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Environmental Defense Fund et al. v. TVA

Paul E. Roberts
University of Florida

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Transcript of testimony of Dr. Paul E Roberts in EDF v TVA 9-17-73

(Quotes are Roberts unless noted as Q)

1. Paul Roberts, asst prof. of Econ. at U. of Fla., Gainesville, Fla. BA and MA from S. Ill. U., PhD in Econ. from U of Iowa, 1968.

2. Testimony to be in 3 areas: w/ respect to NEPA Sec. 102(B) involving development procedure for quantification of environmental losses caused by project; 102(6), full disclosure aspects, and requirement for critical econ. analysis & EIS; 101(B), nature of the decision-making process (of Tellico).

3. (Referred to deposition of Roberts taken July '73). /"in your professional opinion does the [EIS] contain a critical economic analysis for the Tellico project?" (objection made). "In my opinion it does not contain a critical economic analysis of the Tellico Project." As to pg. 49 of EIS "The page is a one page summary of, as it is titled, 'Summary of Economic Information.' It delineates annual costs made up of interest and amortization, operation and maintenance costs, and direct annual benefits, secondary annual benefits, and it is just that." ...

4. As to "Benefit-Cost Ratio for Direct Benefits" --"If you divide it, if you divide the ratio of costs into benefits, that number would come out to be 1.7 to 1 and 1.7 would represent benefits and 1 represents costs"...

Q--"You say the value of the costs, or the amount of the costs?" "Amount of the costs which would be the value, and in this process of estimation you have to take into account the time that is going to be involved. In the Tellico Project the time involved is 100 years..." "[100 years] is the top limit that is allowable, allowed to use. You use either fifty years or 100 years or explain some other economic life of a project. But the top, the absolute top maximum you can use is a 100 years and that is what TVA used in this instance." "...taking into account that benefits and costs accrue over long periods of time in the future, you have to do what is called discounting, both the benefits and the costs back to the present value in order to generate a net present value which is the difference between discounted benefits and discounted costs." "...There is a differential effect on discounting for the simple reason that costs must be incurred early in the project. You have got to have the dam all made before you can have a reservoir and there are other items in there, they have to be incurred before the benefit can state to come. So that the effect of discounting on benefits is much more severe than it is on costs.

To get all the costs incurred in four or five years of the project and that is the effect of the discounting on the costs to bring them back into a low present value, but you have got a hundred years out for benefits. So the value of the benefits in the one hundred year is very much different than the value of the benefits in the, say, eighty or ninth year. It is a much lower value but the effect is much more pronounced on the benefits than it is on the costs because all water resource projects are heavily cost front ended. They are heavily laden w/ fixed cost. All the cost has got to be incurred in the early stage of it."

"...here is another point that is critical to this analysis and that is the interest rate that was used to discount benefits and costs, and we simply stated if you use a higher interest rate to get these numbers back to present value you have a lower benefit cost ratio..."

Q about interest rate used for discounting Tellico (3 1/4%), whether it was reasonable rate for discounting. "No, it is not."

9. Q what would be reasonable rate."I would be very happy to settle with the Water Resource Council proposed guide lines...of seven percent... The National Water Commission recommended the current--in terms of the current standard in the recent report about 5 1/2%. I wouldn't even be too unhappy w/ that under certain circumstances."
"Q Do you know of any, from your examination of the documents of the TVA or theimes, any rational basis for the use of one hundred year life for the project and at 3?"

"Rationality has very little to do with it. It is just allowed. It is allowed and it was used."

(Mr. Brogan, for Defense)"...we don't think this testimony is competent, what is rational. If it is what TVA has to follow by Congress, he says it is allowed, that is it. It seems to me it is immaterial to go into something that the law says you can't use..."

(Mr. Brown for Plaintiffs) "...Dr. Carroll has read into the record a statement by the General Counsel of TVA that they are not subject to Sen. Document #97...then they are not bound to a particular rate of interest, XXX..."

"If you accept his argument, then you don't even have to have a benefit-cost analysis for a water resource project..."

