
I. Strategy to Defeat the Pandemic

DRAFT SCHILLER INSTITUTE PROPOSAL

LaRouche's 'Apollo Mission' To Defeat the Global Pandemic: Build a World Health System Now!

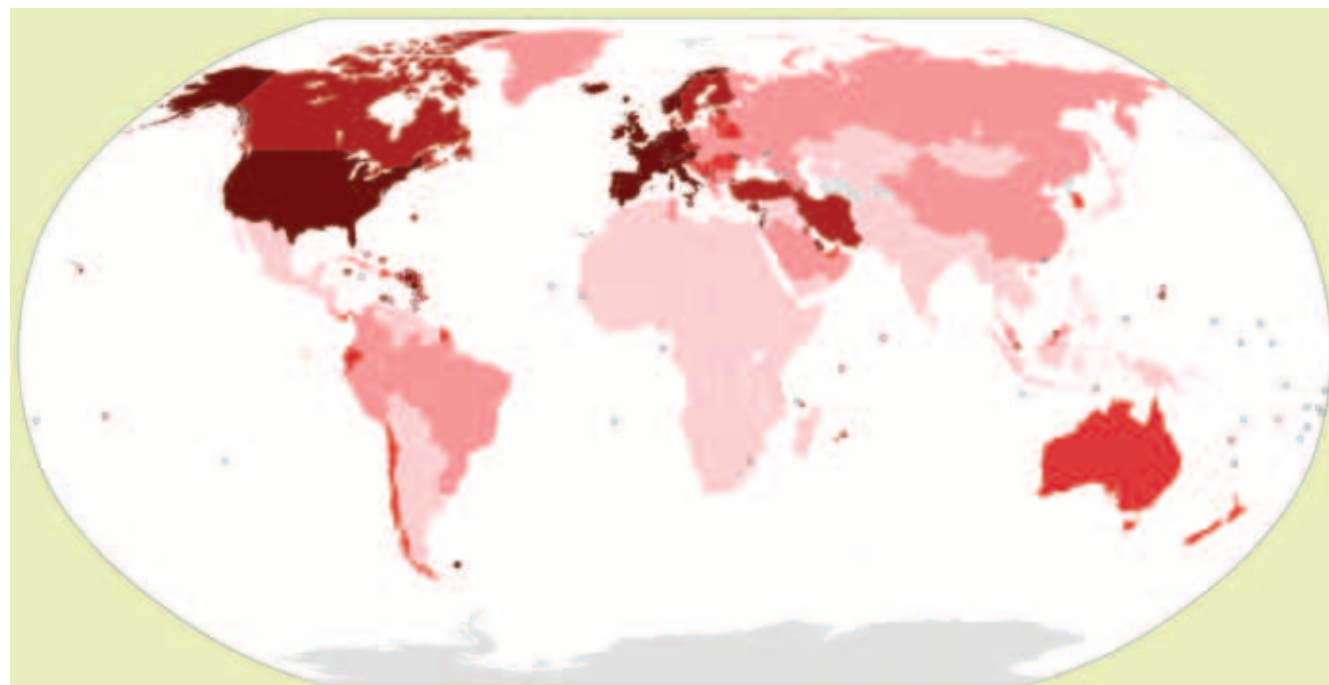
Introduction

April 10—At the time this urgent call to build a World Health System was written, the world had confirmed over 1.5 million cases of COVID-19, and the number of deaths attributed to the pandemic was over 80,000. This disease, first active in humans in December or November 2019, has spread, within a matter of months, to

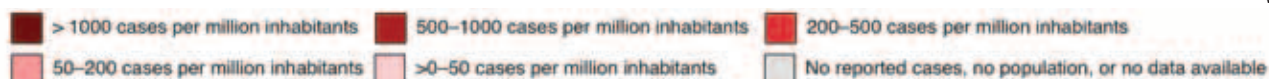
nearly all nations of the world, with a ferocious rate of growth in populations not taking strong measures to arrest its advance. The mortality rate among those infected is estimated to be an order of magnitude greater than that of the seasonal flu. At the time you are reading this call to action, the numbers will be greater, possibly much, much greater.

COVID-19 per capita

(Confirmed cases as of 13 April 2020)



WHO



Gravest of all, we could be witnessing an explosion of infections and deaths in the so-called less-developed sector or Third World, especially in Africa—whose underdevelopment is the Achilles Heel of the entire human species, which requires special attention, as we specify below.

Defeating this deadly virus will require immediate, coordinated global action: intensive public health measures, including extensive testing and isolation of those found to be infected; a huge increase in the availability of healthcare facilities and equipment; significant investment and resources devoted to finding cures and a vaccine; great strides in sanitation measures, especially in less-developed nations; and an end to the historically unnecessary lack of development—and outright looting—in the world. This global pandemic emphatically requires a global response, as reservoirs of the virus in any part of the world could cause resurgences for years.

It requires a World Health System covering every part of the planet.

Such a global response requires, most centrally, the coordination of the United States, China, Russia, and India—a Four Powers alliance open to all nations of the planet. The leaders of those four nations should hold a summit as soon as possible to work out common approaches to addressing the enormous health, material, and infrastructural needs of the world, as a first step towards creating an entirely New Paradigm to replace the bankrupt old system.

There is no other way, no lesser course that will actually defeat the pandemic.

