsible parties** | **Moral obligations** | | **Governments**  (both developed/rich and developing/poor countries) | All governments, rich and poor alike, have the obligations to enforce laws and regulations to prevent/mitigate environmental problems, and also to educate people about the importance of environmental protection.  Some philosophers also suggest that governments of rich countries ought to do more than the poor counterparts in solving environmental problems, applying the ‘ought implies can’ ethical principle.  Common but Differentiated Responsibilities (CDR) is advocated based on the following 2 reasons:   1. Rich countries are said to have a greater responsibility to solve the problems of climate change because they, historically, contributed more to the emissions of carbon dioxide. 2. rich countries have a greater capacity primarily in terms of power and resources to solve these problems | | **International Environmental Non-governmental organizations (NGO)**  e.g. Green Peace, WWF | Environmental NGOs can play a crucial role in helping to plug gaps by conducting research to facilitate policy development, building institutional capacity, and facilitating independent dialogue with civil society to help people live more sustainable lifestyles.  On one hand, NGOs can perform as actors/partners of the governments to help implement environmental policies and participate in the development of the country.  On the other hand, they can organize campaigns/protest against business or governmental acts causing environmental/ecological problems. | | **Global environmental citizens** | Global environmental citizenship is about asserting the ethical responsibilities of individuals, organizations, countries and corporations to create new forms of solidarity to protect all life on Earth.  *Duty and responsibility*:  The principal environment/ecological citizenship obligation is to ensure that ecological footprints make a sustainable, rather than an unsustainable, impact. This should principle should be implemented in all private life aspects of the Global environmental citizens.  *Virtue*: The first virtue of ecological citizenship is justice - a just distribution of ecological space. | | *Challenging level (optional):*  **Others, such as faith groups (please specify)** |  |   References:  Jessica Nihle´n Fahlquist (2009), ‘Moral Responsibility for Environmental Problems—Individual or Institutional?’ in *Journal of Agricultural and Environmental Ethics* 22:109-124.  <http://www.mei.edu/content/role-ngos-tackling-environmental-issues>  <https://wellsharp.wordpress.com/2009/09/22/ecological-citizenship-the-basis-of-a-sustainable-society/>  http://www.ourplanet.com/imgversn/85/barcena.html |

**Worksheet 8: Pluralist and Global nature of electronic waste from overseas.**

B: We need to survive and generate more income, so we can only stay home dismantling circuit boards.

C: It is immoral to export electronic waste to developing countries. Waste producers must be responsible for disposal. Villagers in developing countries are poorly educated, so they are sacrificing their health and environment.

J: The so-called environment certification aims nothing more than to create obstacles to our development. One has to buy technology patents from the western countries before it can obtain the certification. You know who sets the certified standards.

H: We have maintained the province’s GDP growth. Those organisations ask developed countries not to export eWaste to us. Does that mean tens of thousands of people will lose their jobs? It seems that the western powers never change their minds about destroying us. It won’t be too late for us to tackle the issue when we get rich in the future. Didn’t the Europeans and Americans do the same in the past?

I: We dispose of eWaste from developed countries using the least resources, while they get paid for producing eWaste and criticise on the moral high ground.

G: We are willing to provide technological support to those family workshops and villages in developing countries, in a bid to reduce their risk of exposure to heavy metal and polluting the environment, but we need some funding to do that.

F: Those international companies are very crafty by doing everything to evade the environment laws without scruple in a bid to pursue profits. I hereby appeal to everyone: let’s try to be a competent housekeeper of the world and consider the ecocertified products as much as possible.

D: We intend to outsource the most of procedures to emerging industrialised countries which are less troublesome than the EU.

A: From January 1 this year, all locally produced electrical appliances are subject to 5% decomposition tax.

E: The price of this eco-certified tablet is $100 higher than that of the uncertified. Do I have to squeeze my wallet?