(Mr. Brown) "Senate Document #97 has some general procedures for fixing interest rates as do some other documents, and it is a matter of some dispute as to precisely whether or not it is fixed [the rates] or not fixed by Congress at the present time."

(Reading footnote of EIS, pg. 49) "The values used throughout this statement are based on a 1968 analysis using then current prices for both benefits and costs. The power benefit was increased for $20,000 in 1971 on the basis of substantial recent increases in cost of generating power. All other benefit values are as calculated in 1968. Since 1968, inflation and other factors have increased the project cost estimate to $69 million, or an equivalent annual cost of $2,835,000. No detailed re-evaluation of project benefits has been made, but such an evaluation would be expected to show increases generally proportionate to project costs increases and the benefit-cost ratio would remain at about 3 to 1."

(Reasons Roberts believes EIS doesn't have critical econ. analysis). 1-no project reevaluation since 1968. 2--change in cost figure from 2,250,000 to 2,835,000 not broken down, "there has been no way I have been able to find out what the operation and maintenance expenditures are which are absolutely needed by me to re-do the analysis, to duplicate the TVA analysis. I couldn't do anything but guess and had to make an assumption the it still remained at $205,000..."

3--"to assume that [the change in average annual costs] would produce the same benefit-cost ratio over that intervening time just because benefits would exactly change in the same proportion of these costs, seems almost incredible to me. Not only that, they have referred to the wrong benefit-cost ratio down here in the footnote. They refer to the secondary cost-benefit ratio of 3 to 1."...

Q--" And there is nothing in theEISwhich you have found which supports the statement that the benefits have increased proportionately w/ the costs?" "Oh, no."

(Going down list of costs, characterizing which ones Roberts believes are sunk costs)
The first item is land and land acquisition, and to date actual cost have been $16,667,000. And certainly I would think that is not a sunk cost if the project is not built.

Relocating highways and highway bridges, $8,135,000. Now I would think that certainly would not be a sunk cost if the project was not built. I believe you can get some benefits out of relocating highways that might have had to have been relocated anyway, or you get highway bridges that were not there. Certainly under a different project definition this might fit in and be very compatible with it.

Relocation of railroads and railroad bridges, $122,000. The same goes for that, it all depends on what eventually would happen to the land use of the area.

Relocating and protecting other structures on impoundment. I am not sure about that what it really is, $198,000.

The reservoir has got minus fifty-five on it. 'hat's got me. That would indicate that they have made money...

Concrete dam and spillway. I think that under most circumstances this would be a sunk cost...$3,665,000 is probably gone.

Earth main dam embankment, a very small amount, $365,000. Inner reservoir canal, a small amount. The rest of these are fairly small down to construction supervision and services. It would have to be defined and divided on which these went to...

Q--"How would you consider wages?" "Well, in the sense of whether they are being productive wages or not, it would be dependent upon what they were spent for...... It looks like about less than $5 million or around in that area...would be considered sunk, irretrievable or not used even for any other purpose."

Q--"...in your review of the environmental impact statement and particularly w/in your area of expertise did you find any attempt to quantify environmental losses that might be caused by the project?" "No, I did not." "There are two items that you could really call environmental benefits, and one of them is recreation and the other is fish and wildlife..."...which is approximately forty percent of the total benefits of the project.

Q--"Now in your review of the statement including that page [49], did you find any attempt to evaluate secondary costs of the project?" "No." "Would you anticipate that for such a project there would be such secondary costs?" "Yes, we would think there would be secondary costs that could be similarly identified as secondary benefits were..."for example, I think there might be, well, just to keep with the same categories that they talk about, secondary benefit in terms of employment, you look at the employment of the 3-county area. There is a lot of agricultural employment and it certainly is not going to be costless to transition from agricultural employment to industrial employment if it would happen, and there is certainly going to be some retraining costs, relocation, one thing and another, would have to be taken into account in determining the project costs which should be identified..."