Although COVID-19 is the disaster currently inflicting itself on humanity, it is only one of many to which the world is susceptible, due to a failure of the international order over the past fifty years, most especially the deadly looting of developing sector nations. A solar coronal mass ejection could knock out most of the world's electricity grids—why have they not been hardened against such an event, even in the so-called “developed” countries? An as-yet-undiscovered asteroid or comet could destroy an entire continent—why have we developed no defenses against this threat? There are 800 million people on this planet who lack adequate food—why has this been tolerated? A plague of locusts currently menaces the lives and livelihoods of tens of millions. Another disease could spring up any week—why do we not have better defenses against viruses?

The world community must create a resiliency for successful long-term survival, not just in the short-term

while hoping that no unusual events occur, but prepared for true safety and security. This cannot occur under the neo-liberal economic paradigm that is now failing. It cannot occur under a regime of bailout and treating financial values as sacrosanct. That system, with its \$1.8 quadrillion speculative bubble, is now thoroughly bankrupt, and must be put through a process of bankruptcy reorganization long specified by the American economist Lyndon H. LaRouche, along with the simultaneous requirement to build a new Hamiltonian credit system, nationally and internationally, to put humanity back on the track of science-driven physical-economic development. The long-term successful survival and flourishing of the human species requires a world system that recognizes the divine spark of potential genius in each individual and which seeks to foster that potential through economic, cultural, and scientific development.

Here, we take up the task of delineating the needed World Health System. This is a first approximation of the requirements, which we hope will be enriched by input from international experts and concerned people in the immediate weeks ahead.

We begin by posing, and answering, two questions:

1. What is the cause of this, possibly the worst crisis humanity has ever faced?
2. What is the full set of measures that should be taken on all fronts, both in the United States and worldwide, to defeat the pandemic?

We do not start by listing all the bottlenecks and shortages, and try to work from the bottom up. We start instead by figuring out what is required: We must use this existential crisis to finally overcome the underdevelopment of large sections of mankind, a condition that is not worthy of the human species. Then, we determine the physical economic requirements to achieve each step along the way, including the bills of materials and manpower requirements, as defined from the standpoint of industrial engineering. We then return to the bottlenecks and figure out how we are going to break through them, on schedule or earlier. We will find that, to achieve that trajectory, we will be on a forced march requiring constant technological breakthroughs; we will find that we are in the domain of the science of physical economy, where Lyndon LaRouche's work is our only guide and road map.

We will also find that such an approach requires full international cooperation, especially between the United States and China, to achieve these common

aims of mankind. Anyone opposing such cooperation should be scientifically classed in the same genus and species, politically, as the coronavirus itself.

That approach is how Franklin D. Roosevelt mobilized the nation to defeat fascism in World War II. That is how NASA engineers turned the looming Apollo 13 catastrophe into success. And in our current endeavor to defeat the coronavirus across the planet, here too failure is not an option.

This Is a Crisis Fifty Years in the Making

The coronavirus was not caused by a Chinese proclivity to feast on bats. Nor was it cooked up in a secret military lab in the United Kingdom or the United States (although Prince Philip's public promotion of his desire to be reincarnated as a virus to help reduce the planet's population, gives pause for thought). It was caused by an underlying physical-economic process that has been underway for at least a half century. In fact, Lyndon LaRouche forecast such a current pandemic nearly 50 years ago, first in 1971 in his public warning about the end of the Bretton Woods system; and then repeatedly beginning in 1974 testimony before the U.S. House Judiciary Committee where he warned of the danger of an impending biological holocaust, due to misguided economic policies.

In a 1985 [document](#) titled "The Role of Economic Science in Projecting Pandemics as a Feature of Advanced Stages of Economic Breakdown," LaRouche explained that the actual cause of pandemics and similar phenomena is when society's Potential Relative Population Density (PRPD)—the physical-economic power of a society to maintain a rising population at improved standards of living and longevity—drops below the level of the actual population.

Sustainable economic (and population) growth, is measured as an (ideally) constant rate of increase of the potential relative population-density of that society. This is the measure of the average potential for growth of the society as a whole, and is also the absolute measure of per-capita productivity of labor in that society.

LaRouche explained that achieving a rising PRPD requires that the economy produce "free energy" above the "energy of the system," and he specified:

In economic processes, the "energy of the

system" is represented by the interdependency among three "market-baskets" of consumption. Each of these "market-baskets," corresponds to a minimum value, required to maintain the economic process at a constant level of negentropic potential. These three are: (1) The "market-basket" of households' consumption, per-capita; (2) The "market-basket" of producers' goods; (3) The "market-basket" of basic economic infrastructure: energy production and distribution, water management, transportation, etc....

When Do Pandemics Erupt?

The "ideal" case, at which economies are to be examined for economically-determined eruption of pandemics, is the case for which the potential relative population-density falls below the level of the existing population ... [such as] the instance in which the average consumption is determined by a fall of potential relative population-density, below the level of requirements for the existing population.

But there is also the case, LaRouche emphasizes, where—

the differential rates of distribution of the households' goods "market-basket" falls below the level of "energy of the system" for a large part of the population. We are most concerned with the effects on health, as the nutritional throughput per-capita falls below some relative biological minimum, and also the effect of collapse of sanitation and other relevant aspects of basic economic infrastructure upon the conditions of an undernourished population.... [In this case], the undernourished population might become a breeding-culture for eruption of epidemic and pandemic disease....

That is precisely what has occurred during the last 50 years of deadly looting of Third World populations, especially Africa, through the policies of the City of London, Wall Street, and of course the International Monetary Fund.

The full impact of such policies, LaRouche concluded, can only be understood by locating man's development (or what Vladimir Vernadsky referred to as

the noösphere) within the total biosphere.

