Helping your children choose books they will love

I reading

Lovereading4kids.co.uk is a book website created for parents and children to make choosing books easy and fun

opening extract from

Our Choice: How We Can Solve the Climate Crisis

written by

Al Gore

published by

Bloomsbury Publishing Plc

All Text is Copyright © of the Author / Illustrator

please print off and read at your leisure.

Lovereading4kids.co.uk

CONTENTS

THE CRISIS

INTRODUCTION 10

1 WHAT GOES UP MUST COME DOWN 30

OUR SOURCES OF ENERGY

2 WHERE OUR ENERGY COMES FROM AND WHERE IT GOES 50

3 ELECTRICITY FROM THE SUN 62

4 HARVESTING THE WIND 76

5 SOAKING UP GEOTHERMAL ENERGY 92

6 GROWING FUEL 112

7 CARBON CAPTURE AND SEQUESTRATION 134

8 THE NUCLEAR OPTION 150

LIVING SYSTEMS

9 FORESTS 170

10 SOIL 196

11 POPULATION 224

HOW WE USE ENERGY

12 LESS IS MORE 242

13 THE SUPER GRID 272

THE OBSTACLES WE NEED TO OVERCOME

14 CHANGING THE WAY WE THINK 298

15 THE TRUE COST OF CARBON 318

16 POLITICAL OBSTACLES 348

GOING FAR QUICKLY

17 THE POWER OF INFORMATION 370

18 OUR CHOICE 392

INDEX 406

ACKNOWLEDGMENTS 411

CREDITS 415

Almost 20 years ago, the late American novelist Kurt Vonnegut wrote, "Is there nothing about the United States of my youth, aside from youth itself, that I miss sorely now? There is one thing I miss so much that I can hardly stand it, which is freedom from the certain knowledge that human beings will very soon have made this moist, blue-green planet uninhabitable by human beings."

With his trademark blend of surrealism, dark humor, and cynicism, Vonnegut continued, "If flying-saucer creatures or angels or whatever were to come here in a hundred years, say, and find us gone like the dinosaurs, what might be a good message for humanity to leave for them, maybe carved in great big letters on a Grand Canyon wall?"

His suggestion for the message our civilization ought to leave was:

"WE PROBABLY COULD HAVE SAVED OURSELVES, BUT WERE TOO DAMNED LAZY TO TRY VERY HARD.... AND TOO DAMNED CHEAP."

The knowledge that serious damage has already been done to the global environment and to the healthy climate balance on which our civilization depends can become a cause of paralyzing despair. The danger is that this despair may render us incapable of reclaiming control of our destiny in time to avert the unimaginable catastrophe that would unfold on this planet if we don't start making dramatic changes quickly.

Yet the majority of experts on the climate crisis agree that we probably still do have time to avert the worst of the impacts and set the stage for a long but ultimately successful recovery of the climate balance and ecological integrity that are so crucial for the survival of our civilization.

