

reduce or terminate programs to feed the poor in the United States demonstrate how sound governance can be undermined by the rich.

Resource scarcity

Human numbers are overwhelming critical infrastructure, in many, if not most, areas, as ecological deterioration and even devastation is simultaneously reducing many peoples' means of subsistence. Under such circumstances people have less time to seek social justice because they must spend more time focusing on survival. Inundated island nations in the Pacific and Indian Oceans, and the rising flood of refugees crossing the Mediterranean, provide just a tiny preview of how these pressures will play out.

The prospects for future global food security exemplify this situation. Contrasting insufficient food versus inequitably distributed food may seem a caricature but as the encyclical reminds us, discussions on sustainability often polarize into these seemingly opposing viewpoints.

Despite the general agreement on many of the ecological challenges, discussions on sustainability often divide experts about whether the solution lies in dealing with population growth and consumption, or making food distribution more equitable. This is also true of those who argue that it is consumption alone that results in excessive carbon emissions. Focusing on only half the source of, or half the potential solution to, a complex problem can be nearly as ineffective as ignoring the problem altogether, when both factors jointly determine the outcome.

Policymakers and the academic community must recognize that equity issues make adequately feeding everyone extremely difficult. But they must also recognize that biophysical constraints limit our ability to feed more than a certain number of people, even under the most equitable of distributional arrangements. Most importantly, they must acknowledge that our biophysical and social dilemmas are tightly linked, and that as population grows the capacity of social systems to deal with the tightening biophysical constraints shrinks.

The basic task of supplying the population's needs for calories and nutrients is not being met now. Some 800 million of today's 7.3 billion people are undernourished and perhaps half of the world's people — most, but not all, in poor and middle-income nations — lack access to one or more essential nutrients^{3,4}. Even when adequate calories are available, diets are often far from ideal, increasing the burden of disease. Indeed, inadequate consumption of fruits, nuts, seeds, and vegetables makes a major contribution to ill health worldwide. In short, current struggles to feed humanity make the prospects seem slim for the expected 9.7 billion people in 2050 to be healthy and have adequate nutrition — and perhaps billions more beyond that^{5,6}.

As abhorrent as our current resource inequities are, they could pale in comparison with the impending inequity between those alive today and those who will be born tomorrow. Future populations,

under current trends, will inherit a rapidly deteriorating planetary life support system. We envision no quick fixes or shortcuts. Those who champion increased equality as a means of achieving global food security must team up with those who urge curbing over-consumption and humane transitioning to a much reduced and thus sustainable population. Otherwise, the new political and economic institutions desperately needed to redirect humanity toward sustainable food security and away from the fiction of perpetual growth will not evolve.

Pope Francis needs to heed his own comments⁷ on the Church's "obsession" with contraception and abortion, and assume a leadership position in support of women's rights and family planning. There is little chance that the existential challenge facing humanity will be met if the call for dramatic change in society is not expanded to embrace the global demographic dilemma. □

Paul R. Ehrlich is in the Department of Biology, Stanford University, Stanford, California 94305, USA. John Harte is at the Energy and Resources Group, University of California, Berkeley, California 94720, USA. e-mail: pre@stanford.edu

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COMMENTARY:

The Pope's encyclical as a call for democratic social change

Anabela Carvalho

The climate change encyclical represents a decisive democratic act. It calls on citizens to challenge dominant politics, power, and consumer culture in the name of tackling one of the world's great socio-environmental issues.

The Pope's climate change encyclical (<http://go.nature.com/7IbiB5>) injects democratic politics into the environmental crisis by showing how it is tied to wider sociocultural processes at the heart of modern societies. Through an integrative

critical analysis, the encyclical reclaims climate change from the exclusionary realm of technocracy and political-economic elites and calls for an "honest and open debate so that particular interests or ideologies will not prejudice the common good" (\$188).