Society is an integral part of the biosphere, both the biosphere as a whole, and regionally.... Rather than viewing a deep fall of the potential relative population-density, as merely a fall in the relative value for the society as such; let us examine this as a fall in the relative level of the biosphere including that society.... [T]his must tend to be adjusted, by increasing the role of relatively lower forms of life ... [which] “consume” human and other higher-level forms of life as “fuel” for their own proliferation.... In that variant, human and animal pandemics, and sylvatics, must tend to resurge, and evolve, under certain kinds of “shock” to the biosphere caused by extreme concentration of fall of population-potential....

Current Global Inventory

Hospitals

The world as a whole possesses a current inventory of 18.63 million hospital beds. This constitutes a tremendous deficit, rendering country after country incapable of defeating the novel coronavirus. To consider the needed level of beds, consider the United States’ 1946 Hill-Burton Act, which set a standard of 4.5 hospital beds per 1,000 people, in order to ensure the health and well-being of the population. Current levels are 2.8 for the United States, 0.7 for South Asia, 0.7 for the Heavily Indebted Poor Countries, and 0.5 for Nigeria, which has one-fifth of the population of sub-Saharan Africa.

To meet the standard of 4.5 beds per 1,000 people, the world would have to increase its hospital bed inventory to 35 million beds, nearly double the current level. This would require the construction of 35,200 new modern hospitals, especially in Africa, Ibero-America, and Asia, where the new beds would be immediately put to necessary use.

Beds themselves do not save lives. Medical staff are required, and acute cases demand additional equipment, such as ventilators.

Ventilators

The total global inventory of ventilators is hard to determine, but there are certain figures that point to the problems of dealing with COVID-19 in impoverished

nations lacking health infrastructure. The United States has a total of about 170,000 ventilators for its 330 million people, which is about 500 ventilators for every million people. Germany has about 25,000 ventilators for its 83 million people, about 300 ventilators per million—the highest per-capita level in Europe.

The picture in Africa, however, is absolutely devastating. According to an April 7 [article](#) in *Time* magazine, there are 500 ventilators for the 200 million people of Nigeria, which comes out to 2.5 ventilators for every million people—about 200 times less than the United States on a per-capita basis. In Sudan, there are 1.9 ventilators for every million people. The Central African Republic (population nearly 5 million) has a total of three ventilators, and Liberia, with a population of 4.7 million people, has none.

Estimates by the Brookings Institution and the *Financial Times* are that India has approximately 20,000 ventilators, which would be 15 ventilators for every million people.

For the entire world to be at the United States’ per-capita level of ventilators would require a global inventory of 4 million.

Current Understanding of COVID-19

COVID-19 attacks the body in at least two ways. First, it has effects very much like the flu as it multiplies within the body. Fevers, body aches, headaches, and fatigue are common, as well as a cough, especially a dry cough. The cough is due to a specific characteristic of the virus: its targeting of lung cells and the immune system response it elicits. At the time of writing, it is believed that in many patients reaching the second stage of the disease, ARDS (acute respiratory distress syndrome), the body itself is attacking the lung cells as a “storm” of the immune system’s cytokines trigger an escalating response against the virus and cells infected with it, as well as healthy cells.

The death rate for those afflicted with the disease ranges from 0.5% to over 5%, and depends on the physiology of the individual and the capacity of the local healthcare system. The death rate is also uncertain, due to low testing rates. The percentage of infected persons requiring hospitalization ranges from 10% to 30%.

It is possible to target the following areas of disease transmission and morbidity: reducing the transmission rate through social distancing, hygiene, masks, and business closures; reducing the infection rate through vaccinations; treating the virus itself with antiviral

medications; and preventing the acute respiratory distress syndrome that the virus causes in acute cases. These methods will be discussed in greater detail below.

**Africa:
A Case Study**

Sub-Saharan Africa is home to 1.1 billion people, 14% of the total population of the planet. Due to their colonial past and present, the nations of the region suffer extreme poverty, lack of electricity, and slum conditions in its urban centers, at anywhere from 2 to 5 times the average global rate. See the table, Measures of Underdevelopment.

Sub-Saharan Africa has:

- 14% of the world’s population
- 60% of the world’s extreme poor
- 70% of those worldwide lacking access to electricity
- 20% of urban dwellers worldwide living in slums.

This is a part of the human race where the potential relative population-density has clearly plunged way below the actual population, courtesy of the genocidal policies of the British Empire and their Wall Street side-kicks.

Consider also the case of Haiti, by far the poorest country in Latin America and the Caribbean, with conditions similar to those of the most immiserated African nations. Haiti has a population of 11.1 million. Health experts have estimated that the COVID-19 pandemic could claim about 800,000 lives in Haiti—over 7% of the population.

Nigeria, with about a fifth of Sub-Saharan Africa’s total population, has key poverty and related indicators that are typical for the whole region. The problems that Nigeria faces in combating the coronavirus are emblematic of not only Africa, but the entire Third World.

In the developing sector in general, including countries like Nigeria, large percentages of their populations live in inhuman squalor. The majority of their workforces are in the “informal economy,” surviving from day to day on street activities that range from the gray to the black economy. In many cases, up to 70-80% of

Measures of Underdevelopment

	World	China	Sub-Saharan Africa	Nigeria	Haiti
Total Population (billions, 2020)	7.8	1.4	1.1	0.2	0.011
Population in Extreme Poverty	9%	0%	41%	47%	80%
Lack Access to Electricity (%, 2017)	11%	0%	55%	46%	56%
Urban population in slums* (%, 2014)	30%	25%	55%	50%	74%

Source: World Bank

* A slum is defined by the World Bank as a housing unit lacking one or more of the following: running water, adequate sanitation, sufficient living area, durability of housing.

their workforce is part of the informal economy. “Sheltering in place” or locking down without work means literal starvation for very large numbers of people, as well as certain infection with COVID-19 in the slums where they live. Wash your hands repeatedly? This is a cruel joke to the millions and millions of Africans, Asians, Latin Americans and others who do not even have running water.