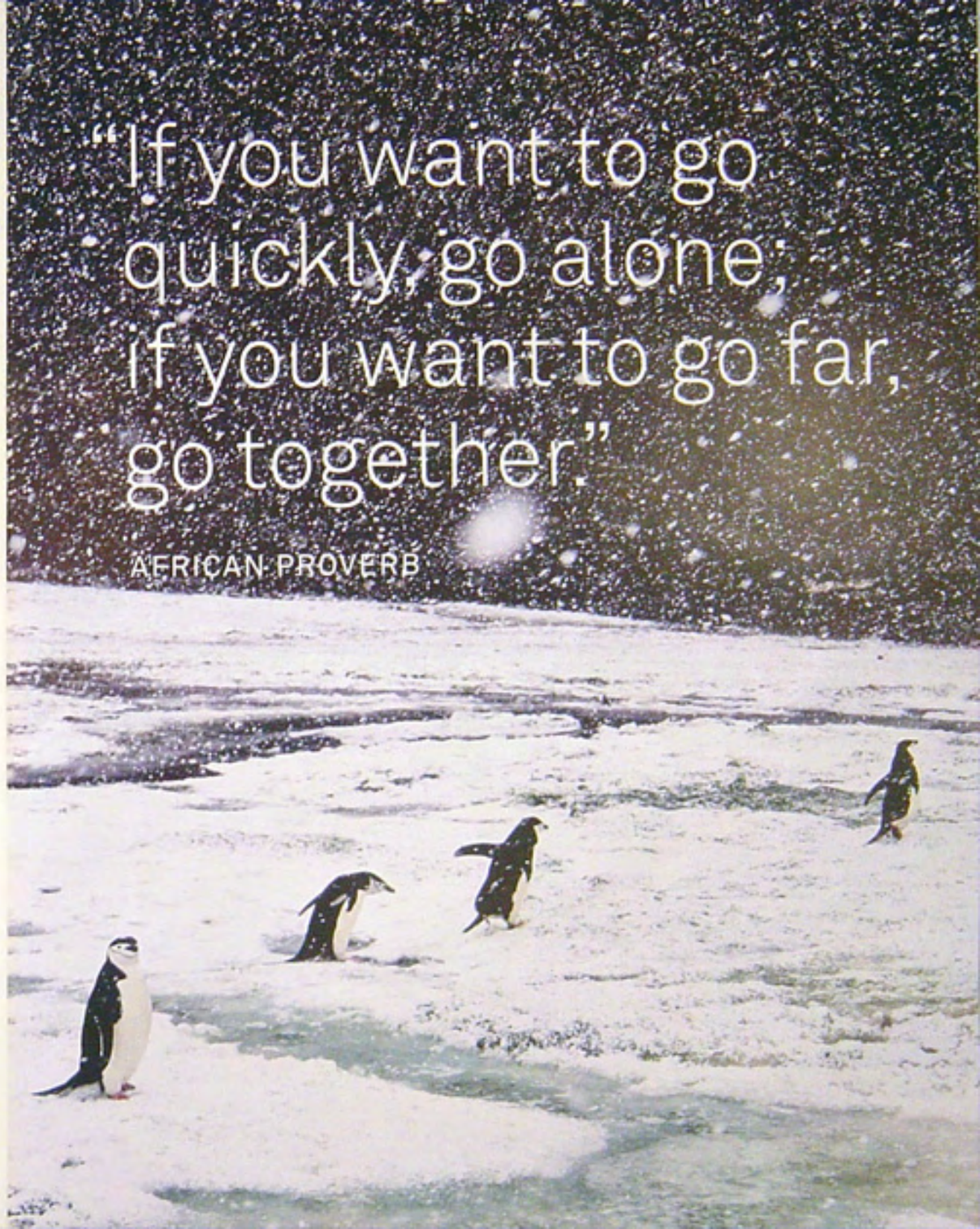
In any case, despair serves no purpose when reality still offers hope. Despair is simply another form of denial, and it invites inaction. We don't have time for despair. The solutions are available to us! We need to make our choice to act now.

An old African proverb says, "If you want to go quickly, go alone; if you want to go far, go together."

We have to go far ... quickly.

This book is about the solutions to the climate crisis. During the three and a half years since the publication and release of *An Inconvenient Truth*, I have organized and moderated more than 30 lengthy and intensive "Solutions Summits," where leading experts from around the world have come to discuss and share their knowledge of and experience in subjects relevant to the construction of a plan to solve this crisis. In addition to hosting these group meetings, I have engaged in a large number of one-on-one sessions with other leading experts around the world in an extended effort to find the most effective courses of action.

From neuroscience to economics, information technology to agriculture, many seemingly diverse subjects relevant to the effort to understand and





INDIAN SCHOOLCHILDREN PARTICIPATE IN A MASS TREE PLANTING IN HYDERABAD, 2008. TREE PLANTING PROGRAMS HAVE HELPED TO OFFSET DEFORESTATION, WHICH IS A MAJOR CONTRIBUTOR TO GLOBAL WARMING.

map out a successful blueprint for action on a global scale have been generously and patiently explained by the foremost global leaders in their respective disciplines. *Our Choice* is the result of the groundbreaking insights offered by the participants in this multiyear dialogue. These experts made it possible to construct a fresh and unique approach I have not seen before.

That's why I have written this book, chosen the pictures, and commissioned the illustrations—to gather in one place all of the most effective solutions that are available now and that, together, will solve this crisis. It is meant to inspire readers to take action—not only on an individual basis but as participants in the political processes by which every country, and the world as a whole, makes the choice that now confronts us.