Q--"By not taking such costs into account what does that do to the numbers that appear on page 49?" "Simply tends to overestimate, make them look better than they might be."
(Comparing "Tellico Project Economic Analysis" 9-7-71, by TVA, with the
numbers on pg. 49 of EIS). "They are all exactly the same except for one. That is the
capital amount at the bottom of the document."

Q--"Is it possible, in your professional opinion, that every other number on that page
could be the same if the cost is $15 million more now than it was in 1971?" "It is
not possible."

(Reading into record 2-17-66 document). "It is Tellico Project Economic Appraisals,
dated January 1966 and circled in red under January 1966 for estimated project cost
is the number $42,500,000 and at the bottom the benefit-cost ration is 1.8 to 1."

(Reading in TVA Budget Program Submitted to Congress for Fiscal Year ending 6-30-70)
"The estimated total cost, project cost is $54 million, an increase of $7 million
above the estimate first presented in the budget program for fiscal year, 1968."

"...so the way the three numbers would read now would be January '66, $42,500,000;
January 1968, $47, million, and January 1969, $54 million."

"Now it is $69 million, 1970, January 1970." Q--"And what, within your knowledge,
is the present estimated cost for the Tellico Project?" "...$69 million."

"There is absolutely nothing I can think of that would allow the project to remain
estimated at the same cost figure for the last 3 and 3/4 years."
(testified that could find no methodology for determination of figures given in EIS
for water supply benefit, flood control benefit, or "redevelopment" benefit.)
(TVA's Justification of Programs and Estimates for the Fiscal Year(s), submitted in
January of 71 and 72, both had $69 million cost estimate, first one had benefit cost
ratio of 1.3 to 1, while the later one had benefit cost ratio of 1.6 to 1.

Q--"Is there any indication in those documents why the benefit-cost ratio went from
1.3 to 1 to 1.6 to 1 during that period when the costs remained the same?" "None.
The only thing I could conclude is that the benefits should have gone up during that
one year period of time to justify the increase in the benefit-cost ratio and
there are no listing of categories of benefits in either one of these documents that
were submitted to Congress."

Q--"Dr. Roberts, in your opinion should the agricultural loss of the project have been
taken into account in determining the costs of the project?" "Yes. They are direct
costs, yes." "And were they taken into account in the EIS?" "They were only taken
into account in that the price of the land was supposed to include the agricultural
productivity of that land forever." "And in your opinion does the price of the land
include that?" "I don't think it does, no."
(As to EPA comments in EIS 1-3-3 that "The discussion of the recreational and aesthetic
aspects should carefully compare the benefits of a free-flowing stream to those of a
man-made lake...") Q--"Do you find anything in that response or in any remainder of the
EIS which compares the economic benefits and costs of a free-flowing stream to a
reservoir as asked for by the EPA?" "None whatsoever."
(As to EPA comment that increased productivity below dam as to ag. should be compared
to loss of land under reservoir) "With respect to the final EIS and in your review of
that, has that suggestion and comment by the [EPA] been complied w/ by the TVA?" "No, it has not."

(Again discusses the lack of methodology as to determining 100 yr life.)

(Agreed w/ Office of Urban and Fed. Affairs of State of Tenn that there is no methodology indicated in EIS for evaluation of annual benefits; ditto as to TVA's response to that particular comment). "I don't believe they [TVA] answered the question, simply referring to Vol. III which is, as I say, is incomplete in the methodology aspect of a systematic benefit-cost evaluation of this project."

(Reading into record memo from R.M. Howes, Dir. of Reservoir Properties, 8-4-60 re: Tellico) "Although the project may be narrowly justified on the basis of a benefit-cost ratio of 1107, staff felt that there was no particular urgency to build the project for statutory purposes (power, flood control and navigation). In the next six to twelve months effort will be made, through the FUDAR Committee and otherwise, to firm up a basis for inclusion of other benefits such as recreation and land increment."

Q-"...what WWMMX the benefit-cost ratio for the project would be using those statutory purposes, for using those purposes, those benefits, that are calculated and appear on pg. 49" "Power represents approximately eleven %, the flood control represents approximately 14½%, and the navigation 11½%...rounded to 36%. And if you summed these three benefit figures and looked at the costs associated w/ these three benefits, the b-c ratio would be less than...½ of 1.1!"