The words dialogue, debate and discussion are found throughout the document: from the Pope's expressed aim of inclusive conversation ("I would like to enter into dialogue with all people about our common home" (\$3)), to his call for

collective inquiry into decision-making processes (“I urgently appeal ... for a new dialogue about how we are shaping the future of our planet” (§14)). He makes his goal explicit: “I will advance some broader proposals for dialogue and action which would involve each of us as individuals, and also affect international policy” (§15).

Power and politics

By addressing the ideologies and practices of the social dynamics entwined with climate change, the encyclical exposes the profoundly political character of global environmental change and its connection with economics and culture.

The publication of the encyclical is action in the public space via language oriented to persuasion which, in Hannah Arendt’s terms¹, is the very essence of politics. This is the head of the Catholic Church writing, of course, so contra Arendt, he claims “indisputable truths... guide our lives” (§15). But in a somewhat agonistic fashion, he acknowledges and validates the clash between opposing views: “there is no one path to a solution. This makes a variety of proposals possible, all capable of entering into dialogue with a view to developing comprehensive solutions” (§60).

The encyclical has an important democratic political value because of its analysis of climate change drivers and responses. Several scholars have recently analysed the depoliticization of climate change and its implications²⁻⁴. In contrast to discourses that conceal the values, power issues, and choices embedded in proposals addressing climate change (for example, the Green Economy⁵), reducing it to a techno-managerial matter and excluding non-elite voices, the encyclical highlights multiple related factors, structures and systems — including the current models of production of consumption, from financial and economic organizations to ideas about technology, labour and employment.

Unlike mainstream economists and others that obscure the political nature of capitalism, the Pope expressly turns the economy into a political domain: “economics without politics cannot be justified, since this would make it impossible to favor other ways of handling the various aspects of the present crisis” (§196). He calls for alternative visions of the future and values the conditions of possibility of plural voices co-constructing it⁶.

Apart from allusions to the ‘power’ of God, there are around 50 references to power in the encyclical (for example, “the



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myopia of power politics” [§178], “the absolute power of a financial system” [§189], and “forms of power derived from technology” [§16]). The Pope thus draws attention to today’s various forms of domination and brings often-marginalized social inequalities and tensions to the foreground.

The encyclical’s proposal for an ‘integral ecology’ highlights connections between social and environmental issues: “we have to realize that a true ecological approach always becomes a social approach; it must integrate questions of justice in debates on the environment” (§49). Referring to the disproportional impacts of climate change on the poor and associated global inequities, the Pope shares concerns expressed by diverse critics, including state officials from the Global South, individuals and organizations from the North, and a variety of civic movements, such as Climate Justice Now!, Climate Camps, and Rising Tide. They have had little impact on the ‘realpolitik’ pursued by the most powerful states and the UNFCCC regime, however.

Echoing defenders of climate justice, the encyclical calls for addressing affluent states’ unmet responsibilities, redressing damages done to poor and indigenous communities, and rejecting futile market ‘fixes’, such as carbon trading. The climate justice perspective, particularly as enacted ‘from below’⁷ has brought the socio-political character of climate change to the fore and thereby opened the debate to democratic struggles. This transformational approach (as opposed to reformist ones) posits that only with a ‘system change’ can we effectively address

the climate challenge, and is in tune with the Pope’s plea for radical change (§171).

Consumer culture

The Pope’s systemic outlook is at odds with neoliberal views on consumers and consumption (another core theme in the encyclical), which focus on the private sphere rather than the public domain. In the discussion of consumerism and related throwaway culture as sources of environmental degradation, the encyclical inserts consumption into wider arenas of economic and symbolic power, such as markets and media. It suggests that consumption has to be viewed as part of ‘culture’, an all-encompassing tier that permeates all aspects of human life.

The Pope’s analysis converges with many critical social theorists and philosophers, especially from the Frankfurt School. The most relevant member is Herbert Marcuse who argued in *One-Dimensional Man*⁸ that the capitalist system of production and consumption, helped by the entertainment and information industry, generated a one-dimensional universe of thought that subsumed logic and behaviour and eliminated the critical power of reason. Similarly, Jean Baudrillard⁹ spoke of a growth system that infinitely creates needs whose satisfaction is (falsely) lived as individual happiness and liberation while in fact people are coerced by the “structure” and “morality” of consumption.