For me, this has been an exciting and illuminating journey, because it is now abundantly clear that we have at our fingertips all of the tools we need to solve three or four climate crises—and we only need to solve one. The only missing ingredient is collective will. But we are getting closer to a political tipping point, beyond which enough people in all of the key countries recognize the reality of this global emergency and accept the challenge of working together to rescue our civilization.

We can solve the climate crisis. It will be hard, to be sure, but if we choose to solve it, I have no doubt whatsoever that we can and will succeed.

Moreover, we should feel a sense of joy that those of us alive today have a rare privilege that few generations in history have known: the chance to undertake an historic mission worthy of our best efforts. It should be seen as an honor to live in a time when the future of human civilization will be shaped forever by what we do now.

In rising to this challenge, we will find fresh evidence that the fate of our civilization depends on effective, cooperative, global measures to save the habitability of the earth and build the foundation for a more just, humane, and prosperous world.

We can solve the climate crisis. It will be hard, to be sure, but if we choose to solve it, I have no doubt whatsoever that we can and will succeed.

Properly understood, the climate crisis is an unparalleled opportunity to address, at long last, many persistent causes of suffering and misery that have long been neglected and to transform the prospects for future generations to live healthier, more prosperous lives with a greater chance of success in each new generation's pursuit of happiness.

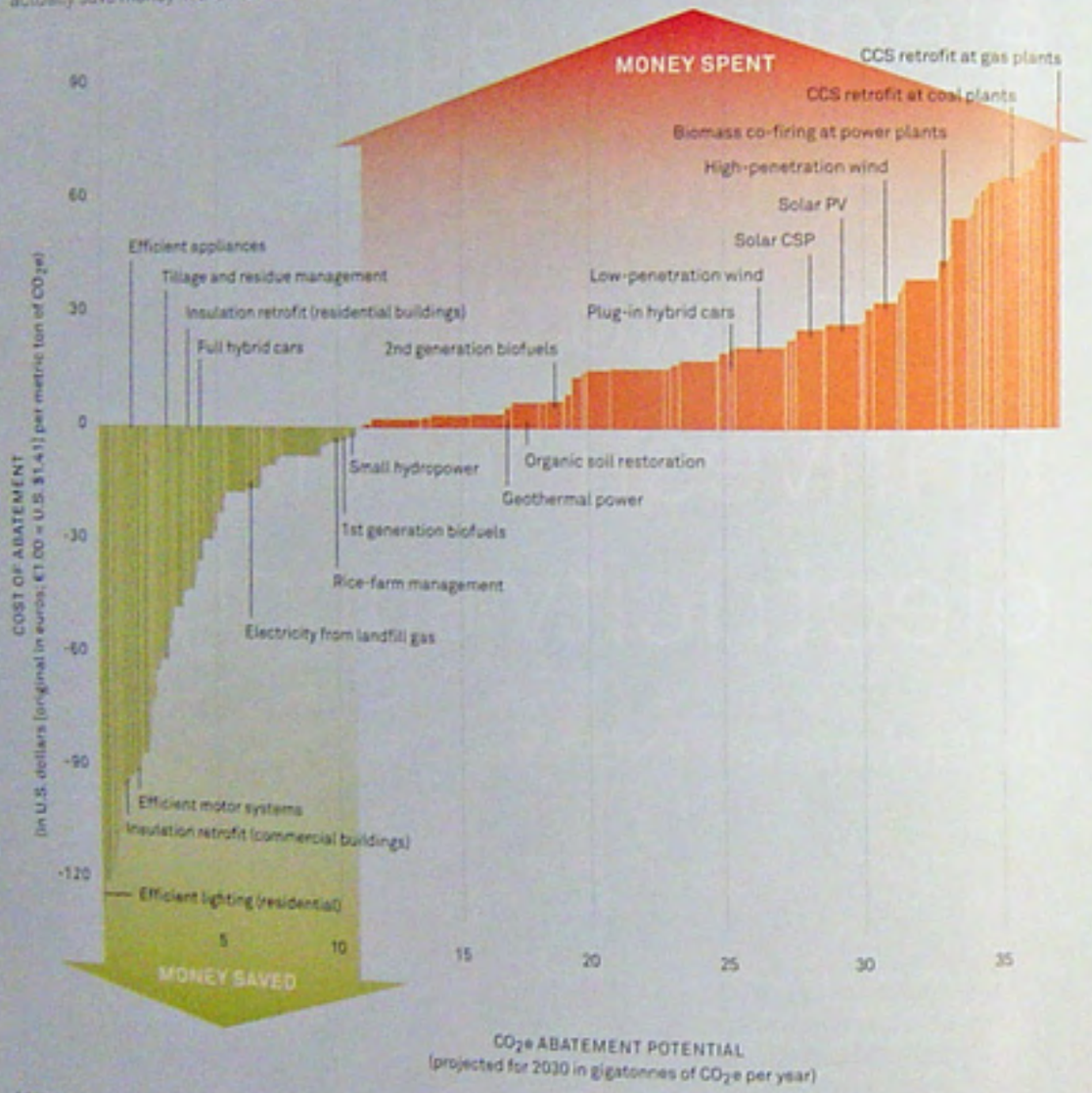
The good news about making a definitive choice to solve the climate crisis is that the scale of systemic transformation necessary will bring,