So how should the pandemic be addressed in such nations?

1. There must be a totally centralized national approach, in many countries centered on the military, which is often the only institution capable of organizing and carrying out such an approach. In many cases, for good or bad, they are also the only remaining national institution still standing, and with popular credibility.

2. The population, especially in the cities, has to be fully tested and segregated into two broad groups: Group A, who do not have COVID-19; and Group B, those who tested positive, even if they are asymptomatic. The health care and other public officials conscripted to perform the tests must be supplied with advanced testing equipment in sufficient supply, along with adequate Personal Protective Equipment (PPE) and other protection.

3. Group B must be immediately quarantined in separate housing units, whether hotels, converted office buildings, sports and convention centers, or quickly-constructed new modular housing units. Those new facilities must have work and recreational facilities *in situ*, for those well enough to use them, as well as necessary staffing of skilled personnel, including nurses

and doctors. Those health professionals will also have to be quarantined, so as to not infect their own families and friends.

4. Sick and very sick patients must be hospitalized. New hospitals have to be built with sufficient beds to handle the patient load, and be dedicated exclusively to COVID-19 cases. Adequate staffing by doctors and nurses has to be organized, including by nationally conscripting them.

5. Group A must be quickly formed into education and work brigades, both in industry and agriculture, much like FDR's Civilian Conservation Corps (CCC) project in the Great Depression in the United States. They must produce food, housing and clothing sufficient to feed themselves, as well as Group B. This will require a return to national food self-sufficiency, which

in turn will necessitate the importation of the capital inputs for modern agriculture—such as fertilizer, pesticides, tractors and irrigation equipment. The local workforce must also start building the housing, hospitals, and other required infrastructure to get the job done. This will require on-the-job training and large-scale transfer of modern technologies.

What China is already doing in Africa with the construction of new rail lines and other infrastructure is exemplary. The extension of the World Land-Bridge into Africa is essential, and will benefit enormously from in-depth cooperation between China and the United States in particular, as well as other countries.

But more must immediately be done by the world community to address the African situation, as we elaborate at the conclusion of this report.

Chapter 1

Public Health Measures

Health Care for Serious Cases

Hospitals

The Institute for Health Metrics and Evaluation (University of Washington School of Medicine) estimates, as of April 8, that a peak of approximately 100,000 hospital beds, 20,000 ICU beds, and over 16,000 ventilators will be required in the U.S., based on current rates of spread and medical care. According to a [survey](#) by the American Hospital Association in 2018, there were just shy of 800,000 staffed beds in U.S. community hospitals, and around 70,000-80,000 adult ICU beds. Since these beds are not typically empty, just waiting for patients to need them, the large number of beds does not mean that there will not be shortages, especially local shortages, as the number of hospitalized patients reaches its peak.

The current level of total hospital beds in the United States, in its broadest measure, is 2.8 per 1,000 people, barely one-third the 1970 level of 7.9 beds. On the basis of “community hospital beds,” which most of the population uses, there are only 2.4 beds per 1,000 people.

Consider the power, water, sanitation, and transportation requirements of hospitals. Using the United

States as a case study, an additional 575,000 beds would be required to bring the national average to 4.5 per 1,000 people. According to a 2007 [report](#) by the U.S. Energy Information Administration (EIA), the largest 3,040 hospitals, with approximately 915,000 beds (at the time of the study), used about 458 trillion BTUs of energy per year: 194 trillion BTUs in the form of electricity (57 billion kWh) and the remainder in the form of natural gas, district heating, and fuel oil.

Using this figure, U.S. hospitals with an additional 575,000 beds would require about 36 billion kWh of electricity per year. That translates into power plants supplying 5,000 MW at an 80% capacity factor. This would be the equivalent of five large nuclear reactors or two Grand Coulee Dams (running at average capacity). And that doesn't even take into account the natural gas requirements!

In the same report, EIA estimated that these 3,040 large hospitals used 133 billion gallons of water per year. Hospitals with an additional 575,000 beds would require an additional 84 billion gallons per year. For a sense of perspective, the world's largest proposed desalination plant, located in the Kingdom of Saudi Arabia, would provide about 100 billion gallons of de-



U.S. Bureau of Reclamation



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CGTN

To build a world health system, we need adequate water and power resources, and a vastly expanded pool of fully-trained medical personnel. Left to right: the Hoover Dam, a high-voltage line transmission tower, a coronavirus patient being admitted to a hospital in Wuhan, China.

salinated water per year.

To bring online another 15 to 20 million hospital beds—to bring the world hospital bed count to the Hill-Burton level of 35 million hospital beds—would require about 100,000 MW of generating capacity, as could be supplied by 100 large nuclear power plants or nearly 2,000 small scale modular nuclear plants. Global water requirements for these new hospitals would require about 4 trillion gallons annually, which is about half the volume of water contained by the Three Gorges Dam.