(Reading into record memo from TVA to Geo. Palo 8-9-60, re: Tellico-Ft. Loudon Extension Project.) "Funds for construction of the Tellico Project will not be included in the budget for fiscal year 1962. Using the conventional methods of economic justification, the benefit-cost ratio for the project would be about 1.1 to 1.... "In addition to other benefits which may be identified, the navigation, flood control, and power benefits resulting from the Tellico Project appear to be substantial. Their potential will not be diminished by any reasonable deferment of the project.... It is essential that we move ahead as rapidly as possible to apply to the Tellico Project any new and different methods we can devise for justification and financing, looking toward construction of the project and starting to capture its benefits at as early a date as is feasible."

Q-"In your review of the benefit-cost analysis performed by TVA, did they come up w/ new and unique methods for justifying the Tellico Project?" "I would say they did.ill the footnote, for one thing, on pg 1-1-49, is indicative of this very thing. Costs remaining constant for almost four years and no detailed reevaluation of the project benefits during that same period of time."

(as to change in recreation figures from 1961 memo of R.M. Howes giving average annual benefit of $272,000, to pg. 49 of EIS, setting out average annual benefit as $1,440,000) "In 1961 there was an effort to capture the benefits from water related
activities and the benefits from shore related activities which might be associated with this, and it boils down to the average profit of these types of activities would serve as the recreation benefit, and the average profit from things like operation and maintenance of boats, probably restaurants, motels, service—fishing sort of things, and so forth and soon, to get the profit from these kinds of activities and get some sort of average and that could be the average annual benefit..." (as to method used now) "So far as I know they use an annual visitation—an average annual visitation day and there are some categories of the visitation days that are classified as recreation benefit and then these are put in dollar figures."

Q—"In the EIS is there any methodology or reason or rationale set out for the change in the methodology for calculating recreational benefits?" "no"

"Q—"What more would you like to see in order to make a determination of that benefit, assuming the method used is calculable and is correct, what additional data would be necessary or desirable to have to determine whether or not that benefit is accurate?" "Well, certainly a very good, much better idea of the population that might visit this reservoir for the next hundred years should be estimated and the errors associated with this estimation of the population calculated, and certainly some probability associated with it rather than actual hard numbers."

It appears, from reading the EIS, this is exactly what will happen. Of course, you are talking about average annual visitation days a hundred years from now in instances, and these are probabilistically orientated, certainly not determined as a deterministic number."

(Reading into record from memo from George Palo Chief Engineer TVA to Robert M. Howes, 8-26-63 Re: Tellico Project Recreation Benefits) "We do think there is merit in Mr. Ericson's suggestion of selecting some arbitrary figure, clearly stated as such, solely as a device for translating visitor days into dollar amounts."

Q—"What does this have reference to?" "I would suppose that this memorandum... would be relative to the data that is contained in the EIS rather than the data because the methodology appears different. I am only supposing that."

(discussed use of amount used to figure benefit--50¢ said in '63 memo, $1 used now)

(Reading from statement from Public works Appropriations for fiscal 1967, 9-27-66) "By Senator Ellender: 'Will, are you familiar with the yardstick used by the Corps in providing the benefit-cost ratio for the projects in which they propose Federal funds for?' Mr. Wagner: 'I am not completely familiar with it, no sir.' Senator Ellender: 'Well, from my experience I would say that neither of these projects qualified. That is what I stated last year, and I stand by that. But, of course, the TVA is for itself, it is just a little branch of the Federal Gov. and it uses, apparently, a different yardstick from what the Corps of Engineers use, and it is my judgment if you were to use the same yardstick for the Tellico and Timms Ford that your benefit-cost ratio would not be sufficient to warrant the Fed. Gov. to put up any money.' Mr. Wagner: 'We did make an evaluation of the Tellico Project using the
Roberts - Direct

All right. I have got something here I will tie in with other testimony to, your Honor.

