

# ZERO-FIFTY IMAGE SOURCES

As part of ZERO-FIFTY, we have used a variety of images taken by others that have been released under Creative Commons licenses or have been released into the public domain. At ZERO-FIFTY, we believe in giving credit where credit is due, and as such, please find acknowledgement below for the images used above. If you do decide to use these images, please could you also include the accreditation shown below the image.

## ZERO-FIFTY BOOK AND IPAD



Image 'London 2050' created by FUTURE WORLD DESIGNS LTD. Sky underlay 'Spacy Waves' released on Flickr by Falk Lademann and reproduced under CC BY 2.0. Cityscape underlay 'London 360 from St Paul's Cathedral' released on Wikimedia Commons by David Iliff and reproduced under CC-BY-SA 3.0.

## LONDON 2050



Image 'London 2050' created by FUTURE WORLD DESIGNS LTD. Sky underlay 'Spacy Waves' released on Flickr by Falk Lademann and reproduced under CC BY 2.0. Cityscape underlay 'London 360 from St Paul's Cathedral' released on Wikimedia Commons by David Iliff and reproduced under CC-BY-SA 3.0.

## SHANGHAI 2050



Image 'Shanghai 2050' created by FUTURE WORLD DESIGNS LTD. Sky underlay 'Blue from Tower' released on Flickr by Swami Stream and reproduced under CC BY 2.0. Cityscape underlay 'Shanghai Panorama 2006' and 'Shanghai Panorama 2006 2' released on Wikimedia by Don-kun and reproduced under CC BY 3.0.

## TOKYO 2050



Image 'Tokyo 2050' created by FUTURE WORLD DESIGNS LTD. Sky underlay 'Sky 2' released on Flickr by zaphad1 and reproduced under CC BY 2.0. Cityscape underlay 'Tokyo Roppongi Hills, Japan' released on Flickr by Alberto Carrasco Casado and reproduced under CC BY 2.0.

## CAPTAIN! WE ARE SPIRALLING OUT OF CONTROL!



Image 'Year 2068, Shanghai' created by FUTURE WORLD DESIGNS LTD. Image 'Year 2068, San Francisco' created by FUTURE WORLD DESIGNS LTD. Cityscape underlay 'Coit Tower, View from 02' released on Wikimedia by Sailko and reproduced under CC BY-SA 3.0. Image 'Year 2065, Runaway Global Warming' created by FUTURE WORLD DESIGNS LTD. Photo underlay 'Earth Science' released on earthdata.nasa.gov by the Michael Lisowski and reproduced with the photographer's permission.

## FOSSIL FUELLED PLANET

**Q1 // WHAT IS IT?**  
Coal is the second most abundant fossil fuel on the planet and produces 75% of power globally. It is a naturally occurring and renewable resource that can be used to generate electricity, heat, and transport energy.

**Q2 // WHY DO WE LIKE IT SO MUCH?**  
Coal is the cheapest of fossil fuels, costing around 10 per cent less than oil and 20 per cent less than natural gas. It is also a reliable and secure energy source, with large reserves and a long history of use.

**Q3 // HOW MUCH COAL DO WE CONSUME?**  
Coal use has risen 40 per cent since 2000, with China and India accounting for 80 per cent of the increase. Global coal reserves are estimated to last for 115 years at current consumption rates.

**Q4 // HOW IS COAL TRANSFORMED INTO ELECTRICITY?**  
Coal is burned in a power plant to generate heat, which is used to produce steam. The steam drives a turbine, which is connected to a generator that produces electricity.

**Q5 // HOW MUCH DOES ELECTRICITY GENERATED FROM COAL COST?**  
Coal is the cheapest source of electricity, costing around 4-6 cents per kilowatt-hour. This is significantly lower than other fossil fuels and renewable energy sources.

**Q6 // HOW MUCH POLLUTION DOES BURNING COAL CREATE?**  
Coal power plants emit large amounts of carbon dioxide, sulfur dioxide, and nitrogen oxides. These emissions contribute to air pollution and climate change.

**Q7 // WHAT ARE WE CURRENTLY DOING TO REDUCE COAL CONSUMPTION?**  
Many countries are investing in renewable energy sources like wind, solar, and hydro. Some are also implementing policies to reduce coal use, such as carbon pricing and emissions trading.

**Q8 // ARE WE LIKELY TO RUN OUT ANYTIME SOON?**  
Coal reserves are estimated to last for 115 years at current consumption rates. However, demand is increasing rapidly, particularly in China and India, which could lead to a shortage in the future.

**Q9 // CAN WE MAKE COAL ENERGY GENERATION CARBON FREE?**  
Coal can be used to generate electricity without emitting carbon dioxide if it is combined with carbon capture and storage (CCS) technology. However, this technology is still in the early stages of development and is expensive.

Image 'Coal' released on Flickr by Paul Downey and reproduced under CC BY 2.0. Image 'Ashtabulacoalcars e2' released on Wikimedia by Matthew Trump and reproduced under CC BY-SA 3.0. Image 'Grand Junction Trip 92007 0981' released on Wikimedia by Staplegunther and reproduced under CC BY-SA 3.0.

## BUILDING OURSELVES A BETTER FUTURE

**01 // BUILDING ENERGY CONSUMPTION**  
We consume around 32 million GWh of energy each year within buildings, the equivalent of more than 28 billion tonnes of oil. This is enough oil to fill over one million Olympic swimming pools, which, if all lined up, would wrap the entire circumference of the world at least once over.

**ENERGY DEMAND OF A 21ST CENTURY BUILDING SECTOR**  
TRANSFORMING HOW OUR IDEAS OF COMFORT AND ENERGY USE ARE BEING CHALLENGED

**WHAT ARE BUILDINGS USED FOR?**  
WHY WE NEED THE BUILT ENVIRONMENT

**PIE CHART DATA:**  
RESIDENTIAL: 45%  
COMMERCIAL: 35%  
INDUSTRIAL: 20%

Image 'South Street Seaport NYC' released on Wikimedia by Ian Reid and reproduced under CC BY 2.0. Image 'Dotonbori-16' released on Wikimedia by Steven Chang and reproduced under CC BY 2.0. Image 'An Airbus in downtown Hong Kong' released on Flickr by Luis Argerich and reproduced under CC BY 2.0.

## THE SIX MINUTE CITY

**STEP FIVE**  
FILL IN THE REST WITH HOMES AND GREENERY

**STEP SIX**  
ENJOY WALKING EVERYWHERE!

**NOW START ADDING THE HOMES. A GOOD CONCENTRATION OF APARTMENTS WORKS BEST TO ACHIEVE A DENSITY OF 200 DWELLINGS PER HECTARE. HOWEVER, IF PLANNED WELL, THERE WILL BE AMPLE SPACE FOR SOME WELL-DESIGNED HIGH-DENSITY HOUSES TOO.**

**NOW JUST SIT BACK AND WATCH AS ALL THOSE CARBON-PUMPING CARS DISAPPEAR. NEED TO GO TO THE SHOP? IT'S NO MORE THAN SIX MINUTES WALK AWAY. NEED TO GO TO THE DOCTOR? AGAIN, NO MORE THAN SIX MINUTES WALK. OUR LOW-ENERGY FUTURE IS BASED ON HIGH-DENSITY DEVELOPMENT.**

Image 'The Six Minute City' created by FUTURE WORLD DESIGNS LTD using SimCity 4.