Hospital beds aren't much good without doctors and nurses. The current crisis is seeing retired health care workers coming back to work, and there are cases of medical schools offering early graduation for students in their final year if they are willing to immediately go to work as doctors. As virus hotspots move around the world, healthcare providers able to travel should be encouraged to work in other regions and countries.

Ventilators

Using influenza pandemic scenarios considered in a 2005 planning [study](#) by the U.S. Department of Health and Human Services, there could be several million hospitalizations in the United States, with up to a million or more patients requiring ICU treatment and half a million requiring mechanical ventilators. Projecting from these figures to the present world population, 10 million people could require ventilators, with an estimated 1 million each in Africa, Latin America, and India.

Personal Protective Equipment

Personal Protective Equipment (PPE) is used at health care facilities to prevent patients from transmitting disease to health care workers or other patients. This includes gloves, respirators and masks, face visors,

goggles, gowns, hair coverings, and full-body suits. Without the high-quality filtration afforded by an N95 (or equivalent) certified mask, workers are put at serious risk of catching the disease themselves. Shortages are causing enormous price increases and tensions among nations seeking to produce or to import equipment from those nations that manufacture it.

An industrial gear-up is required to ensure that adequate supplies of PPE are available.

The physical layout of a hospital or other care facility can have an enormous impact on the quantity of PPE required. In a healthcare setting that includes only confirmed COVID-19 cases, care need not be taken to avoid transmitting the disease from one patient to another, and health care workers can wear protective equipment through an entire shift. But if nurses must attend to patients of mixed COVID-19 status, best practices mandate that they equip themselves with PPE before entering a COVID-19 patient room, and then dispose of the equipment immediately upon leaving, to avoid carrying the virus to the uninfected patients they will next be visiting. With this setup, ten sets of PPE could be consumed per day per patient room. Thus, health care facility arrangements that separate COVID from non-COVID patients can permit significant savings of PPE. Accurately separating these patients requires testing.

Respirators

A properly fitted N95 respirator protects the wearer from 95% of particles over 0.3 microns in size. While the SARS-CoV-2 coronavirus itself is smaller than this size, the virions do not float around entirely on their own and are effectively blocked by N95 respirator masks.

A 2015 [study](#) by the U.S. National Library of Medi-

cine, part of the National Institutes of Health, examining three scenarios of demand, estimated that if 20-30% of the U.S. population were to become ill, some 4 billion N95 respirator masks would be required. Extrapolating this figure to the world's population, the global requirements would be on the order of 100 billion N95 masks for the duration of the outbreak: some 15 billion in Africa, 10 billion in Latin America, and 20 billion in India.



U.S. Navy/Timothy F. Sosa

ICU ward aboard the hospital ship USNS Mercy.

Rapid Point-of-Care Testing

Developments in testing technology now allow for thousands of tests to be processed per day by a single piece of equipment in a dedicated laboratory (high-throughput) as well as for rapid test results at the point of care. The development by Abbott Laboratories of a portable testing unit capable of delivering a positive result in as little as 5 minutes or a negative result within a quarter-hour greatly speeds the process of processing patients presenting with possible COVID symptoms, allowing them to be sent to the appropriate COVID-only or non-COVID facility or hospital wing.

Health Care for Mild or Asymptomatic Cases

Isolation Accommodations

Everyone confirmed to have the novel coronavirus should have the opportunity to be isolated from their neighbors, roommates, and families. This means that asymptomatic or mildly symptomatic individuals must be offered free room and board accommodations in facilities designed to keep them isolated and healthy. Hotels—which have occupancy rates in the single digits—could be repurposed to this effect, with adequate PPE supplies and training



Military.ru

Doctors don personal protective equipment in a hospital.

for a reduced hospital staff. The types of shelter arrangements provided following natural disasters would also be appropriate for these individuals.

This was the approach taken in Wuhan, in which *every* positive confirmed case was isolated under medical supervision, whether in a hospital, gymnasium, or hotel. Mild and asymptomatic cases could then socialize and engage in

group exercise classes—far better for their mental health than hiding in a room at home, fearful of infecting their loved ones! Two negative nucleic acid tests for the virus, taken 24 hours apart, were required before people could leave the isolation facilities. This form of isolation, going beyond staying (and infecting) at home, helped drive Wuhan's eventual victory over the virus.

In fact, China's achievement in Wuhan remains the most successful model to date for combating the coronavirus.

Mass Testing

Since anywhere from one-quarter to one-half of those infected with the coronavirus display extremely mild symptoms or no symptoms at all, it is impossible to rely on symptoms to locate all cases of the disease. Large-scale community testing—emphatically including those without symptoms—will make it possible to isolate cases in an effective and targeted way and make

contact-tracing more manageable. South Korea tested one in 170 people and used this knowledge to trace contacts, alert residents via text messages of nearby cases and hotspots, and reduce the spread of the disease.

The large-scale shutdowns currently used to crush the spread of the coronavirus do carry a toll, both economic and social. While these shutdowns are appropriate given a relatively low



Commonwealth Media Services/Natalie Kolb



USAF/Mandy Foster

“Large-scale community testing—emphatically including those without symptoms—will make it possible to isolate cases in an effective and targeted way and make contact-tracing more manageable.” A Pennsylvania Department of Health Test Lab; and COVID-19 drive-through testing at Kadena Air Base, Okinawa, Japan.

level of testing, truly large-scale testing will make it possible to make intelligent decisions about lifting restrictions.

To test the world at the South Korea level of one in 170, would require 45 million tests. But many people will require more than one test: Examples include a person who has tested negative but who has had recent potential exposure, or a person in an isolation facility who is being tested to make sure that discharge is safe. To perform 60 million tests (factoring in some people being tested multiple times) at current worldwide testing rates would take the better part of a year.

