Sustainable engineering discussion sheet

ENGINEERS IRELAND
STEPS

STEPS
Engineers Week
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Engineers take ideas and turn them into reality, using science, maths, and imagination. Engineers use their problem-solving skills to improve the world around us. Engineers are important for sustainable development. Take the Sustainable Engineering Challenge to learn more!

PART ONE: Learn about engineering and the UN SDGs. Explore the UN SDGs and Engineering.

Have you heard about the UN Sustainable Development Goals (UN SDGs)? These goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. Engineers are key to help achieve many of the UN SDGs, and this challenge will highlight how this is happening now for a number of these goals.

DISCUSSION: Let's look at six of the UN SDGs, and how engineers are working towards these. Read the table below. Can you come up with more ways engineers are working to these SDGs? There are 6 covered below, but 11 that are not mentioned. Can you find the links between engineering and the remaining SDGs? **VISIT THE FOLLOWING RESOURCE TO SEE THE 17 UN SDGS: WWW.SDGS.UN.ORG/GOALS**

1	TRANSPORT AND MOBILITY	Engineers design more sustainable ways of helping us move around, such as more space for us to walk and cycle safely. This reduces emissions and makes our roads safer.
2	CLEAN ENERGY	Engineers design ways to source renewable energy such as hydropower (dams), wind (wind turbines) and solar (solar panels). This helps us use less fossil fuels.
3	CLEAN WATER AND SANITATION	Engineers design ways to clean our water, such as a wastewater treatment plant. This helps us to keep our waters clean, such as the water at our beaches as clean as possible.
4	SUSTAINABLE CITIES AND COMMUNITIES	Engineers can use natural materials like timber, and include more green spaces such as parks and trees in communities.
5	LIFE BELOW WATER	Engineers are tracking the amount of plastic waste in our oceans, and how that is going to hurt our marine life. They create ways to stop plastic from entering our waterways in the first place.
6	LIFE ON LAND	Engineers and agricultural engineers help make new and more sustainable machinery, and also new ways to protect our soil and crops, reduce greenhouse gasses and more.

PART 2: Explore the UN SDGS and the life cycle of the electric vehicle

Let's take the electric vehicle as an example to see how engineers apply the UN SDGs to their engineering projects. Can you link the UN SDGs to the lifecycle of the electric vehicle?

1 Let's focus on the first four UN SDGs listed above (Transport and mobility, Clean Energy, Clean Water and Sanitation, Sustainable Cities and Communities). Match these 4 UN SDGS to the relevant stage in the lifecycle in the image on the next page. The lifecycle goes all the way from material sourcing right through to the roads the vehicle will drive on. The UN SDGs will appear multiple times, so you can repeat the numbers.

2 We are challenging you to come up with ways engineers can apply the UN SDGs to this life cycle. Fill in the boxes with the ideas that you have. You can apply current engineering ideas, or come up with your own engineering solution. We have filled in the first example for you.

SDGs: _____

SDGs: _____

SDGs: _____

SDGs: _____