BY MR. BROWN:

Q  Just explain those two documents and perhaps you can answer his Honor's question.

A  The first document is entitled -- something I did myself -- it is entitled "Benefits for Preserving Town of Tanase," or Tennessee, however it is pronounced, "Name of Tennessee, Fifty Cents for Each Tennessean as Based on the April 1970 Census Population."

It is entitled further "Benefit dash dash dash Cost if Destroyed, Figured at 3-1/4 percent for Five Hundred Years."

That is the first calculation.

THE COURT: Who made that calculation?

THE WITNESS: I did.

THE COURT: How did you work that out in your mathematics?

THE WITNESS: I worked it out on ---

THE COURT: Were you taught that at school?

You are in a different world from the Court.

THE WITNESS: I just worked this out. I can show you this, your Honor. It is very simple, because you look at -- I took the population of Tennessee, which would be double this number, about three million nine hundred and some-odd-thousand people, and I ran
this at 3-1/4 percent discount rate. That is the
discount rate that they used, just for the heck of it.
I talk about fifty cents each. That number is familiar
because they used it at one time, fifty cents for
recreation benefits, so I decided -- also used some
other thinking on this.

I have been in the Everglades fight back home.
The people, whether they go to the Everglades or not,
they have a feeling they like the Everglades and there
is some benefit they get out of it, a recreation sort
of thing.

So taking for each Tennessean, as of the 1970
April census, at fifty cents each only, I figured out
right here what would be the net benefit of simply
not destroying that town in eighteen years, and it
turns out that it is $28-million.

If you compare $28-million with the net benefit
figure for the whole project, then the benefit-cost
ratio is less than 1, at 3-1/4 percent.

Now then, why I am tying this into testimony is
that we have identified the benefit, the environmental
benefit that they claim for recreation using methodology
that is very similar to this, and what I have tried to
do is use a methodology that is similar that would be
-- and I wouldn't exactly say that this is a number
that anyone should really put a lot of faith in, but the thing goes like this.

If the town of Tannase, the heritage, you know, of the state capital to Tennesseans, each Tennessean, is worth fifty cents, and if the interest rate is approximately at 3-1/4 percent, then this is what that would be at the end of eighteen years and this project is not economically feasible.

The other document simply does the same thing only I did it at seven percent because that is the rate proposed by the Water Resources Council. And what happens is that it generates net benefits that are greater than the net benefits claimed by TVA for the project, in slightly more years, here thirty-seven years instead of eighteen years, and that would stand to reason. It is almost double in the interest rate.

There is nothing very complicated about this.

THE COURT: Where did the five hundred years come in?

THE WITNESS: I just ran it for a long period of time to see how these things would go and you notice here how this kind of stabilizes around $62-million.

You see, it is still very similar around 180 years, all the way up in here. Well, it is still $62-million down here around 338 years, you know, and
it is still $62-million at nearly at five hundred.

BY MR. BROWN:

Q. Dr. Roberts, if you ran it for a hundred years project life would you get the same results, roughly?

A. For a hundred years, for a hundred years project life you would get almost $60-million, $59-million, but that is all this is, your Honor.

THE COURT: He has shown me the reason why some of these boys fail in economics in these universities.

(Laughter.)

MR. BROGAN: I think it shows why the upper courts say they won't review this question.

MR. BROWN: Your Honor, the Section 102(2)(b) of the Act requires that we submit a quantification of these kinds of environmental losses. Here on one side is the quantification which recognizes visitations at fifty cents or a dollar a visit day. Dr. Roberts is simply attempting to show that there is a value on the losses that are to be occasioned by the project.

BY MR. BROWN:

Q. Dr. Roberts, I have only one additional question. Does the Environmental Impact Statement benefit-cost analysis for the Tellico Project consist almost entirely of unsupported conclusions?
kind of benefits and the methods that are set out in Sen. Doc. 97 which is one recognized for evaluating, and using those methods we would have a benefit-cost ratio of about
1.9 to 1. I do not know the extent to which the Corps of Engineers uses that.'....
(Sen. Ellender again) 'But I came across a few cases where the benefit from recreation were as much as fifty-two percent, and I did not think that was fair.'"
(discussion of TVA's possible bad faith--Roberts very upset about errata sheet, fact that only way he could get close to TVA's figures was to change to the $2,835,000 (see notes from pg. 14).

