PN-ABK-822

76378

PRESENTATION

ON

ENERGY CONSERVATION

TO THE

ENERGY POLICY BOARD

BY

DR DONOR M LION

MISSION DIRECTOR

USAID/ISLAMABAD

MINISTRY OF PLANNING AND DEVELOPMENT

FEBRUARY 11, 1985

PRESENTATION TO THE ENERGY POLICY BOARD

FEBRUARY 11, 1985

BY

DR DONOR M LION

MISSION DIRECTOR

USAID/ISLAMABAD

(VISUAL 1)

A NATIONAL ENERGY CONSERVATION PROGRAM FOR PAKISTAN

IMPERATIVE

RELATIVELY INEXPENSIVE

HIGH AND QUICK YIELDING

FIRST, LET ME SAY THAT USAID IS HONORED TO BE ASSOCIATED WITH THE GOVERNMENT OF PAKISTAN'S ACTIVITIES IN THE ENERGY SECTOR. IN TERMS OF RESOURCES, THIS SECTOR IS, ALONG WITH AGRICULTURE , THE GOP'S AND USAID'S HIGHEST PRIORITY WE ARE ALSO ESPECIALLY PLEASED TO BE PARTICIPATING IN THE SECOND MEETING OF THE ENERGY POLICY BOAPD THIS IS AN ENTITY WHICH COULD PLAY A DECISIVE ROLE IN PAKISTAN'S ENERGY POLICY AND PROCESS (VISUAL 1) FINALLY, WE HOPE THAT WE CAN HELP NOT ONLY IN THE ENERGY SECTOR AS A WHOLE BUT, ALSO, IN THE COUNTRY'S EFFORTS DIRECTED TOWARD ENERGY CONSERVATION

(VISUAL 2)

OBJECTIVES FOR THE BOARD

- AGREE IN PRINCIPLE TO PROPOSED PROGRAM
- AGREE TO STUDY PROGRAM AND TO RECOMMEND APPROPRIATE NEXT STEPS
- IMMEDIATELY SET UP GROUP TO STUDY PROGRAM
- ARRANGE FOR GROUP TO MEET WITH USAID AND CONSULTANTS
- APPROVE ESTABLISHMENT OF INFORMAL GROUP OF DONORS

(VISUAL 2) OUR PRESENTATION TODAY, AS YOU KNOW, IS ABOUT ENERGY CONSERVATION OUR OBJECTIVE FOR THIS PRESENTATION IS TO SET THE STAGE FOR THE BOARD TO TAKE THE FOLLOWING FIVE ACTIONS

1 AGPEE IN PRINCIPLE TO THE NATIONAL ENERGY CONSERVATION PROGRAM WHICH I WILL DESCRIBE

2 AGREE TO STUDY THE PROPOSED PROGRAM AND TO RECOMMEND TO THE APPROPRIATE GOP OFFICIALS, POSSIBLY INCLUDING THE CABINET AND THE PRESIDENT, STEPS TO INITIATE THE PPOGRAM INCLUDING ORGANIZATIONAL STRUCTURE AND THE MANPOWER AND FINANCIAL RESOURCES REQUIRED TO LAUNCH THE NATIONAL ENERGY CONSERVATION PROGRAM

3 SET UP IMMEDIATELY A GROUP TO STUDY THE PROPOSED PROGRAM WITH A TARGET DATE FOR THE BOARD TO REVIEW THE RECOMMENDATIONS OF THIS GROUP AND MAKE DECISIONS WITH RESPECT TO THEM

+ ARRANGE FOR THE GROUP TO MEET WITH USAID STAFF AND CONSULTANTS (AND POSSIBLY WITH WORLD BANK AND OTHER INTERESTED DONORS' STAFF) TO DISCUSS IN DETAIL THE PROPOSED PROGRAM, INCLUDING THOSE STEPS THAT CAN BE TAKEN IMMEDIATELY AND WITHOUT REFERENCE TO APPROVAL OF THE OVERALL PROPOSAL BY THE CABINET AND THE PRESIDENT

5 FINALLY, APPROVE THE ESTABLISHMENT OF AN INFORMAL GROUP OF DONORS TO EXPLORE WITH ENERPLAN HOW EACH OF THEM CAN WORK COOPERATIVELY AND COMPLEMENTARILY ON A NATIONAL ENERGY CONSERVATION PROGRAM

MY PRESENTATION WILL COVER THREE BASIC TOPICS FIRST, I WILL BRIEFLY DISCUSS WHY ENERGY CONSERVATION IS SO IMPORTANT TO PAKISTAN, PARTICULARLY IN THE NEXT FEW YEARS THEN, I WILL SUMMARIZE WHAT ENERGY CONSERVATION CAN CONTRIBUTE TO PAKISTAN'S SOCIAL AND ECONOMIC DEVELOPMENT GOALS FINALLY, I WILL DISCUSS HOW TO GO ABOUT IMPLEMENTING A NATIONAL PROGRAM -- THE ORGANIZATIONAL APPROACH, THE ELEMENTS OF A NATIONAL PROGRAM, THE PRIORITIES AND IMPLEMENTATION STEPS WHICH SHOULD BE UNDERTAKEN

THIS PRESENTATION WAS PREPARED WITH THE ASSISTANCE FROM OUR CONSULTANTS, HAGLER, BAILLY & COMPANY, USING BEST AVAILABLE (AND DAILY CHANGING DATA) AT THEIR DISPOSAL FROM A VARIETY OF GOP AND OTHER SOURCES NOTE ALSO THAT WE HAVE RESTRICTED MOST OF OUR ANALYSIS TO INDUSTRY AND WAPDA THE ENERGY CONSERVATION POTENTIAL IS THUS UNDERSTATED

(VISUAL 3) WHAT IS PAKISTAN'S CUPRENT ENERGY IMBALANCE AND WHAT ARE ITS CONSEQUENCES?