The nasal swab tests most widely used at present operate by detecting components of the virus’s genome. These are referred to as PCR tests, named for the polymerase chain reaction process by which the genetic material is multiplied by 1,000,000 to 1,000,000,000 times to allow it to be detected.

Another kind of test would use blood, rather than swabs, and would detect, instead of the virus itself, antibodies produced by the body to fight the disease. These antibodies are present in people who were once infected but have since recovered. A virus test would come back negative, but an antibody test would be positive. With these tests, it will be possible to identify potential blood plasma donors (for convalescent blood serum therapy) and identify people who are no longer infected and likely to be immune. If further research reveals that the immunity enjoyed by those who have recovered is long-lasting, perhaps such people could be allowed to return to work, or be recruited to serve in the community as coordinators of meal deliveries, workers in isolation facilities for mild cases, etc.

Yet another form of testing could use samples of untreated sewage to detect the general presence and prevalence of the virus in a community.

Treatments and Vaccines

Pharmaceutical interventions can save lives and reduce disease in several ways. *Vaccines* “teach” the immune system about a pathogen, allowing it to immediately fight it when encountered in the future. *Antiviral medications* can target the virus itself, by preventing its entry into cells or its replication. *Antibodies*, derived from the blood of recovered patients or produced in a laboratory, can help the immune system fight the virus. *Combating cytokine storms* is a fourth approach, which could reduce the deadly respiratory effects of the virus, while not fighting the virus itself.

Readers eager to learn more can visit the accompanying [information page](#), “Pharmaceutical Interventions to Defeat COVID-19.”

Vaccines

Vaccines are used in advance to protect people from contracting a disease, by “priming the pump” of the immune system to get practice in defeating something that is similar to the pathogen but does not itself cause harm. People who are vaccinated against a disease are able to quickly fight it off if they come in contact with it, since their bodies are already prepared to do so.

The first phase of research is to establish the safety of the new vaccine. Researchers must make sure that the vaccine doesn’t itself cause problems. If study results are promising, the next phases of study will determine the effectiveness of the vaccine. Then manufac-

turing capabilities must be developed to produce the specific treatment. These multiple stages are the reason that a timespan of 12-18 months is given for vaccine development and production.

Antiviral Medications

Once the virus has taken hold in the body, treatments can prevent it from entering cells, prevent it from replicating, or target it for destruction by the immune system.

Several already existing medications are undergoing testing:

- *Avigan* (favilavir/favipiravir)—an anti-influenza drug developed by Fujifilm in Japan, is now included in China’s treatment plan and is being studied in several countries, including the United States, China, and Japan.

- *Remdesivir*—undergoing trials in several nations, this drug was originally developed to combat Ebola by Gilead Sciences in the U.S., a company with significant experience treating other viral infections.

- *Plaquenil* (hydroxychloroquine) and *chloroquine*—originally used to treat malaria, these drugs have been used for auto-immune disorders as well. Trials are underway around the world, and many hospitals are already using hydroxychloroquine for their COVID-19 patients. Hundreds of millions of tablets are being produced even as its effectiveness is being studied.

Antibodies are structures created by the human immune system, which attach to pathogens, deactivating them, preventing their entry into cells, or marking them for destruction by the immune system. They can be created in the laboratory by using yeast, mice, or other animals as “factories.” At least a dozen groups are working on developing antibodies against the coronavirus.

Plasma of Recovered Patients

When someone recovers from the coronavirus, their blood continues to contain antibodies created by their own immune system to defeat the virus. Their donated blood can be transfused into severely ill patients to help their bodies fight the disease. U.S. hospital use of this technique began in the last weekend in March, and appeals on social media are now recruiting recovered COVID-19 survivors to donate their blood to help others.

Preventing Lung Problems

There are some drugs that do not target the virus itself, but seek to reduce the death rate and symptoms of COVID-19.

An advanced stage of the disease, in which severe

and life-threatening respiratory problems develop, is associated with an excessive response by the body’s own immune system, in which the patient’s body damages healthy lung cells in addition to those harboring the virus. Two antibody drugs already approved for other conditions—Kevzara (sarilumab) and Actemra (tocilizumab)—are being studied and used to reduce this excessive immune system activity. Entirely new antibodies are also being developed for this purpose.

Steroids can be used to reduce the immune auto-response, although they have the side effect of weakening the immune system. They are also becoming widely used by physicians.

Social Stability

Society must maintain stability, and people who are ill must be able to follow public health measures.

Sick Leave, Unemployment Benefits, Basic Income Stipend Payments

It is impossible to require people to remain at home if they rely on their daily work to supply their necessities of life. It is impossible to require homeless people to remain at home.

Employees must be provided with sick leave time to allow them to quarantine themselves to arrest the spread of the virus. Loans and grants must be made to businesses to allow them to continue to pay employees unable to work. Unemployment protection should be expanded to include those in nontraditional employment situations. To protect those who work informally and could not be expected to benefit from such programs, direct assistance in the form of basic income payments and the supply of necessities such as food and basic supplies is required. It is important that the isolation facilities for positive cases include people without homes, and that food and other necessities be included to allow everyone to isolate safely.

Moratorium on Foreclosures, Evictions, and Utility Shutoffs

Basic income to ensure the necessities of life will not be sufficient to pay mortgages, rent, utilities and car payments. A moratorium on foreclosures, evictions and utility shutoffs (including internet and telephones) must be implemented during the time of lockdown, and payments on mortgages and personal loans should be made optional. Businesses negatively affected by these policies will be able to apply for aid.