In some passages, the encyclical closely resembles Marcuse’s⁸ reflections on consumerism, technology and publicity media as forms of social control that keep people in a state of “unfreedom”: “Since

the market tends to promote extreme consumerism in an effort to sell its products, people can easily get caught up in a whirlwind of needless buying and spending. Compulsive consumerism is one example of how the techno-economic paradigm affects individuals” (§203).

Marcuse maintained that in contrast to the dominant universe of thought that erases alternative discourses, two-dimensional thought is oppositional and allows for imagining radically different futures, something the Pope claims has become unthinkable: “The idea of promoting a different cultural paradigm ... is nowadays inconceivable.” (§108). Against the “assault of the technocratic paradigm” (§111), the encyclical pleads for a “bold cultural revolution” (§114) built on a liberating and “happy sobriety” (§224), and on care for others and Mother Earth. Here, the focus shifts away from macroprocesses and structures and onto individual “conversion” (§217) to an “ecological culture” (§111), making the encyclical’s message more ambiguous.

Giving primacy to spirituality could only be expected from a publication of the Catholic Church. But the radical

change required by the environmental crisis entails more than a new awareness. The challenge is enormous and the road ahead is unavoidably bumpy. Society needs to embark on a creative destruction and reconstruction of multiple socio-political arrangements and institutions. Long-established discourses, which appear natural and inevitable, have to be problematized and replaced. Ingrained practices have to be questioned. The encyclical itself touches on some of those thorny matters, which may involve “[imposing] restraints ... on those possessing greater resources and financial power” (§129) or “accept[ing] decreased growth in some parts of the world” (§193).

Democratizing climate politics

Truly democratic change will require making room for those 99% that dominant narratives about the politics of climate change construct as spectators of (inter) governmental negotiations while hiding their mess. The encyclical is a highly significant appeal to citizen engagement with environmental and social change. Appreciating the ecological movement’s historical role, the Pope repeatedly urges individuals and civic groups to engage with

the politics of climate change and pressure governments to develop effective measures.

In its reading of the interconnectedness of environmental and social matters and in the vision it advances, the encyclical proposes a social ecology that will hopefully inspire many to go beyond ‘green romanticism’¹⁰ and push for structural social and political transformation. □

Anabela Carvalho is in the Department of Communication Sciences, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal.
e-mail: carvalho@ics.uminho.pt

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COMMENTARY:

Science and religion in dialogue over the global commons

Ottmar Edenhofer, Christian Flachsland and Brigitte Knopf

The Pope’s encyclical makes unprecedented progress in developing scientific dialogue with religion by drawing on research, and encouraging further discussion about the ethical challenge of governing the global commons.

In a year critical for international efforts to address climate change and sustainable development, Pope Francis has published an encyclical on climate change, poverty and inequality (<http://go.nature.com/7IbiB5>). It is the first time in the history of the Roman Catholic Church that a Pope has addressed an encyclical not only to all Roman Catholics or to “all people of good will”, but also to all “people living on planet Earth”. Pope Francis’ call for a global dialogue on the twenty-first-century challenges of climate change, poverty and inequality has resonated with scientific communities

in particular, with major journals such as *Nature* and *Science* dedicating editorials to the subject^{1,2}. This is unprecedented in the Western history of dialogue between religion and science.

Since enlightenment, the relationship between science and religion has generally been characterized by conflict rather than cooperation. Religion has struggled to identify a division of labour on questions related to cosmology, evolutionary theory, socio-biology, economics or reproductive medicine. In this struggle, it can be said that religion has been losing epistemic

authority to science in one territory after another. Perhaps the most striking aspect of the encyclical is that Pope Francis seems unwilling to continue this conflict — instead, he chooses to embrace science while pointing out that ethical questions cannot be resolved by science alone. He asks for a dialogue between religion and science to meet the fundamental global challenges that mankind is collectively facing.

As its starting point, the encyclical adopts the scientific finding of the anthropogenic causes of climate change as established by Working Group I of the