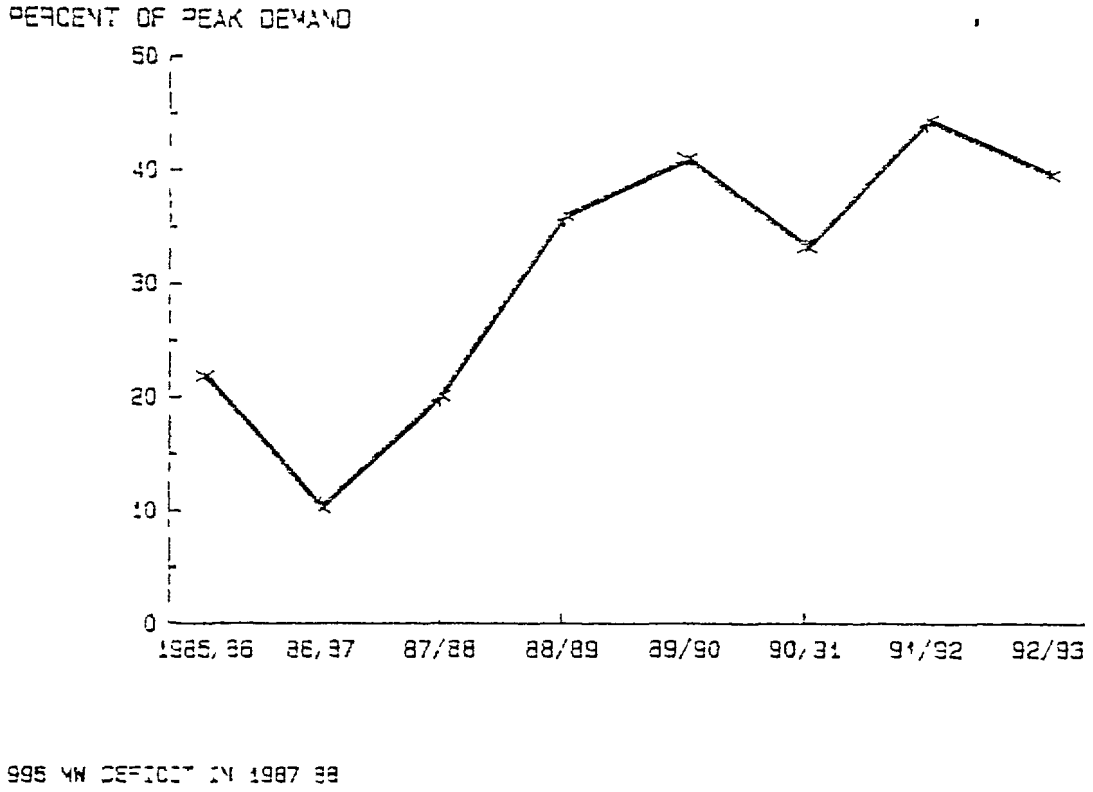
YOU ARE ALL FAMILIAR WITH THE CURRENT AND PROSPECTIVE ENERGY SITUATION I WILL, THEREFORE, ONLY COVER A FEW OF THE HIGHLIGHTS

THE CURRENT ENERGY SUPPLY AND DEMAND IMBALANCE IS WORSENING AS DOMESTIC PRODUCTION AND IMPORTS CANNOT KEEP PACE WITH INCREASED DEMAND

THIS IS TRUE DESPITE THE SIXTH PLAN'S PROJECTED ANNUAL GROWTH RATE IN OIL IMPORTS OF 11 5 PERCENT EVEN IF DOMESTIC OIL PRODUCTION CONTINUES TO INCREASE, AS IT HAS, PAKISTAN IS CONSTRAINED BY REFINERY CAPACITY, WHICH IS NOW ABOUT 5 MILLION TONNES PER YEAR ADDITIONAL REFINING CAPACITY CANNOT BE BROUGHT ON LINE FAST ENOUGH TO CHANGE THIS SITUATION MUCH IN THE SHORT TERM

(VISUAL 4)