"THE CT: You are convinced that they used erroneous figures in the impact statement? THE WITNESS: Well, we had it in the documents they submitted to Congress, too; they had this benefit-cost number. THE CT: Used erroneous figures. Now it does not follow because they used erroneous figures that they were guilty of bad faith. What I am trying to find out is what do you base your contention on that TVA acted capriciously or in bad faith in submitting these three volumes of the impact statement? THE WITNESS: That they had--they have grossly misled virtually everybody that has read that document to think that those numbers of that page were right. Grossly misled every single person that has read that that thinks those numbers are right, and it is the only place in the 3 volumes, your Honor, where there is an economic justification in some kind of a concise manner given. No other place is that body of information in one place, and virtually everybody that has read that has been misled by--but, I don't know what else I can say."
XEROX PGS 70-73

(in reply to ques on 73) "It does, on my opinion, yes."

END OF DIRECT

(TVA raised HIS Vol III, Pt. iii, pg24--). "If the project were to be reevaluated economically today, current benefit values should be as well as current discount rates and costs. In addition, the most meaningful evaluation would be one that takes into account the fact that a substantial investment has already been made, not one that assumes a situation different from that which actually exists. If this were done, project benefits would exceed project costs by a wide margin--on the order of 3.5 to 1 at a 5 3/8% discount rate."

Roberts--"Can you show me where the data is that backs up 3.5 to 1 and 5 3/8%?... are environmental costs in the number."
(TVA refers to Supplement #1 to Sen. Doc 97, and to rules of Water Resources Council in effect at time b-c analysis prepared. Then refers to Sen. Doc. 97 itself--)

"It says a hundred years should be the absolute maximum used, and what you should do is use the economic life of the project if that is shorter, is precisely what it says, paraphrased."
Q--."Do you disagree that a hundred years is proper, imp--per?" "No, I just don't see any great rationale for it when there is a lot of projects around that use 50 years."
(TVA refers to Vol. III pt. iii, pg 6-9, to show that is clear in EIS how # of visits and value per visit arrived at.)

(Back to Water Resources Council rule adopted 12-24-68, reported 42 USC Sec. 1962 (d)(1).

(Brogan) "I am reading 704.39, subsec. (d), which is taken from Chap. 6 of the Water Resources Council Rule ... published in the Code of Fed. Regs. It says this: 'Where construction of the project has been authorized prior to the close of the second session of the 90th Congress, the discount rate to be used in the computation of benefits and costs for such a project shall be the rate in effect immediately prior to the effective date of this session, and that rate shall continue to be used for such a project until construction has been completed unless the Congress otherwise decides.'"

(TVA then tried to impeach Roberts, implying bias, going into # of times he had testified for EDF, against Corps and TVA, his membership in Environmental groups, etc.)

(Tried to show that TVA following Sen. Doc 97 a good thing.)

(Brogan) "Now w/ respect to all these letters that Mr. Brown introduced through you that were dated in 1960, 1961, they all preceded Sen. Doc. 97 and they all preceded the project planning report in 1963; is that correct?" "Well, again, I don't care to get into a legal argument w/ you, Mr. Brogan, about that."

(Roberts continuing) "The Sen. Doc. 97 superseded the effective document that was in effect, which was the Green Book, which was adopted in 1952, and I suppose that would-- as a matter of fact the Green Book was much more stringent than Sen. Doc 97 was, in many of the respects, of the evaluation."

(discussion as to applicability of Sen. Doc. 97) "THE COURT: All right. You are in agreement w/ the Court if you don't know whether it applies or not, neither does the Ct."

(discussion of ways and propriety of figuring loss of ag. production & certainty of industrial dev.)

(EPA letters and comments brought out in cross superseded by later letter in EIS at 1-3-1, asking new questions)