Photo by Stefan Cohen.

An emaciated polar bear hunts in the Arctic.

CLIMATE

A Time to Choose

By James Gerardo Lamb

Global climate change, its causes, consequences, and solutions, is the subject of a profoundly disturbing, yet deeply optimistic new film, "A Time to Choose." The race against time that the planet is facing — and the tremendous stakes involved — dramatically open the film. Set against stunningly beautiful natural panoramas filmed all over the world, the opening montage movingly illustrates just what is at risk if nothing is done to change the current trajectory. Noting the warming that has already taken place in the last several decades, the threat of further climate change causing a major rise in sea levels is the first sobering reality addressed in the picture. If this effect is not soon mitigated, the film warns, with the skylines of some of the world's largest and most important cities cascading in the background, major metropolises around the globe could be submerged within the lifetimes of many in the audience. New York City, London, Saint Petersburg, Mumbai, Singapore, Beijing, and more appear on screen with their respective population totals. The narrator, noted actor Oscar Isaac, informs the audience that up to 600 million people could be affected by this displacement.

Academy Award-winning documentary filmmaker Charles Ferguson sat down for a conversation with the audience following a special advance screening of the movie at UC Berkeley, hosted by the Center for Latin American Studies in September 2015. Ferguson explained to the audience that he had been approached by Thomas Dinwoodie, founder of SunPower Corporation and a leading voice on renewable energy technology and policy, to make a film highlighting both the dire climate situation, as well as pathways to its resolution that are more practicable than ever. It was this latter realization that particularly stuck with Ferguson, who directed, co-wrote, and co-produced the film. He admitted to having shared "the predominant view, which is that this

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is a very serious problem, but there's nothing we can do about it."

In that vein, the film devotes significant focus to the technology innovators, political and social leaders, and grassroots activists across five continents who are struggling to address the problem before it is too late. Along the way, Ferguson learned "how deep the connections were between the forces that are causing the climate problem and forces causing many other problems around the world of a much more immediate and direct kind, ranging from economic inequality to the destruction of nature to the incredible human toll associated with fossil-fuel extraction."

This stark seriousness informs the tone of the narrative, which is broken down into the major areas contributing to climate change. In each part, however, the forward-looking and solution-oriented perspective of the director lightens what might otherwise be a bleak and overwhelming subject. It is, as Ferguson said, "a film about the problem and how to solve it," its message delivered in a line of text following the opening sequence: "We can stop climate change."

The first major part of the film deals with perhaps the most widely known contributor to climate change: the extraction and burning of fossil fuels for energy. Fully two-thirds of global warming is caused by this type of energy production. At the front end, the extraction of these fossil fuels has tremendous human and environmental consequences, while the burning of these fuels releases carbon dioxide into the environment, warming the planet. In both regards, the burning of coal is the most critical issue globally, particularly because of reliance on this energy source in the populous and growing nations of India and China.

The film shows the catastrophic consequences to the natural environment of mountaintop coal removal in West Virginia, which has leached toxins into the local water and sickened many residents while scarring a vivid, gorgeous landscape. The audience also sees and hears from coal miners in China, an industry so dangerous and yet economically central that all filming had to be done secretly and at significant personal risk. "I knew that coal mining was not a nice industry, but I had no idea," Ferguson shared with the audience. "When I learned coal mining had killed a million people in China and perhaps two million worldwide in the last 30 years ... that definitely was a wake-up call." Scenes of the intense air pollution in Beijing and of an enormous coal ash heap in China complete this picture of the devastating consequences of burning coal.

However, the movie informs viewers that the development of renewable energy technologies has made them scalable and cost-competitive with new energy production of any type. The price of solar and wind has come tumbling downward in recent years, and a graphic indicates that solar and wind energy may be cheaper than any other source of energy within just a few years. Moreover, the film maps the rapid increase in installed capacity and in production of renewable energy technologies. From large players in the U.S. and Chinese solar energy industries to smaller-scale entrepreneurs trying to bring solar electricity to the household sector in Kenya (where the underserved population numbers 40 million), the audience sees a new industry with tremendous possible impact just beginning to reach that potential in the present. The innovations around "mobile solar" in Kenya — households can make payments on small solar electricity systems that are cheaper than traditional, but polluting, kerosene — begins to indicate the connection between clean energy and broader social justice issues.