PROJECTED ELECTRIC CAPACITY DEFICIT AS PERCENT OF PEAK DEMAND

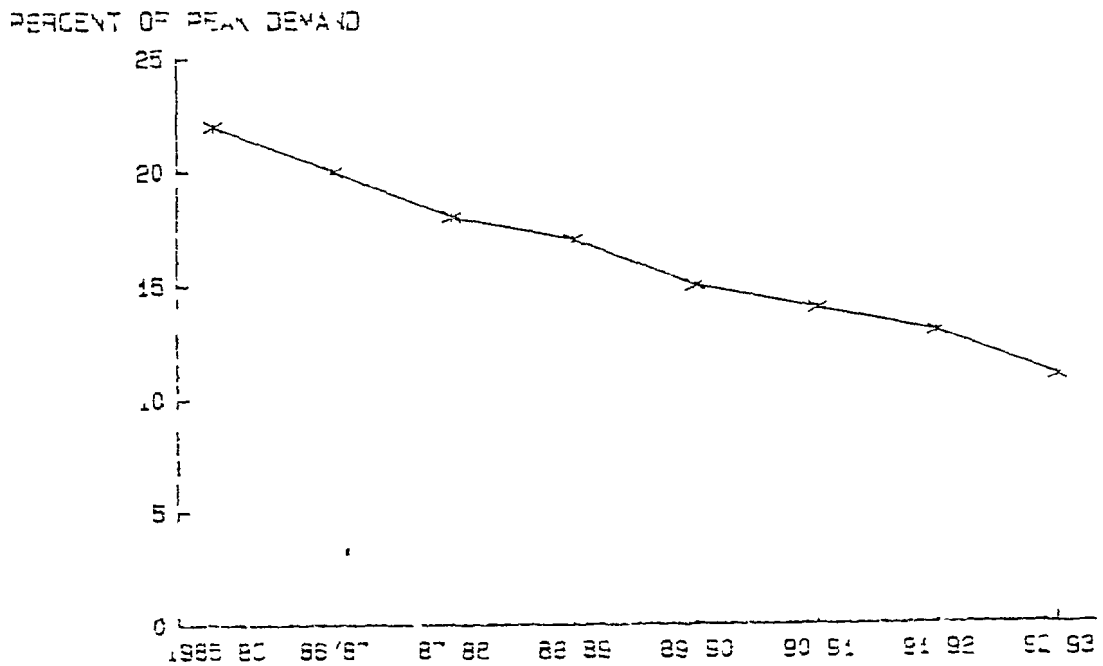


Source WAPDA

(VISUAL 4) WITHOUT REMEDIAL ACTIONS, WE ALL KNOW THAT THE OUTLOOK IS GLOOMY MORE ELECTRIC AND NATURAL GAS LOAD SHEDDING THE MOST RECENT ESTIMATE PROJECTS THE ELECTRIC POWER CAPACITY DEFICIT FOR WAPDA ALONE AT 995 MW FOR 1987/88 OR APPROXIMATELY 20 PERCENT OF PEAK DEMAND NOTE THAT THE JANUARY '85 ACTUAL DEFICIT WAS ON THE ORDER OF 1400 TO 1600 MW LOOKING BEYOND 1987/88, THE SITUATION LOOKS EVEN WORSE AS THE DEFICIT IS PROJECTED TO EXCEED 40 PERCENT OF PEAK DEMAND

(VISUAL 5)