**1 Who makes the above comments? What values do they uphold? Try to explain.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Person/stakeholder** | **Values upheld** | **Explanation** |
| **A** |  |  |  |
| **B** |  |  |  |
| **C** |  |  |  |
| **D** |  |  |  |
| **E** |  |  |  |
| **F** |  |  |  |
| **G** |  |  |  |
| **H** |  |  |  |
| **I** |  |  |  |
| **J** |  |  |  |

**2 There are divided views among stakeholders on economic development and environmental protection. Can you give a pair of examples? Explain your answer.**

|  |  |  |
| --- | --- | --- |
| **Stakeholder:**  **Explanation:** | **Perceiving the relationship between economic development and environmental protection** | **Stakeholder:**  **Explanation:** |

**3 The above stakeholders have their own resources / strengths, Explain three of them.**

**4 The above comments show that some stakeholders have suggested solutions. Identify two and explain two of them. Which solution do you think is better?**

**5 Some believe multinational, cross-disciplinary collaborations can help implement these solutions, while others think that acute climate changes and eWaste are not only environmental problems, but also moral issues. In your opinion, how can ethical groups, such as religious groups, contribute to the implementation of these solutions?**

**Worksheet 8: Pluralist and Global nature of electronic waste from overseas.**

***(For Teacher’s Reference)***

**1 Who makes the above comments? What values do they uphold? Try to explain.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Person / stakeholder** | **Values upheld** | **Explanation (other reasonable answers are acceptable)** |
| **A** | Government officials (environment or finance) of developed countries such as the EU | Environmental protection | Make sure electronic products will not end up untreated and pollute the environment by charging on disposal. The government can use extra tax income to procure eWaste from recyclers and employ well-trained or equipped workers to dispose of eWaste. |
| **B** | Operators of family-run factories in developing countries | Increasing personal income | Lack of supervision, loose regulation and lack of insurance contribute to lowering costs and increasing competiveness. With redundant labor force in rural areas, local governments pursue economic growth and turn a blind eye to those substandard factories. |
| **C** | Environmental groups | Environmental protection  Justice  Sustainable development | Point out that it is immoral to take advantage of income disparities and use workers and the natural environment of developing countries as a solution to eWaste without any consideration of their safety. |
| **D** | Management of multinational companies | Maximization of profit | To evade responsibility, highly polluting procedures are outsourced to developing countries where the regulation is lax and the need for investment is strong. It is not impossible to retain these procedures in the native countries, only that it will reduce profits and competiveness. |
| **E** | Consumers | Lower price prevails over environmental protection | Consumers know and understand the meaning of environmental certification and may afford extra expenses, but they prefer lower price to environmental protection. |
| **F** | Religious leaders | Environmental protection  Justice | Denounce multinational companies for their evil deeds, and make use of the influence of religious groups to promote ethical consumption |
| **G** | Volunteer organizations formed by specialists and professionals from tertiary institutions | Science and technology  Environmental protection  Care | They believe that science, technology and education can help tackle problems of dismantling and recycling eWaste in small / family-run factories (see Technocentrism in Chapter 2) |
| **H** | Officials of developing countries | Economic development | Polluting first, cleaning up later  Developed countries take the first- mover advantage to benefit from unrestricted industrial development and speak of morals and virtues after making profits, but they are holding a double standard |
| **I** | Officials / citizens of developing countries | Impartiality | They believe that they have contributions to the world, especially developed countries, so they should be recognised but not criticised |
| **J** | Manufacturers of developing countries | Impartiality | They believe that the problem caused by the fact that western countries have dominance over discourse and set the standards with an aim to make money from the substandard developing countries and stop them from rising |

**2 There are divided views among stakeholders on economic development and environmental protection. Can you give a pair of examples? Explain your answer.**

|  |  |  |
| --- | --- | --- |
| Stakeholders:  Environmental groups  Explanation:  The environment is more important than economic development and should not be the cost of the latter. | On the relationship between economic development and environmental protection | Stakeholders:  Officials of developing countries  Explanation:  Economic growth is pursued at the cost of the environment. They believe that the pollution problem can be addressed by means of technology and investment after making profits |

**3 The above stakeholders have their own resources / strengths, Explain three of them.**

**Suggested answer:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Code** | **Person / stakeholder** | **Resources / strengths** | **Explanation** |
| **A** | **Government officials (environment or finance) of developed countries such as the EU** | **More established regulations** | **While these regulations are based on a particular social background, they serve as a reference for developing countries and save some wasted efforts. For** example, considering easy dismantling solutions when designing electronic products |
| **B** | Operators of family-run factories in developing countries | Lower labour cost | Any reasonable answer is acceptable |
| **C** | Environmental groups | Network of supporters | Any reasonable answer is acceptable |
| **D** | Management of multinational companies | Global perspective, accurate calculation | Any reasonable answer is acceptable |
| **E** | Consumers | Support companies selectively through spending out of free will | Non eco-friendly companies have to introduce environmental elements or seek environment certification for the sake of survival |
| **F** | Religious leaders | Ethical power  Extensive network of believers | Some faith groups have billions of followers. Instructions of religious leaders have great impact on the followers’ behaviour |
| **G** | Volunteer organizations formed by specialists and professionals from tertiary institutions | Knowledge and technology | These specialists have the knowledge and technology to reduce the risk of dismantling eWaste, which is beneficial to both workers and the environment. More importantly, profit is not their primary concern. |
| **H** | Officials of developing countries | Policy-making | Any reasonable answer is acceptable |
| **I** | Officials / citizens of developing countries | Policy-making, lower labour cost | Any reasonable answer is acceptable |
| **J** | Manufacturers of developing countries | Entrepreneurship | Any reasonable answers are acceptable |