THE (OFTEN NEGATIVE) COSTS OF REDUCING GREENHOUSE GASES

Starting in 2006, McKinsey & Company launched a now-famous study of different ways to reduce emissions of greenhouse gases (GHGs). The chart below, known as the global GHG abatement cost curve, displays the abatement potential and costs associated with about 200 of the most important GHG abatement opportunities.

One significant finding is that nearly 40 percent of the potential reduction in emissions worldwide can actually save money in the near term!

The options in the green portion of the chart have a negative cost, which indicates a net benefit or savings over the lifetime of each option. The study's conclusion is that the world can reduce CO_2e emissions to stabilize concentrations in the atmosphere at 450 parts per million of CO_2e with investments of as little as 0.6 percent of the GDP—largely because of the savings made possible by gains in efficiency.



SOURCE: Adapted, with changes, from McKinsey & Company, *Pathways to a Low-Carbon Economy, Version 2 of the Global Greenhouse Gas Abatement Cost Curve*, 2009

- The replacement of inefficient industrial electric motors with far more efficient modern motors.
- Adequate insulation of buildings in every sector—particularly residences.
- The replacement of inefficient windows, lighting systems, hot water heaters, appliances, and electronics with more efficient modern versions.
- Higher fuel-economy standards for cars and trucks and the greater use of mass transit.

The favorable economics of introducing efficiency gains are clear and compelling. Any nation adopting a determined and persistent national strategy for implementing pervasive improvements in the efficiency with which energy is converted to useful work will quickly find that this is, by far, the most effective way to save energy and reduce global warming pollution.

This is true in rich and poor countries alike. McKinsey & Company found in a report published in July 2009 that the United States could reduce its projected energy consumption 23 percent by 2030 simply by making economically beneficial investments in energy efficiency. Earlier, a report by the McKinsey Global Institute found that developing countries "could reduce their energy demand growth by more than half…and reduce their energy consumption in 2020 by 22 percent from the projected levels.… Boosting the energy productivity of developing countries' economies alone has the potential to reduce global CO_2 emissions by 15 percent in 2020, making it critical from the global climate change perspective."

For example, Johnson Controls, one of the leaders in industrial energy efficiency, points out that while Japanese factories run at an efficiency level of 85 percent or better, Chinese factories run at only 50 percent efficiency. Since each 10 percent reduction in factory efficiency represents a doubling of energy consumption, the result is that Chinese factories use an average of 350 percent more energy than Japanese factories for each unit of output.

The United States went through a brief period of careful attention to efficiency gains, from 1977 through 1985—in the first serious effort to reduce oil consumption, after the oil embargoes of the 1970s—and the results were stunning. In response to intelligent and focused policies pursued by President Jimmy Carter and continued through the first years of Ronald Reagan's presidency, the United States cut oil use by 17 percent while increasing economic output by 27 percent. Our dependence on imported oil dropped by half

CALIFORNIA LEADS THE WAY

Since the energy crises of the 1970s, California's laws have encouraged efficiency. Over the past 25 years, the state's per capita electricity use has remained flat, while that of the rest of the U.S. has jumped by 60 percent.



