
Interview: Dr. Ellis Armstrong

Hydraulic expert reviews 'great projects' required in Asia, Africa, and the U.S.

Dr. Ellis Armstrong has had 50 years of active involvement in public works projects around the world. He served as project engineer on design and construction of the St. Lawrence Power and Seaway project (1953-57). He was U.S. Commissioner of Public Roads (1958-61), Commissioner of the Bureau of Reclamation (1968-72), and chairman of the Hydraulic Resources Task Force of the World Energy Conference International Commission on Energy Conservation. In 1972-74 he chaired the U.S. National Committee of the World Energy Conference, an organization of 83 nations which is meeting this month in New Delhi. Dr. Armstrong attended the conference, stopping in Japan to confer on engineering plans for a second Panama Canal.

In this interview, Dr. Armstrong reviews many of the infrastructure projects proposed by the Global Infrastructure Fund—a program first presented in 1977 by Mr. M. Nakajima, chairman of the Mitsubishi Research Foundation; and he evaluates the five infrastructural projects proposed as initial efforts by EIR founder Lyndon H. LaRouche, Jr. for South and Southeast Asia.

Dr. Armstrong currently chairs the National Energy Policy Committee of the American Society of Civil Engineers, which has warned of the dangers in cutting capital investment in U.S. electrical power supply.

Marcia Merry Pepper of the Fusion Energy Foundation interviewed Dr. Armstrong for EIR on Sept. 2.

EIR: The EIR has identified five priority projects in the Indian Ocean-Pacific Ocean Basins. What is your evaluation of these projects?

Armstrong: The Himalayan hydroelectric project I think is a viable one and certainly hydro is the best and the most economical source of energy. That would revolutionize that area of the world, I think, with that amount of energy.

You see, what developed the [American] West really was the hydropower that we developed at Grand Coulee and Hoover Dam. Same with the hydropower of the TVA. That's a starting point, and then other things followed.

EIR: What about the hydraulic project planned to control the Mekong River?

Armstrong: At the Bureau of Reclamation, we had a team of about 40 or 50 people over there for about four years. They

made a detailed study, and as we completed the study, I went over and spent some time there, going over it in detail. There are problems, of course—adverse effects on fishing and one thing or another. But overall, the benefits far outweigh the adverse effects, in my view, and in the results of our studies.

And certainly, utilizing that tremendous resource they have in the river, which now is not much of a resource except for the fisheries, will have great benefits. It's a roaring flood for a period, and then it's a drought. So you've got to cut that cycle, as well as develop a tremendous amount of energy. That's detailed in a whole set of very extensive and intensive studies of all of the aspects of the problem.

It would step up agricultural productivity. They could be self-sufficient in rice; and they could export.

EIR: What about hydraulic projects in China—plans for a canal between the Yangtze and the Yellow Rivers, irrigation in the north and so forth?

Armstrong: There are quite a number of things that could be done in China. One of the big problems there, of course, is the density of population. So it has to be very well planned out, for instance, on the Yangtze Gorge. In fact, in the Bureau of Reclamation, when I was in the design office, we did some studies on that right after the war. During the past three or four years, the Chinese government has sort of reconstructed some of those studies and brought them up to date. And there is considerable discussion going on now about whether you want one big project or you want to break it down into several smaller ones.

Several U.S. engineering firms are now participating in some aspects of the study. Both the Army Corps of Engineers and the Bureau of Reclamation have visited the area, and I think China has a contract now with the Corps for directing some of those studies. The Bureau of Reclamation will be involved from the standpoint of helping the government administer engineering contracts and so on for the studies.

On China, I'd like to mention that when I was chairman of the Committee on Hydraulic Resources of the International Commission on Energy Conservation, we took a hard look at the hydraulic, hydropower resources of the world, including China. In the past three decades the Chinese built about 85,000 hydro plants, but very small ones, with the average capacity about 50 kilowatts. It's unbelievable. But this is the

first step. You see, this gives a light or two—a street light, and a bulb or two in each of the houses. And of course they recognize now that they've got to go beyond that. Hydropower is the lowest cost. So it's a good way to start.