The costs of oil are also poignantly highlighted. From environmental devastation and health consequences and economic marginalization of local populations in the Niger Delta, to the Gulf of Mexico oil spill and even geopolitical conflicts and war centered on petroleum resources, "Time to Choose" makes clear the destruction wrought by this form of energy extraction and production. Of course, oil production is most closely tied into the transportation system, its derivatives still fueling the vast majority of transport worldwide. In this context, innovations in transportation and urban planning are discussed.

Most importantly with respect to transportation, the rise of electric vehicles is profiled. One important player in this area is California-based Tesla Motors, which designs and manufactures both electric cars and energy storage products. Electric vehicles that are cheaper to operate and can travel longer distances are being developed. Storage capacity is improving in quality and cost, thanks to new battery technologies and the economies of scale that come with increasing demand. With respect to urban planning, the issues of public transportation and walkable, mixed-use urban spaces and neighborhoods come to the fore. These issues are especially crucial since a massive urban build-out, primarily in the developing world, is forecast for the coming decades. As seen in some U.S. cities, and more recently with the growth of mega-cities in China, urban transportation systems designed around private automobile transportation are beset with traffic congestion, air pollution, and alienating city landscapes.

Conversely, some cities offer a more sustainable model of urban development. In Curitiba, Brazil, investment in public transportation — notably Bus Rapid Transit (BRT), which carries two million passengers per day — has significantly reduced air pollution and emission of climate-change gases. Key public services distributed

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The aftermath of mountaintop removal coal mining.

Photo by Dennis Dimick.

Photo by marlordo59

A variety of electric cars outside San Francisco's City Hall.

throughout the city in each district, neighborhoods that combine work, leisure, and residential functions, and attention to street life, pedestrian friendliness, and public spaces like parks round out the picture. These measures contribute to countering climate change as well as other social goals, such as development of peripheral areas and public safety.

The third major part of the film deals with "land and food," the agricultural and food production systems that contribute to one-third of climate change. In this area, two major interrelated concerns are highlighted. First, meat-heavy diets in the developed — and increasingly in the developing — worlds put strain on the agricultural system. The audience learns that producing meat for human consumption takes up ten times as much land as the equivalent nutrients drawn from plant-based foods. Feedstock for livestock husbandry also contributes to other pathologies in the agricultural system, like encouraging large-scale monocrop agriculture of a few specific commodity grains. This type of farming in turn necessitates the mass use of petroleum-based insecticides, with the ensuing health and environmental consequences. As an alternative, the film offers the example of a bio-diverse, organic polyculture farm that not only yields healthier produce, but actually helps capture carbon and renew — rather than deplete — the soil's nutrients.

With so much land devoted to raising animals for food, the pressure for deforestation to clear land has been greatly increased in places like Brazil. Another example of the problems in the food production system is the monoculture palm oil plantations in Indonesia, which have been driving deforestation of particularly crucial peat forest, one of the most important carbon sinks on the planet. In addition to destroying the habitat of endangered species, underwriting a highly exploitative and unequal economic sector, and contributing to the corruption of public institutions, this deforestation is also releasing large amounts of carbon dioxide. Here, the solutions are more difficult to envision in the immediate term, but the film touches on consumer awareness and choices as well as the valiant efforts — under incredibly difficult circumstances — of anti-corruption officials fighting illegal deforestation in the country.

Indeed, one of the messages Ferguson emphasized in his comments after the movie was that "personal choices do make a difference." From the type of car we drive — or more broadly, the type of transportation we use — to the mix and type of foods we consume to efforts to conserve energy use, a change in perception and action at the individual and local levels will be a key part of any climate change solution. Of course, policy is and will remain critical: from international treaties committing to greenhouse gas emissions reductions to building regulations, urban planning, and energy production and use rules. Still, when moderator Harley Shaiken asked the director how making this film had changed him, Ferguson's first answer was "various aspects of my personal conduct," a sentiment very much in line with the pro-active message of the film. This personal conduct extends beyond individual consumption choices and also involves becoming knowledgeable about the issue and involved in policy advocacy to pressure governments and businesses to take serious action on climate change. In this vein, the film ends with scenes from the September 14, 2014, People's Climate March in New York City, which drew perhaps half a million participants to coincide with a meeting of global leaders at the UN Climate Summit.