Securing Financial System Stability

The world's financial system, particularly that in the trans-Atlantic world, includes quadrillions of dollars in financial instruments that can never be settled. There should be no general attempt to maintain the values of financial markets. The financial collapse now occurring may have been triggered by the coronavirus, but the conditions for the blow-out have been laid by decades of disastrous policies. As Lyndon LaRouche expressed concisely with his triple-curve image, the physical productivity of many so-called "western" nations (including the United States) has decreased in per capita terms over the last several decades, in a way that accelerated with the collapse of the Soviet Union, while financialization has increased at a rapid and accelerating rate.

The required summit of the leaders of the United States, Russia, China, and India must take up the need for an orderly bankruptcy-style reorganization of the financial markets, to set the stage for banking to play a useful role in financing a global economic and health gear-up.

Social Distancing/Non-Pharmaceutical Interventions

Closing of Non-Essential Businesses

People whose daily work is not truly essential for the functioning of society should stay home. Financial and logistical arrangements required to support their livelihood must be implemented.

Masks

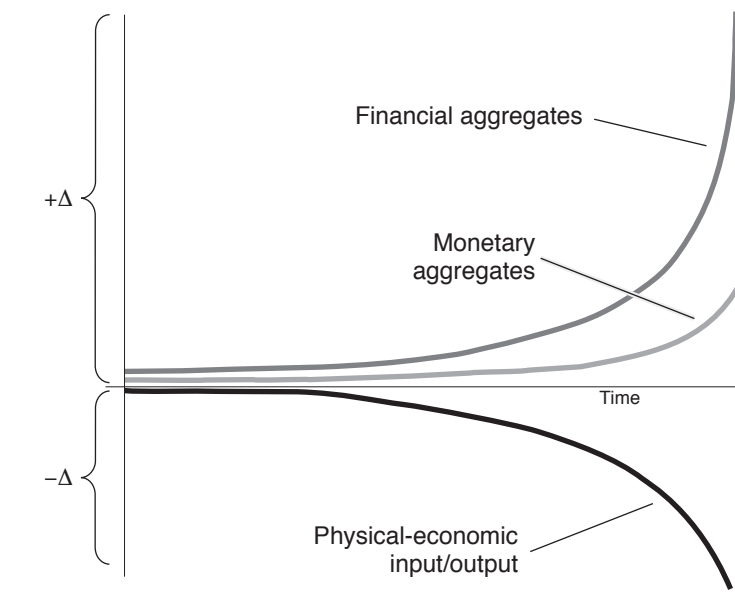
Everyone should wear a mask when among other people (which should be kept to an absolute minimum). This will provide the wearers themselves some protection against infection and reduce the potential for wearers to spread the disease. They also reduce face-touching.

Hand Washing/Sanitation

Frequent hand washing with soap can help reduce the spread of coronavirus, as does the use of alcohol-based hand sanitizers.

But there are over three-quarters of a billion people on this globe without access to improved water. Two and a half billion people lack access to improved sanitation infrastructure. The costs to health and well-being are staggering. According to a [Fact Sheet](#) issued by the

LaRouche's Typical Collapse Function



CDC, citing research published in the *Lancet*, every year 800,000 children under five years of age die from diarrheal diseases. Lack of sanitation and of water for drinking and hygiene contributes to 88% of deaths from diarrheal diseases worldwide.

Urging a community without sanitary facilities to practice frequent handwashing is both insulting and foolish. A crash program to develop sanitary facilities must be implemented, supplemented with the provision of hand sanitizer for hygiene purposes.

Contact Tracing

In the United States, the National Security Agency's intimate knowledge of the whereabouts of everyone with a cellphone can be put to good use! As one example, it could be used to provide text alerts to people who have been in the vicinity of someone who later tests positive. This approach was used in South Korea to help people get a better sense of their risk of exposure, and is part of the relative success that nation has seen in reducing the spread of coronavirus

Travel Restrictions

When testing is performed at a high enough level to give a sense of the different incidence of the virus in different areas, travel restrictions may be sensible to prevent its spread from areas with significant community transmission. This may make more sense as the first wave of the pandemic is crushed.

Chapter 2

Industry and Infrastructure Required To Support Public Health Measures

Providing the health measures in Chapter 1 will require major investments in manufacturing and in basic economic infrastructure. The inexcusable condition of the world, in which poverty still exists in the year 2020, must be remedied. This is eminently possible, as China's experience in eliminating poverty over the past four decades has shown.

Infrastructure

The platforms of physical improvements we make to our surroundings provide the human species with a synthetic, nurturing environment far superior to the “natural” environment we share with the apes. By controlling water flows, draining swamps, irrigating fields, building canals, railroads and roadways, developing water and wastewater systems, creating electrical and communication grids, and improving the flora and fauna, the human species has a unique power to make this Earth a garden. This infrastructure includes such soft infrastructure as an educated and culturally uplifted populace. Much of the investment in eliminating poverty will be of the form of basic economic infrastructure. And the current coronavirus pandemic points to the particularly urgent need of health infrastructure. But can a hospital be built where there are no roads or electricity? What are the requirements for the provision of health services?

Production Requirements

Medical Equipment

Numerous companies have expressed interest in re-tooling for the production of ventilators, from automakers to aerospace companies. The list includes:

- Automakers General Motors (which will work with Ventec Life Systems to produce 10,000 units a week), Ford Motor Company (which has committed, with General Electric, to produce 50,000 by July 4), McLaren, Jaguar Land Rover, and the VW Group.
- Aerospace companies such as Brazil-based Em-



General Motors and Ventec Life Systems are partnering to produce ventilators in response to the COVID-19 pandemic.