PROJECTED NATURAL GAS DEFICIT AS PERCENT OF PEAK DEMAND



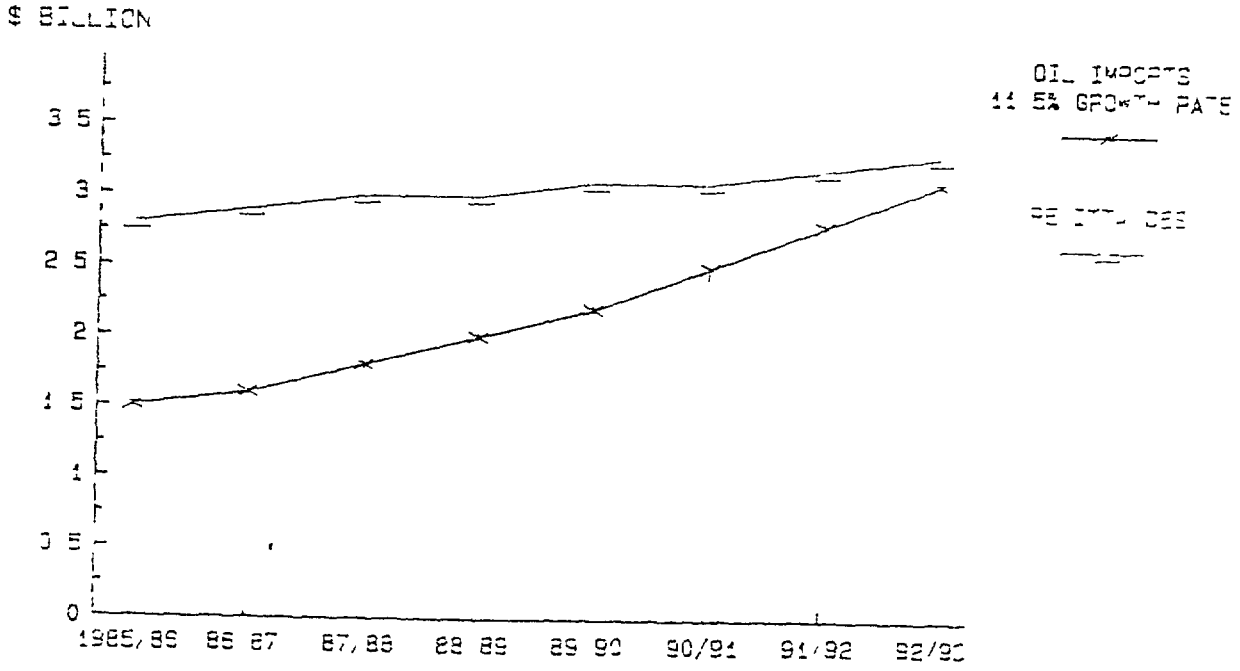
Source Sixth Plan

(VISUAL 5) THE PROSPECTS FOR NATURAL GAS ARE NOT MUCH BETTER EVEN UNDER THE OPTIMISTIC PROJECTIONS OF THE SIXTH FIVE YEAR PLAN, NATURAL GAS LOAD SHEDDING IS EXPECTED TO CONTINUE INTO THE FORESEEABLE FUTURE ALTHOUGH DECLINING THE DEFICIT IS PROJECTED TO REMAIN AS HIGH AS 18 PERCENT OF PEAK LOAD DEMAND IN 1987/88 AND 11 PERCENT IN 1992/93

(VISUAL 6) **WHAT ARE THE CONSEQUENCES OF THIS IMBALANCE?**

(VISUAL 7)

IMPORTED OIL COST VS REMITTANCES
VIth PLAN PROJECTIONS

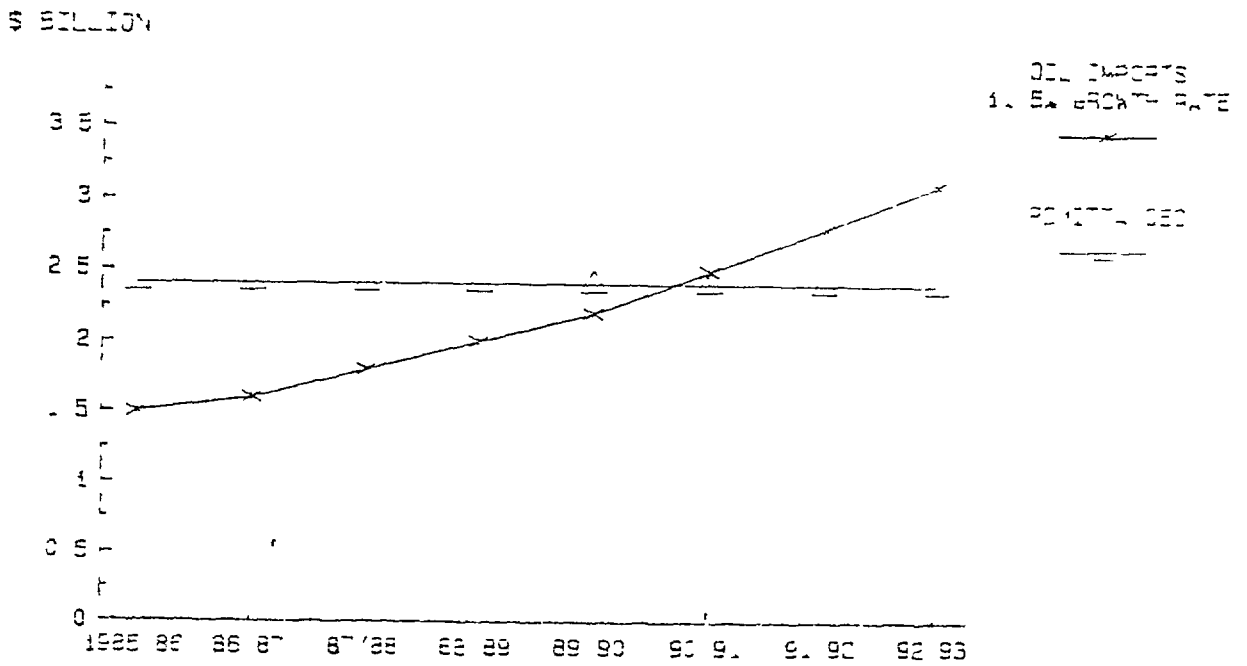


Source Sixth Plan

(VISUAL 7) OIL IMPORTS, DESPITE RECENT INCREASES IN DOMESTIC PRODUCTION, ARE LIKELY TO REMAIN HIGH IT IS USEFUL TO COMPARE PAKISTAN'S PROSPECTIVE IMPORT BILL WITH THE OUTLOOK FOR REMITTANCES THE COMPARISON IS DISCOURAGING AS SHOWN ON THIS GRAPH IF YOU ASSUME THE SIXTH PLAN'S PROJECTIONS FOR BOTH REMITTANCES AND FOR INCREASES IN OIL IMPORTS, THE GAP BETWEEN THEM WILL TEND TO DISAPPEAR BY 1992/93

(VISUAL 8)

IMPORTED OIL COST VS REMITTANCES
ALTERNATE SCENARIO



Source Hagler, Bailly & Co

(VISUAL 8) IF YOU ASSUME ON THE OTHER HAND THAT REMITTANCES WILL STABILIZE AT THEIR CURRENT LEVEL WHILE THE OIL IMPORT BILL WILL INCREASE AS PROJECTED IN THE SIXTH PLAN, THEN THE OIL IMPORT BILL WILL EXCEED REMITTANCES BY 1990 IN EITHER CASE, THIS ILLUSTRATES THE PAINFUL CONSEQUENCES OF AN UNREMEDIED ENERGY SUPPLY-DEMAND IMBALANCE

