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TECHNOLOGY AND THE ENVIRONMENT

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MOTION:

"TECHNOLOGICAL PROGRESS WILL NOT SOLVE SOCIETY'S ENVIRONMENTAL ISSUES"

DEBATING MATTERS TOPIC GUIDES

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FUTURE OF ENGINEERING DEBATES BY:

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CONTENTS

KEY TERMS

Climate change

Disruptive innovation

Ecomodernism

Environmentalism

Fossil Fuel

Geo-engineering

NOTES

Arguably, climate change, and the environmental problems that will occur as a result, are the most pressing issues that mankind faces. The Paris climate change summit last year was hailed as a momentous deal, in which countries pledged, among other things, to cap emissions, and seek to limit temperature rises to 1.5C – below the 2C which most accept would be disastrous for the planet [Ref: Guardian]. However despite this, debate still rages about whether this is enough to combat climate change, and if, reductions, caps and restrictions are the path that we should be following at all. Indeed, there are some that argue that we need far more radical thinking, and that even if, "we had found cheap renewable energy technologies that could gradually replace all of the world's coal plants...it still wouldn't have solved climate change." [Ref: Spectrum] As such, they argue that radical new technological means of producing and storing energy, as well as carbon capture and storage for example – disruptive technologies which change the energy and environmental landscape totally, are what is needed. For these advocates of technological innovation, cutting emissions, and changing our lifestyles is not the answer. That said, others are not convinced. Instead, they are critical of those who put their faith in technology and innovation as the answer to our environmental problems, with one commentator noting that this amounts to, "an alibi for excess", going on to state that: "We have placed our faith in something called progress, in the untestable belief that things will always get better." [Ref: Guardian] So, should we embrace the promise of technological innovation to solve society's environmental issues? Or in doing so, do we ignore the fact that we are responsible for the behaviour change that society needs to tackle climate change?

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"Technological progress will not solve society's environmental issues"

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The climate change conundrum

Central to the debate about climate change, is the discussion about how best to reduce it, or halt its progress altogether; through reductions and behaviour change, or through technology and innovation. Many now suggest that despite attempts at finding political solutions through international agreements, it is highly unlikely that these methods will reap meaningful rewards going forward. For instance, economist and commentator Will Hutton observes that in the midst of the discussion on climate change, rapidly developing countries such as India want the same opportunities to grow their economies as Western countries did during industrialisation, and will continue to burn coal unless there are alternatives that are as cost effective [Ref: Guardian]. As such, he adds that: "Prime Minister Modi is clear: if the choice is between poverty and climate change, India will choose the latter", and so it is obvious that: "It will be innovation that will save the planet. This is the blistering truth that should be written in neon in the skies" [Ref: Guardian]. However, others are critical of this approach, and accuse its proponents of attempting to have their cake and eat it. They argue that we cannot continue to live the way that we do, and that it is our attitude towards growth and progress, and its impact on the environment that needs to change, as environmentalist George Monbiot suggests: "We seem unable to face the fact that our utopia is also our dystopia; that production appears to be indistinguishable from destruction." [Ref: Guardian]

Is technological progress the answer?

For advocates: "It's not true that we can't solve big problems with technology; we can. We must." [Ref: Technology Review] And outlining the technological argument, science writer Leigh Phillips notes that: "Through technological advance, we can use less of something to produce the same amount, or replace one raw material with another. We didn't 'run out' of whale blubber. We replaced it with kerosene." [Ref: Guardian] Moreover, in light of the fact that 2015 is likely to have gone down as the hottest year since 1880, and with the attempts to move to renewable energy barely reducing carbon dioxide emissions [Ref: Economist], supporters of technology and innovation claim that global warming cannot be dealt with using todays tools and mindset, and suggest that we need to create some new ones. From this perspective, humans have the potential to solve climate and environmental problems through technology and progress, as an Economist editorial argues: "The climate is changing because of extraordinary inventions like the steam turbine and internal combustion engine. The best way to cope is to keep inventing." [Ref: Economist] In this way, they dismiss environmentalist arguments, which suggest, "that the best way to save the planet is to curtail human activity, whether in the form of breeding, building, burning or business" [Ref: Telegraph], and instead posit the idea that the answer is not retreat and de-modernisation, but innovation and radical solutions. Ideas such as geoengineering [Ref: BBC News], which involves modifying the Earth's environment, are being researched – with Dubai currently looking to build an artificial mountain to increase rainfall to combat drought [Ref: New Scientist]. Others suggest that: "Our society needs to fund scientists and engineers to