GM

braer, Europe-based Rolls Royce and Airbus, and the American firm SpaceX.

Current producers are ramping up production:

- Philips is doubling production to 2,000 per week, and Getinge will increase production to 3,750 per week. Dräger, Vyaire, and the Smiths Group are all working to produce additional ventilators for governments.

If all goes according to projection, the companies listed above would supply at least 300,000 ventilators by July. An April 9 [Politico article](#) reports that estimated demand solely from the United States and several Western European nations is for one million ventilators; the world's needs will be higher.

PPE

According to a news [report](#), 3M intends to double its international production to 2 billion N95 respirators over the next year, and is presently producing about 100 million respirators per month.

Honeywell Industries has upgraded a facility in Rhode Island and is revamping its aerospace facility in Phoenix, Arizona as part of its overall increase in production to 120 million per year.

Chapter 3

Required Global Policy Changes

International Collaboration

The coronavirus pandemic now afflicting the world is only one of the deadly viruses we face. The financial virus chiefly centered in the City of London and in Wall Street has proven to be no less deadly over the past decades. The cultural virus infecting the addled minds of foolish politicians still fighting the Cold War threatens to wreck the potential for precisely the kind of collaboration required to defeat the other viruses.

A summit discussion involving President Donald Trump, President Vladimir Putin, President Xi Jinping, and Prime Minister Narendra Modi is urgently required to achieve the cooperation needed in the short term to address the menacing health crisis. Such a summit is also the means by which, according to Lyndon LaRouche, a new and just economic system can be put into place globally.

The world must join forces as a single humanity to stop the impending mass-death in Africa, in particular, as the coronavirus spreads. Brigades of engineers, medics, and other skilled personnel from scores of nations must be mobilized, deployed and coordinated under the United Nations and African Union, and with full respect for the sovereignty of all nations. Building health and sanitation infrastructure, assisting in supplying necessary medical and protective equipment, and assisting with administration of health systems are among the urgent jobs at hand.

African nations must also be granted an immediate cancellation of their foreign debts; the world must



White House



quirinale.it



Kremlin.ru



SCO

The leaders of the world's largest economies must urgently convene a summit to coordinate international response to the coronavirus. A world health system has to be an integral part of their deliberations. Above: Presidents Donald Trump and Xi Jinping; below, President Vladimir Putin, and Prime Minister Narendra Modi.

choose life over debt.

Similarly, all sanctions, armed conflicts, border disputes and the like must stop internationally. Much better to use those resources for the common battle of mankind against the coronavirus.



en.people.cn

Expanded infrastructure is required for public health everywhere on the planet. Shown: The Ethiopia-Djibouti Railway, constructed with Chinese funding, design, and equipment.

A Paradigm Shift

Lyndon LaRouche warned nearly fifty years ago that President Nixon's August 15, 1971 takedown of the Bretton Woods system would lead to devastating economic effects that would result, in the end, in fascism. This is seen today in, among other places, the green outlook whereby people supposedly concerned about the world's future act to deny energy development to the world, condemning millions to early deaths.

Some few years later, in 1974 and 1975, LaRouche warned that worsening economic conditions would create the conditions for the rapid spread of diseases, including new diseases, threatening a biological holocaust. While it may seem that China and major developed countries are bringing the current pandemic under some form of control, what will the next months bring to the developing world if there is not a radical and sudden change?

To create an economy resilient in the face of such crises as the emergence of new diseases, requires enormous investments in basic economic infrastructure, as well as a reconceptualization of economics.

Lyndon LaRouche was adamant that economics is not about money, or about values that could be expressed in monetary terms. Rather, the secret of economic growth is the ability of the creative human mind to discover and develop new physical principles that expand the capabilities of the human species. As a rough measure of the value of a discovery, or of a cultural outlook, Lyndon

LaRouche used the metric of increase of potential relative population-density—a measure of what the population density *could* be, relative to the quality of land and improvements made to it. That is, how many people could be supported, per square kilometer, on the basis of a certain repertoire of discoveries, technologies, and culture? And what sort of culture could act to increase that value? That is the location of economic value.

In one of his last policy papers, Lyndon LaRouche demanded the immediate implementation of [four laws](#) that he said were necessary for the United States. They are needed for the world as well. First, a banking reform based on principles of the 1933 Glass-Steagall law, to deny speculative investment the protection of government while ensuring commercial banking could play its useful role. Second, national banking arrangements whereby governments can make long-term credit available for physical economic purposes, rather than for financial stability as has been the practice of the Federal Reserve and European Central Bank. Third, metrics for the application of the needed credit, based not on financial gain but on physical economic growth. Fourth, the new discoveries needed for human growth over the next fifty to a hundred years: nuclear fusion, space research, and fundamental breakthroughs in biology, to name three powerful examples.

By unlocking the true economic potential of our current repertoire of scientific discoveries and the potential to further expand it, poverty and hunger can be entirely eliminated within a generation, or even within a decade. Nuclear fusion power will change our relationship to energy, water, and resources. Fusion-powered rockets will keep us safe from any asteroids threatening to careen into our planet. Biological advancements will cure disease and allow for the rapid eradication of newly emerging threats. And, most importantly, the fear of large-scale international conflict can be overcome as we come to realize our common aims, here on Earth, and beyond!

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