THE SERIOUS NEGATIVE EFFECTS OF THIS SITUATION ON FOREIGN EXCHANGE, ECONOMIC OUTPUT, DEBT AND RESOURCE MOBILIZATION ARE APPARENT AND IT IS CLEAR TO ALL THAT THIS SITUATION

IMPERILS PAKISTAN'S ACHIEVEMENTS IN PROVIDING A SATISFACTORY QUALITY OF LIFE FOR ITS PEOPLE, AND IN ATTAINING THE KIND OF SELF-RELIANCE AND PROGRESS PAKISTAN IS SEEKING

(VISUAL 9) WHAT CAN PAKISTAN DO?

THE ANALYST IMMEDIATELY PERCEIVES THAT, INASMUCH AS THE ENERGY BALANCE LINKS SUPPLY AND DEMAND, PAKISTAN'S OPTIONS INCLUDE MEASURES TO INCREASE SUPPLY AND MODERATE DEMAND HOWEVER, SOME OPTIONS CANNOT BE EFFECTIVE OR PRACTICAL IN THE SHORT RUN THE BOTTOM LINE, OF WHICH ALL OF US ARE AWARE, IS THAT IN THE SHORT RUN, SOME DEMAND REDUCTION OPTIONS AND SUPPLY INCREASE OPTIONS, EVEN IF VIGOROUSLY PURSUED, ARE NOT LIKELY TO MAKE A FUNDAMENTAL DIFFERENCE IN THE EQUATION

IN THE SHORT RUN, THE SUCCESS OF SUPPLY INCREASE OPTIONS LARGELY DEPENDS UPON THE MORE ENERGY EFFICIENT USE OF EXISTING CAPACITY CAPACITY ADDITIONS TAKE YEARS TO PRODUCE TRADITIONAL DEMAND REDUCTION OPTIONS (E G RELIANCE ON PRICE CHANGES OR IMPOSITION OF FURTHER LOAD SHEDDING, PENALITIES AND ENFORCEMENT) CREATE THEIR OWN PROBLEMS THESE PROBLEMS REDUCE THEIR ATTRACTIVENESS AND THEREFORE, LIMIT THEIR PRACTICAL USEFULNESS AS A WAY OF SIGNIFICANTLY RESTRAINING DEMAND IN THE SHORT RUN PAKISTAN HAS PERHAPS ALREADY GONE AS FAR AS IT IS PRACTICAL TO GO IN LOAD-SHEDDING

I SHOULD POINT OUT THAT EVEN IF HEROIC PRICE ADJUSTMENTS ARE MADE IN THE SHORT RUN, PRODUCERS AND CONSUMERS NEED TIME TO ADJUST ALTHOUGH THESE ADJUSTMENTS ARE CRITICAL TO THE SOLUTION TO PAKISTAN'S LONG RUN ENERGY SITUATION, THEY ARE NOT LIKELY TO IMMEDIATELY TRANSLATE INTO MAJOR EFFECTS ON THE ENERGY BALANCE, WITHOUT SHARP DISLOCATIONS AND OTHER ADVERSE EFFECTS ON PRODUCTION AND EMPLOYMENT THE SAME GOES FOR THE PENALTIES AND ENFORCED DEMAND REDUCTION OPTIONS

SOME OF THESE CONSIDERATIONS COULD LEAD TO A DECISION TO PURSUE AN ENERGY PROGRAM WHICH RELIES ON ENERGY IMPORTS TO COPE WITH THE SHORT RUN AND INTERMEDIATE CRISIS ON THE SURFACE, THIS APPROACH IS POLITICALLY ATTRACTIVE IT IS AWFULLY TEMPTING, AND, IF A NATIONAL REFERENDUM WERE HELD, IT MIGHT JUST BE A WINNING OPTION BUT WE ALL KNOW THAT THIS OPTION HAS LARGE HOLES PAKISTAN'S DEMANDS ON ITS FOREIGN EXCHANGE RESOURCES FAR EXCEED AVAILABILITIES

LET ME ILLUSTRATE THE DILEMMA WHICH PAKISTAN FACES AND WHICH WOULD BECOME EVEN MORE PAINFUL IF IT CHOSE TO PLACE EXCESSIVE RELIANCE ON OIL IMPORTS LET US CONSIDER, FOR A MOMENT, EDIBLE OIL IMPORTS THEY REACHED OVER 700,000 TONS IN THE PAST YEAR AND UNLESS REMEDIAL STEPS ARE TAKEN, WILL LIKELY EXCEED ONE MILLION TONS A FEW YEARS FROM NOW IN 1989, THE EDIBLE OIL IMPORT BILL COULD RISE TO 1 2 BILLION DOLLARS AND BY 1994, TO ALMOST 2 4 BILLION DOLLARS, OR ABOUT TWICE YOUR CURRENT PETROLEUM OIL IMPORT BILL