propose new ideas, fail quickly, and share what they learn" [Ref: Spectrum], and argue that R&D needs to be properly financed, with more onus placed on funding radical 'disruptive' [Ref: Wikipedia] projects which may have the potential to solve our environmental problems. This is because: "There are, no doubt, all manner of unpredictable inventions that are possible…if imagination, science, and engineering run wild." [Ref: Spectrum]

Less is more? The environmental case

Professor Clive Hamilton laments the notion that technological fixes can solve environmental problems, and suggests that the real reason why some are wedded to them, is because it allows us to believe that nothing needs to change. He says that: "Technofixes – technical solutions to social problems – are appealing when we are unwilling to change ourselves and our social institutions" [Ref: Scientific American], and argues that it is profound behavioural change that is needed instead of the, "unbridled techno-industrialism", which illustrates "our unwillingness to change the way we live." [Ref: Scientific American] Furthermore, critics of technological fixes are suspicious of the idea posited by some Ecomodernists [Ref: Wikipedia] – that our actions, and modernity per se, are not the problem, and claim that these assertions represent, "an illusion, created by the irrational accounting of our environmental impacts." [Ref: Guardian] A key argument for opponents of technological answers to climate change, is that we need to be realistic about what we can hope to do, because innovations that are put forward are often, "emerging technologies, that are barely proven, yet to be successfully commercialised, or downright illusory." [Ref: MIT Technology Review] In a similar

vein, further interrogating the argument that technology holds all of the answers, one writer opines that: "Climate change is an energy problem. Burning fossil fuels to produce electricity or heat is responsible for roughly half of global warming pollution… Changes are required not just in technology, but also in people's behaviour." [Ref: Scientific American] Opponents also note that in this debate, technology is often used as a smokescreen for politicians to hide behind, allowing them to postpone making unpopular decisions that will actually help lower CO2 emissions. As George Monbiot argues: "Governments urge us to both consume more and to preserve more. We must extract more fossil fuel from the ground, but burn less of it…These policies are irreconcilable." [Ref: Guardian] With these arguments in mind, where does the balance lie? Are critics right that the key to combatting environmental issues is behaviour change on a global scale, which may mean that aspects of life in industrial countries may have to change? Or should we put our faith in radical, new technologies, and innovation, because: "The end is not nigh, and we do not need to rein in industrial society. If anything, we must accelerate our modernity." [Ref: Guardian]

ESSENTIAL READING

FOR

[Magical thinking about progress won't save planet Earth](#)
Giles Fraser *Guardian* 17 December 2015

[Consume more, conserve more: sorry, but we just can't do both](#)
George Monbiot *Guardian* 24 November 2015

[Geoengineering is not a solution to climate change](#)
Clive Hamilton *Scientific American* 10 March 2015

[How to solve global warming: It's the energy supply](#)
David Biello *Scientific American* 13 April 2014

AGAINST

[Innovation will save our warming planet – so where is the investment?](#)
Will Hutton *Guardian* 29 November 2015

[Clear thinking needed](#)
Economist 28 November 2015

[Why eco-austerity won't save us from climate change](#)
Leigh Phillips *Guardian* 4 November 2015

[What it would really take to reverse climate change](#)
Ross Koningstein & David Fork *Spectrum* 14 November 2014

IN DEPTH

[Why we can't solve big problems: Has technology failed us?](#)
Jason Pontin *MIT Technology Review* 24 October 2012

Fake mountains to make it rain? Its last gasp geoengineering
Jamais Cascio *New Scientist* 13 May 2016

How zero carbon buildings can save the world – and $20 billion
Ken Maher *Fifth Estate* 12 May 2016