SOURCE: California Energy Commission

It's increasingly clear that part of the challenge we face in solving the climate crisis stems from the way we think about it, both individually and collectively.

Why is it that humanity is failing to confront this unprecedented mortal threat? What is it about the way we human beings process information and make choices that promotes global procrastination?

In fact, there are striking differences between the commonly accepted mythology about the way we make decisions and the way we *actually* make decisions, according to psychologists, neuroscientists, and some economists. In many ways, most of modern civilization is based on decision-making structures that assume the existence of an archetypal "reasonable person," one who takes in all available information about decisions to be made, selects the evidence most relevant to the decision, discusses that evidence with other reasonable persons, and then makes a rational decision and sticks to it.

This prototype originated in late 18th century England, Scotland, and Europe as the culmination of a philosophical movement called the Enlightenment, which enshrined the "rule of reason" as a new sovereign source of authority to take the place of monarchs, the medieval church, and the feudal structure.

It is not coincidental that Adam Smith's *The Wealth of Nations*, Thomas Jefferson's Declaration of Independence, and the first volume of Edward Gibbon's *The History of the Decline and Fall of the Roman Empire* were all published in the same year, 1776. The philosophical architects of the modern world were filled with optimism, a belief in progress, and a keen sense that they were building something new from the remnants of an old order that was collapsing around them.

The design of representative democracy and market capitalism were both based on the assumption that Reason could be made paramount in the ongoing decisions that determined human affairs. The collective judgments of reasonable people were to be found in the results of democratic elections, which aggregated all of the individual decisions by voters in order to steer the ship of state. And the best guidance for the economy was to be found in the "invisible hand" of the marketplace, which aggregated the net result of millions of individual economic decisions to balance the supply and demand for goods and services.

This overarching belief in the rule of reason was enhanced by the nature of the information ecosystem on which 18th century inhabitants depended. Thanks to the development of the printing press three centuries earlier, new information spread rapidly to lay publics, leading to widespread literacy. There was a growing optimism that individual citizens, armed with knowledge previously available only to elites, could make decisions for themselves in ways that produced better political, social, and economic results than mere acquiescence to the dictates of the few who ruled by divine right.

The printed word was equally accessible to anyone who learned to read and write. For the first time in history, any literate individual, without regard to wealth or force of arms, could use knowledge and ideas as a source of power. Reason was the principle governing the aggregation of individual judgments and choices into a single net result. While emotions and feelings were recognized as powerful motivators, it was assumed that rationality would determine the ultimate outcomes. As Benjamin Franklin wrote in 1749, "If Passion drives you, let Reason hold the Reins."

According to this view, reason could also be employed to cleverly design safeguards protecting the operations of the rule of reason against well-understood threats inherent in human nature. For example, since the accumulation of too much power in the hands of one person (or one small group of people) could unbalance the operations of reason, America's founders divided power between state governments and the federal government and divided power within the federal system among three coequal branches of government. These checks and balances were woven into the fabric of the U.S. Constitution. It is worth remembering that the states refused to ratify the Constitution until individual freedoms provided by the First Amendment—which, among other things, guarantees citizens access to the free flow of information without governmental interference—were added to the text, along with the rest of the individual protections included in the Bill of Rights.

The United States of America's stunning success over the last 200 years (emulated by aspiring democracies on every continent) and the dominance of market capitalism in most of the world (especially after its philosophical victory over communism in the late 20th century) both serve as evidence of the unprecedented power and vitality of these two designs based on the assumed primacy of reason in human affairs.

Both systems were traditionally seen as self-correcting. Market failures would be sorted out with the benefit of new information from the failures themselves, with said information subjected to the rule of reason in order to find progressively better solutions to newly discovered problems. For example, when reformers pointed out the unhealthy economic consequences of concentrated economic power, Congress responded with anti-trust laws and other protections. When the Great Depression of the 1930s shook public confidence in market economics, the U.S. government adopted vast new powers of regulation to protect against a repeat of that massive market failure.

Similarly, it was assumed that voters would respond to political failures by correcting them over time, ideally at the next election. The key to continued smooth functioning of both intertwined systems was freedom of information. So long as

Why is it that humanity is failing to confront this unprecedented mortal threat?