IN OTHER WORDS, THE OIL IMPORT INCREASE OPTION CANNOT BE UNDERTAKEN WITHOUT REFERENCE TO OTHER VERY HIGH PRIORITY DEMANDS ON FOREIGN EXCHANGE, WHETHER IT BE EDIBLE OIL, OR OTHER IMPORTS, SUCH AS RAW MATERIALS AND SEMI-FINISHED GOODS NEEDED FOR DOMESTIC PRODUCTION IN OTHER WORDS, THE GOP'S ENERGY POLICY SHOULD MINIMIZE THE SACRIFICES AND TRADE-OFFS IT REQUIRES OF OTHER CRITICAL SECTORS IN SHORT, EXCESSIVE RELIANCE ON FUEL IMPORTS TO DEAL WITH THE SHORT TERM CRISIS IS NOT THE ANSWER IT WOULD CREATE SERIOUS AND PERHAPS UNACCEPTABLE PROBLEMS IN OTHER KEY SECTORS

SO, LOOKING PARTICULARLY AT THE NEXT FEW YEARS, WHAT IS THE ASSESSMENT? (VISUAL 10)

(VISUAL 10)

WHAT IS THE ASSESSMENT FOR THE NEXT FOUR YEARS?

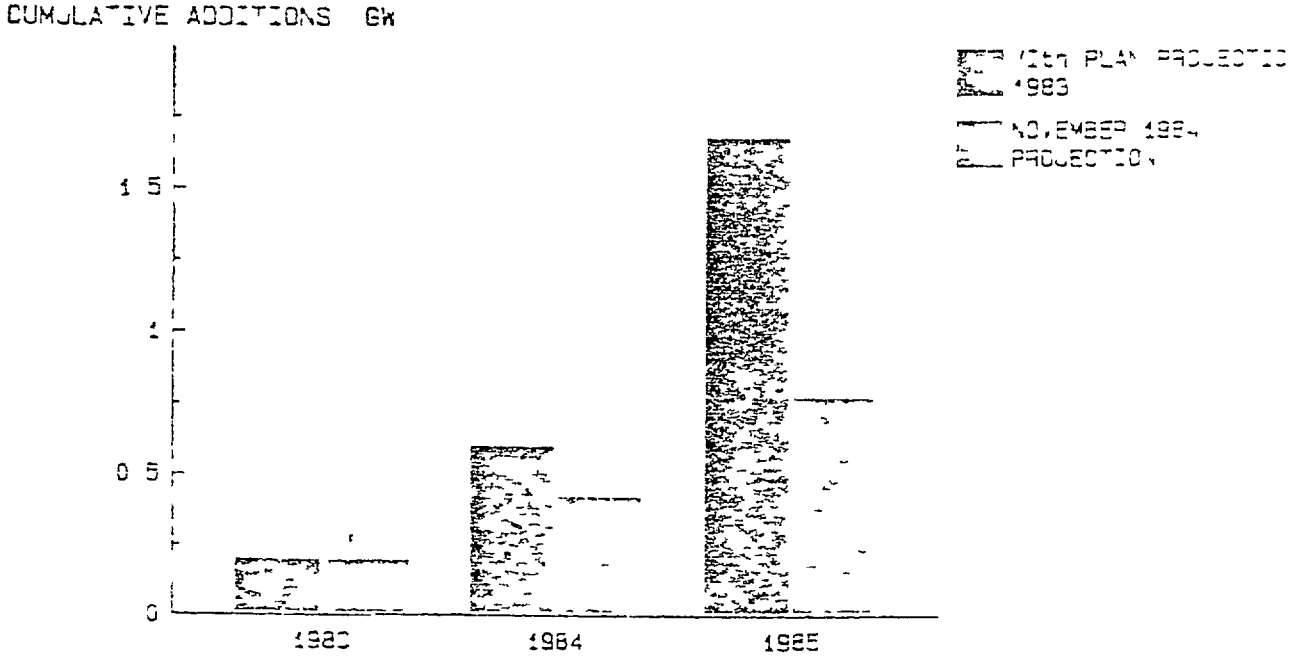
- DOMESTIC SUPPLY EXPANSION NOT LIKELY ALONE TO KEEP PACE WITH REQUIREMENTS
- CAPACITY INCREASES CONSTRAINED BY TIME LAGS
- INCREASED OIL IMPORTS CANNOT SOLVE PROBLEM
- PRACTICAL AND POLITICAL DIFFICULTIES WITH TRADITIONAL DEMAND DECREASE MEASURES

---

1 INCREASES IN SUPPLY FROM INDIGENOUS EXPANSION OF OIL AND GAS PRODUCTION ARE EXTREMELY IMPORTANT BUT WILL NOT ALONE KEEP PACE WITH REQUIREMENTS

(VISUAL 11)

CUMULATIVE PROJECTED ELECTRIC CAPACITY ADDITIONS VIth PLAN VERSUS NOVEMBER 1984 PROJECTIONS



Source Sixth Plan and WAPDA

2 (VISUAL 11) INCREASES IN CAPACITY CANNOT RESOLVE THE PROBLEM BECAUSE OF TIME LAGS FOR EXAMPLE, AS SHOWN ON THIS EXHIBIT, THE SIXTH FIVE YEAR PLAN'S CAPACITY TARGETS ARE ALREADY BEHIND SCHEDULE IN THE ELECTRIC SECTOR IT NOW SEEMS THAT ONLY ABOUT ONE HALF OF THE ORIGINALLY PROJECTED CAPACITY ADDITIONS WILL BE REALIZED NEXT YEAR