**4 The above comments show that some stakeholders have suggested solutions. Identify two and explain two of them. Which solution do you think is better?**

**Open answer based on Question 8.3**

**5 Some believe multinational, cross-disciplinary collaborations can help implement these solutions, while others think that acute climate changes and eWaste are not only environmental problems, but also moral issues. In your opinion, how can ethical groups, such as religious groups, contribute to the implementation of these solutions?**

Any reasonable answer is acceptable. For instance, eWaste is a global environmental problem, so multinational and cross-disciplinary collaborations may help alleviate the problem. Faith groups in different regions can work with volunteer organizations of professionals, raise funds and provide different kinds of support for them so that they can go to the villages of developing countries, teaching them how to protect themselves and the environment when dismantling eWaste or how to improve their manufacturing technology, strengthening their foundation for industrial upgrade.

Escalating an environmental issue to an ethical level means discussing and considering environmental damage and the disregard of workers’ welfare from an ethical perspective. Ethical consideration is involved. It can be easily concluded from any ethical perspective that it is immoral not to be eco-friendly and to disregard workers’ welfare. Any illegal behavior will result in legal punishment, and any unethical behavior will lead to moral condemnation. Ethical judgment and accusation is not only a matter of values and beliefs. It has an impact on the material world. For example, with respect to ethical consumption, religious groups can exchange views with environmental groups, studying how to integrate religious guidance with environmental issues so that believers can make informed, sensible spending decisions in line with religious and ethical principles while promoting environmental protection standards.

**Summary:**

**Moral Pluralism**

Moral pluralism is the view that moral values, norms, duties and virtues are irreducibly diverse: morality serves many purposes relating to a wide range of human interests, and it is therefore unlikely that a theory unified around a single moral consideration will account for all the resulting values. In the above learning activity, various stakeholders uphold different values such as “economic development”, “conserving the environment”, “value for money” etc… No one value can prevail over the others due to difference in contexts and needs. This pluralist scenario is further reinforced by interplay of countries struggling for the greatest political interest in the international arena.

**The Global Perspective**

Repeated and unresolvable conflicts in international conferences on climate change and other environmental issues have left the whole human race with disappointments and helplessness. Our hot-flat-crowded earth has witnessed the destruction of the natural environment due to reckless exploitation of resources and well-being of the next generation of the whole planet by taking advantage of the gaps of wealth, laws and information between countries.

Yet, globalization is well recognized a double-edged sword. In this borderless era, international NGOs have appealed to the conscience of ethical consumers. Accreditation in environmentally friendly design and production will become an essential feature for any product to win popularity in the future. This is no longer an unreachable dream with the emergence of new media, rise of education standard and reiteration of concerns in environmental crisis from world religions. It is hoped that a synergy of the above forces can guide the governments to the right course of sustainable development within and across countries.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Worksheet 9: Summary & Self-evaluation – Global village and sustainability  **Write down the key learning points of this module.**   |  | | --- | | 1. **Sustainable development** | | 1. | | 2. | | 3. | | 4. | | 5. |  |  | | --- | | 1. **Common goal and conflicts between economic development and environmental protection** | | 1. | | 2. | | 3. | | 4. | | 5. |  |  | | --- | | 1. **The need for a global perspective in solving environmental problems** | | 1. | | 2. | | 3. | | 4. | | 5. |   **Evaluate how well you have learnt (please put a ‘🗸’)**   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | Very good | Good | Fair | Poor | | 1. Sustainable development |  |  |  |  | | 1. Common goal and conflicts between economic development and environmental protection |  |  |  |  | | 1. The need for a global perspective in solving environmental problems |  |  |  |  |   **What question(s)/area(s) you want to learn more in this module of ‘Global village and sustainability’?** |