EIR: Have you looked at the water availability for farming in the north?

Armstrong: That's one of the things they are looking at now. Vast areas there can increase food production with irrigation. They built a large number of canals and a large number of irrigation projects, relatively small in scope, in the last three or four decades. It's a matter of continuing that work in such a way that, again, will maximize the resources that they have—land and water.

EIR: Can you comment on the proposed Isthmus of Kra Canal in Thailand or the second Panama Canal?

Armstrong: I know about the Kra proposal in a general way, and certainly it looks like it has merit. It ought to improve the communication and trade in those areas, and cut down on the shipping costs.

A second Panama Canal, our 1970 study indicated, ought to be done by 1986. We're not going to make it. The study was by a special commission set up by Congress, funded at \$25 million dollars for about four years. Engineers did most of the study work. And they concluded that the best location—they looked at all the different sites—was just parallel to the present canal, and about 20 miles to this [the northern] side. And it should be sea level. They lined out a method of taking care of the tides, which I think will work out very fine, very well. I think the environmental impacts will be minor. The intent was, after a study was published, to proceed with the studies leading on to construction a little further down the road. But then they got into a hassle over the Panama Canal Treaty. Since then, nobody wants to touch it because of the politics.

In looking at those 1970 studies—and I was involved on the periphery of some of those studies—it seems to us that the economic viability is still there. The worldwide recession has set it back a bit, but it's still, in my view, something that needs to be done.

It should be preceded by these detailed analyses of the environmental impacts. A lot of people are concerned about the biota from the Pacific contaminating the Atlantic. Well, it can be designed so that the effect from one ocean to the other will be minimized. . . . In particular, be sure you look at the full system—all the impacts. And then, minimize the adverse, and maximize the beneficial, so that you have a pretty good idea what the effects are going to be. That's the secret. It can be done.

I'm not so sure about the Bering Straits [plan to build a dam across the Straits to retard the flow of cold, Arctic waters into the northern Pacific—M.M.P.]. Physically it can be done. I think we would want to make a rather detailed study



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of what the overall impact might be. There might be some things there that we don't understand too well, and we have to take a good hard look.

EIR: What about the priority projects proposed for Africa, where the deliberate lack of large infrastructural projects and lack of food have led to starvation and disease?

Armstrong: Yes, the Chad region, and up in that area. . . . The African Central Lake approach looks to me like it has merit. It is going to be very helpful to the whole area, from the standpoint of power production, from the standpoint of irrigation and food production and so on. With the people that we have now in the world and those coming down the road, we've got to increase our food production. And the way we do it is with the application of energy and the utilization of our water and land resources.

One man on the farm in the United States now produces for about 80 off the farm—utilizing good seed, good farming practices, and so on; and you have to have energy. It is an interesting thing, and I use this quite often in my lectures, that the energy expended per unit produced is lower in the United States than it is in the developing countries. And this is quite striking when you get down to the actual figures and shows what we've got to do if we're going to produce the food that is necessary to feed the people coming down the road. We expect that there will be 9 billion people by the year 2020, that's on the basis of the analysis that we made with the International Commission on Energy Conservation. [This commission was organized by the World Energy Conference—M.M.P.].

EIR: What about the Yonglei Canal in the Sudan?

Armstrong: Down through the Sudan swamp area. I took a good hard look at that back in the early 1950s when I was in Egypt. That has a lot of merit. There are some adverse effects, both on the wildlife and on the tribes that exist. But I don't think it's a very good existence. It's going to change,

and mostly for the better. It certainly is something that needs to be done.

EIR: There has recently been a wave of bad publicity about that project and about the Aswan High Dam. They say that high dams' "social costs" are too high—people get schistosomiasis.