3 CONTINUED HIGH LEVEL OF OIL IMPORTS IS LIKELY BUT CANNOT BE RELIED ON ALONE TO SOLVE THE PROBLEM BECAUSE OF OTHER URGENT DEMANDS ON FOREIGN EXCHANGE AND BECAUSE OF LIMITED INSTALLED REFINERY AND GENERATION CAPACITY TO HANDLE HIGHER IMPORTS

4. PRACTICAL AND POLITICAL DIFFICULTIES WITH THE MAGNITUDE AND NATURE OF TRADITIONAL DEMAND DECREASE MEASURES SUCH AS LOAD SHEDDING, FACTORY RE-SCHEDULING AND SHUT-DOWNS, DO MAKE A MEANINGFUL DIFFERENCE BUT AT AN INCREASINGLY POLITICALLY AND ECONOMICALLY PAINFUL COST THIS POINTS TO THE CONCLUSION THAT THIS ROUTE CANNOT ALONE SOLVE THE PROBLEM OVER THE NEXT FEW YEARS

ALL OF THE FOREGOING SUPPLY AND DEMAND APPROACHES MUST, IN ONE DEGREE OR ANOTHER, PLAY A PART IN PAKISTAN'S ENERGY POLICY AND PROGRAM AND THEY ALREADY ARE DOING SO WHAT WE ALL KNOW IS MISSING, THUS FAR, IS AN AGGRESSIVE NATION-WIDE, SYSTEMATIC ENERGY CONSERVATION EFFORT THIS NATIONAL ENERGY CONSERVATION PROGRAM IS VITALLY IMPORTANT TO PAKISTAN

I AM NOT TALKING ABOUT THAT MISAPPLIED DEFINITION OF ENERGY CONSERVATION WHICH IS ASSOCIATED WITH RATIONING AND AUSTERITY I AM TALKING ABOUT REDUCING WASTE IN ORDER TO INCREASE THE SUPPLY OF EXISTING ENERGY RESOURCES TO ALL SECTORS THIS KIND OF ENERGY SAVING OR CONSERVATION IS POSITIVE AND ATTRACTIVE, IN BOTH SOCIAL AND POLITICAL TERMS AND IN ECONOMIC AND FINANCIAL TERMS IT IS WELCOMED BY MINISTERS OF FINANCE, PLANNING AND DEVELOPMENT, AND BY ENERGY POLICY BOARDS IT IS NOT WITHOUT COST, BUT IT IS RELATIVELY INEXPENSIVE TO CARRY OUT AND BUILDS LARGELY ON EXISTING INFRASTRUCTURE AND PERSONNEL THIS POLICY WOULD TAKE AN IMPORTANT CONTRIBUTION TO THE REDUCTION OF PAKISTAN'S CURRENT AND PROSPECTIVE SERIOUS RESOURCE MOBILIZATION AND FOREIGN EXCHANGE PROBLEMS IT FITS IN WITH, AND REINFORCES THE GOVERNMENT'S FINANCIAL AND DEVELOPMENT STRATEGY

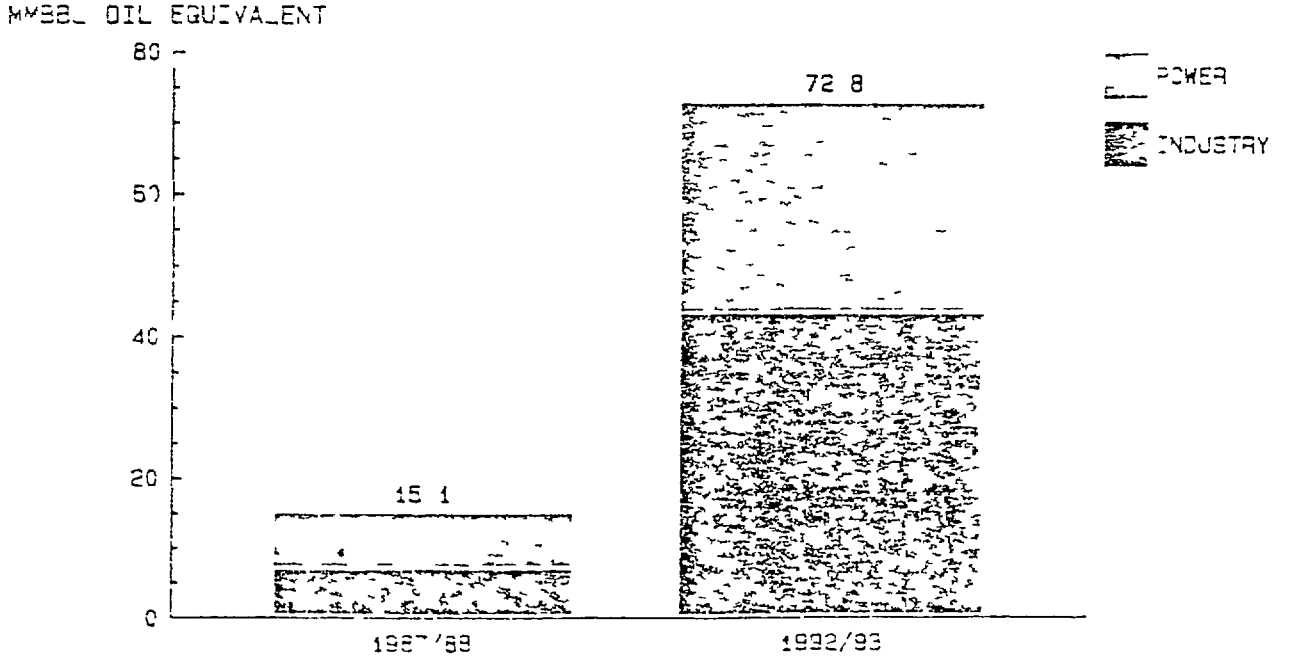
(VISUAL 12) WHAT CONTRIBUTION CAN ENERGY CONSERVATION MAKE? WHAT WILL THIS CONTRIBUTION COST?