Trying to save the planet one light bulb at a time
Mark Gilbert *Japan Times* 3 May 2016

Meet the Google Exec trying to save the planet
Lisa Eadicicco *Time Magazine* 15 April 2016

Generation Anthropocene: How humans have altered the planet for ever
Robert Macfarlane *Guardian* 1 April 2016

Paris climate agreement rests on shaky technological foundations
Richard Martin *MIT Technology Review* 15 December 2015

Can new energy technology save the planet?
Eric Niller *Discovery* 1 December 2015

How investing in food technology can save the planet and improve human health
Randy Komisar *Tech Crunch* 13 October 2015

Economic growth is the key to saving the planet
Owen Paterson *Telegraph* 20 September 2015

Dark thoughts on Eco-modernism
Chris Smaje *Dark Mountain* 12 August 2015

We must learn to limit our excessive consumption
Observer 30 November 2014

Can technology save the world? Experts disagree
Claire Cain Miller *New York Times* 2 May 2014

The overpopulation myth
Fred Pearce *Prospect Magazine* March 2010

Climate technologies: a leap into the unknown
Oscar Reyes *Red Pepper* December 2009

Engineering our climate
Royal Geographic Society

An ecomodernist manifesto
Ecomodernism.org

Tackling climate change with technology
BBC News

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TOPIC GUIDES

How can humans survive doomsday? Scientists prepare 500-Million-year plan
Tech Times 11 May 2016

Elon Musk: 'We need a revolt against the fossil fuel industry'
Guardian 5 May 2016

Science says this centuries-old discovery will save the planet
Mother Jones 2 May 2016

NASA's latest X-Planes could help save the planet
The Next Web 26 April 2016

Lab-grown beef will save the planet
Newsweek 28 February 2016

Bill Gates predicts a clean-energy breakthrough within 15 years will save the planet
Quartz 22 February 2016

Most threats to humans come from science and technology, warns Hawking
Guardian 19 January 2016

Geoengineering 'not a solution' to sea-level rise
BBC News 24 August 2010

AUDIO/VISUAL

How investing in food technology can save the planet and improve human health
Randy Komisar *Tech Crunch* 13 October 2015

ORGANISATIONS

Institution of Mechanical Engineers

ADVICE FOR
DEBATING MATTERS

FOR STUDENTS

READ EVERYTHING .....
In the Topic Guide and in the news - not just your side of the argument either.

STATISTICS ARE GOOD BUT.....
Your opponents will have their own too. They'll support your points but they aren't a substitute for them.

BE BOLD
Get straight to the point but don't rush into things: make sure you aren't falling back on earlier assertions because interpreting a debate too narrowly might show a lack of understanding or confidence.

DON'T BACK DOWN
Try to take your case to its logical conclusion before trying to seem 'balanced' - your ability to challenge fundamental principles will be rewarded - even if you personally disagree with your arguments.

DON'T PANIC
Never assume you've lost because every question is an opportunity to explain what you know. Don't try to answer every question but don't avoid the tough ones either.

FOR JUDGES

Judges are asked to consider whether students have been brave enough to address the difficult questions asked of them. Clever semantics might demonstrate an acrobatic mind but are also likely to hinder a serious discussion by changing the terms and parameters of the debate itself.

Whilst a team might demonstrate considerable knowledge and familiarity with the topic, evading difficult issues and failing to address the main substance of the debate misses the point of the competition. Judges are therefore encouraged to consider how far students have gone in defending their side of the motion, to what extent students have taken up the more challenging parts of the debate and how far the teams were able to respond to and challenge their opponents.

As one judge remarked *'These are not debates won simply by the rather technical rules of schools competitive debating. The challenge is to dig in to the real issues.'* This assessment seems to grasp the point and is worth bearing in mind when sitting on a judging panel.

FOR TEACHERS

Hoping to start a debating club? Looking for ways to give your debaters more experience? Debaitng Matters have have a wide range of resources to help develop a culture of debate in your school and many more Topic Guides like this one to bring out the best in your students. For these and details of how to enter a team for the Debating Matters Competition visit our website, **www.debatingmatters.com**

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