Armstrong: That's mostly nonsense. I spent nine months in Egypt in 1963 on basic planning with the dam—that is, taking a look at all the land and water and resources and how they would be impacted by the Aswan. In some areas, there will be some increased infection from the snail—the water-borne snails which are the cause of the schistosomiasis. But we found, and we went into great detail in these remote rural areas, that most of the people there were already infected with them. It's a whole problem of sanitation. It's a disease of poverty. If you can bring people out of the poverty stage, then you've got it whipped.

One article I saw that cited a specific area which before the dam was built had no problems with this disease. Afterward, I think they said that 50 to 60 percent were infected.

Before they built the dam there wasn't anybody there! There has been a lot of distorted and completely wrong information about some of these things on the impact of the Aswan. On balance, the benefit to Egypt, in my view and in the view of most everyone who is fully knowledgeable on the subject, the benefits far outweigh the problems. . . .

EIR: What about major hydraulic projects in the Western Hemisphere? There is a plan to connect the headwaters of the Orinoco and the Amazon to create inland transportation and power for many nations in South America. . . .

Armstrong: I think there's good potential there, though I'm not acquainted with the details. . . . I had an engineering firm in New York; we had quite a number of projects in Brazil, Argentina, and Colombia. There is tremendous potential down there, but they've got to get with it. Their hydropower resources are great. The Itaipu project [a just completed dam on the Parana River between Paraguay and Brazil—M.M.P.] will be the largest hydropower installation in the world when it's completed. The first stage will be about 13.5 million kilowatts and I think when they get that done, they'll go right on to the second stage to produce about 22 million kilowatts.

The Grand Coulee, when we get our third powerhouse completed, will only be about 10 million. So you see it's a tremendous source of energy, economical energy.

EIR: Then there is the plan for Canada, the United States and Mexico—the North American Water and Power Alliance (NAWAPA), to divert the MacKenzie and Yukon River waters south?

Armstrong: There are quite a large number of studies that have been made, that by Parsons [engineering company]

being just one of them, to have the fresh water resources of the north be brought down to the West, and also the Great Lakes and so on. They all have potential, and certainly this is the way to increase the carrying capacity of our country to a great extent. There are some problems with the environmental impact, but the pluses more than outweigh the adverse.

EIR: You must be thinking about the current drastic decline in the United States of electricity per capita and per industrial worker. . . .

Armstrong: That is of great concern to the committee I serve on. I am chairman of the American Society of Civil Engineers' National Policy Committee. And what has happened to our basic industry, which is energy-intensive, is that it is only operating now at half capacity. And of course we're dropping back in the use of energy. Our manufacturing is only operating about 70 percent now. . . . And when the recovery gets underway, one of the things that may deter our recovery from recession or depression, or whatever you want to call it, is going to be the lack of electric power, which you can show just about matches the GNP, and they both affect each other.

Electricity is a source of energy which we are now completely dependent on—I'd like to turn the power off one day a month to wake people up to the fact that this is essential for our whole society. Certainly we are becoming more efficient in the way we use it. But we've gone perhaps about as far as we can go at this stage with management decisions. From here on we're going to have to make some pretty large capital investments to increase the efficiencies, and that is going to take time. We don't think we're facing up realistically to this problem of electric power.

One of the things that intrigues me about the Global Infrastructure Fund approach is that these are types of things that in my view make for peace between nations. It makes for better understanding and gets people working together for their mutual benefit, and when they get to do that, then we make progress. I headed the first delegation that went to Russia after Nixon kind of smoothed things over. We went to take a look at their high-voltage generation and transmission of high-voltage electric power. We were over there about three weeks. One of the Russian engineers that went with us, as we were leaving, said to me, and I have thought about it ever since: "You know if we could just get the politicians in the world to do what we've been doing, that is concentrating on the similarities, you know our differences disappear." I think that's rather basic.

For instance, the St. Lawrence Seaway and power project. You know that I was project engineer on that. After 75 years of hassling and fighting over it, they finally decided to get with it. I expect from the standpoint of relationships and entities involved, it was probably one of the most complex projects ever built. But when they finally decided to get with it, we built it in three and a half years!