A final lasting impression of the film involves its timing and the historical moment in which it appears. As Shaiken noted, the screening occurred between Pope Francis's encyclical, "On Care for Our Common Home," which advocated "swift and unified global action" on climate change, and the December 2015 United Nations Climate Change Conference. Even more broadly, the movie comes at a time that is seeing the convergence of a long-term crisis becoming acute just as many of the technological, policy, and social innovations needed to counter it are, for the first time, also becoming feasible at the scale needed. In the optimistic register of the film, Ferguson sees both a technological and a cultural revolution approaching rapidly. Regarding how people view the kinds of cars they drive and the way they eat, "There is going to be a major cultural transition ... a cultural sea change," Ferguson predicted. "The question," he added, "is whether it is going to happen in time." As Michael Brune, the President of the Sierra Club, says in the film, "The future has become the present." It is this combination of historically new factors that makes the "time" referenced in the title of the film so significant.

Charles Ferguson is an Oscar-winning documentary film-maker. He received the 2010 Academy Award for Best Documentary Feature for his film "Inside Job."

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Director Charles Ferguson (center) with CLAS Chair Harley Shaiken (left) and Professor Dan Kammen before the Berkeley screening.

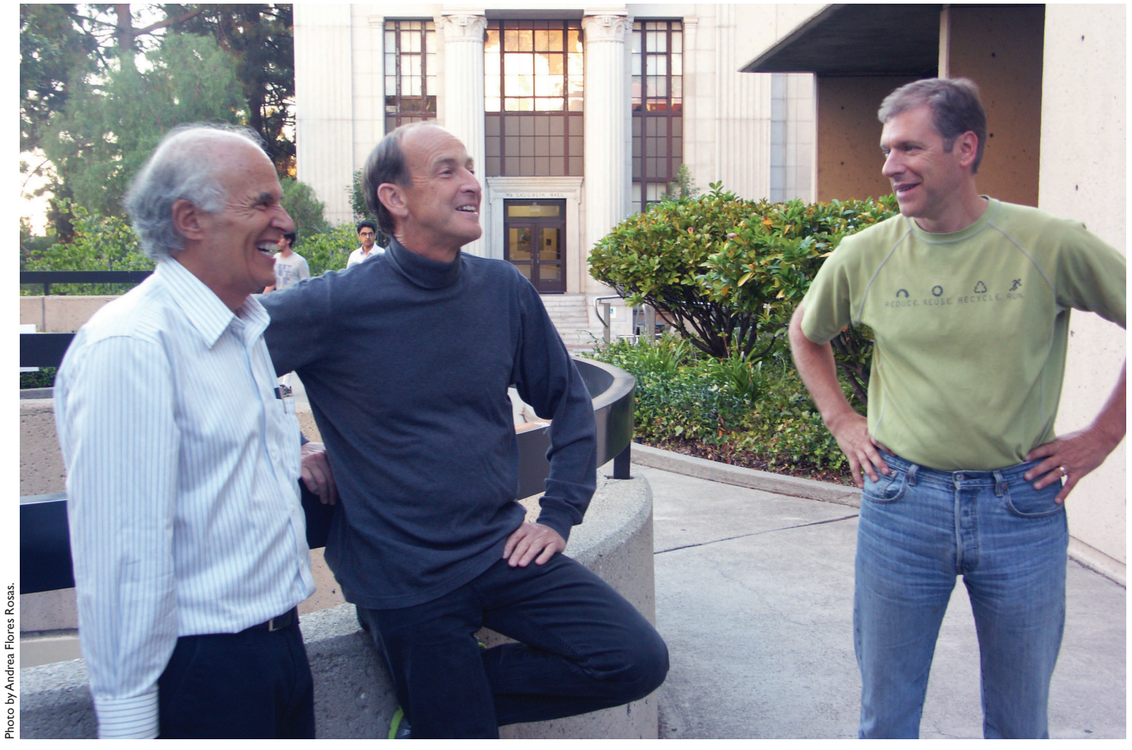

Photo by Andrea Flores Rosas.