LET ME HIGHLIGHT JUST A FEW ASPECTS OF ENERGY CONSERVATION WHICH MAKE THIS OPTION NOT ONLY VERY ATTRACTIVE BUT IMPERATIVE FOR PAKISTAN NOT AS THE SOLUTION, BUT AS A MAJOR INDISPENSABLE COMPONENT OF PAKISTAN'S TOTAL ENERGY STRATEGY, POLICY AND PROGRAM

FROM A DOMESTIC ENERGY SUPPLY PERSPECTIVE, ENERGY CONSERVATION CAN BE REGARDED AS A QUICK WAY OF AUGMENTING PAKISTAN'S OIL AND GAS RESERVES FURTHERMORE IT CAN DO SO IN A WAY THAT IS LESS COSTLY THAN OTHER SUPPLY OPTIONS

(VISUAL 13)

POTENTIAL CUMULATIVE SAVINGS
MILLION BARRELS OF OIL EQUIVALENT

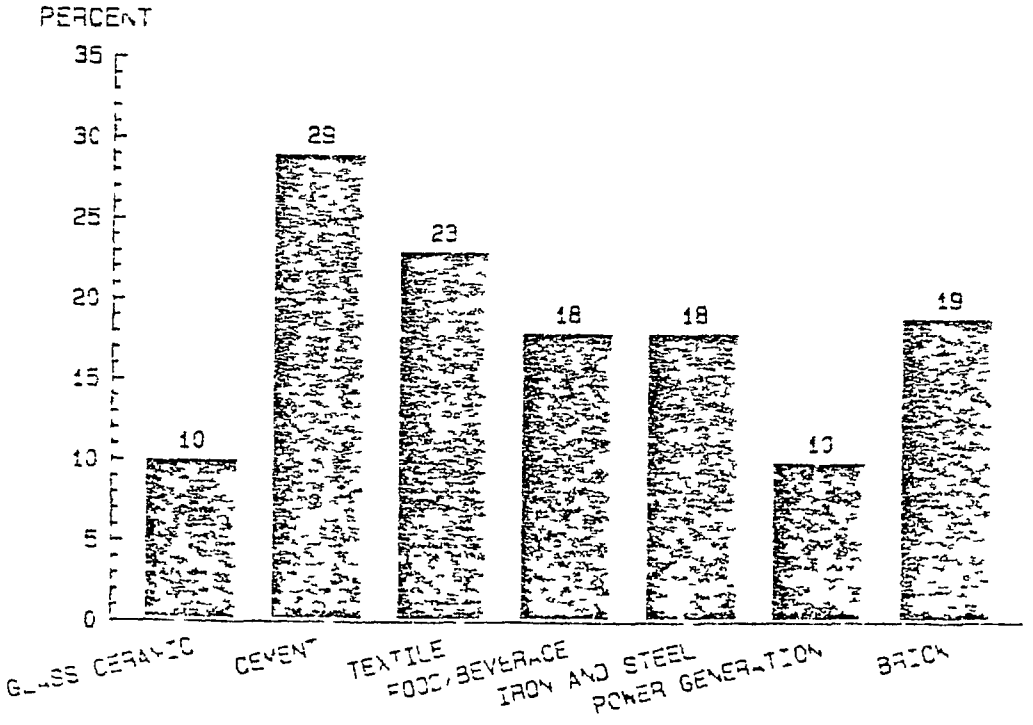


Source Hagler, Bailly & Co

(VISUAL 13) OUR CONSULTANTS HAVE CALCULATED THAT IN THE INDUSTRY AND POWER SECTORS ALONE PAKISTAN CAN SAVE SOME 15 MILLION BARRELS OIL EQUIVALENT (APPROXIMATELY 2 MILLION TOE) ON A CUMULATIVE BASIS BETWEEN NOW AND THE END OF THE SIXTH PLAN (1988) AND NEARLY 73 MILLION BARRELS OF OIL EQUIVALENT (ABOUT 10 MILLION TOE) BY THE END OF THE SEVENTH FIVE YEAR PLAN (1993) OR THE COMBINED EQUIVALENT VALUE OF OVER $ 2 7 BILLION THE BENEFIT-COST RATIOS IMPLIED BY THESE FIGURES ARE EXTREMELY HIGH

(VISUAL 14)

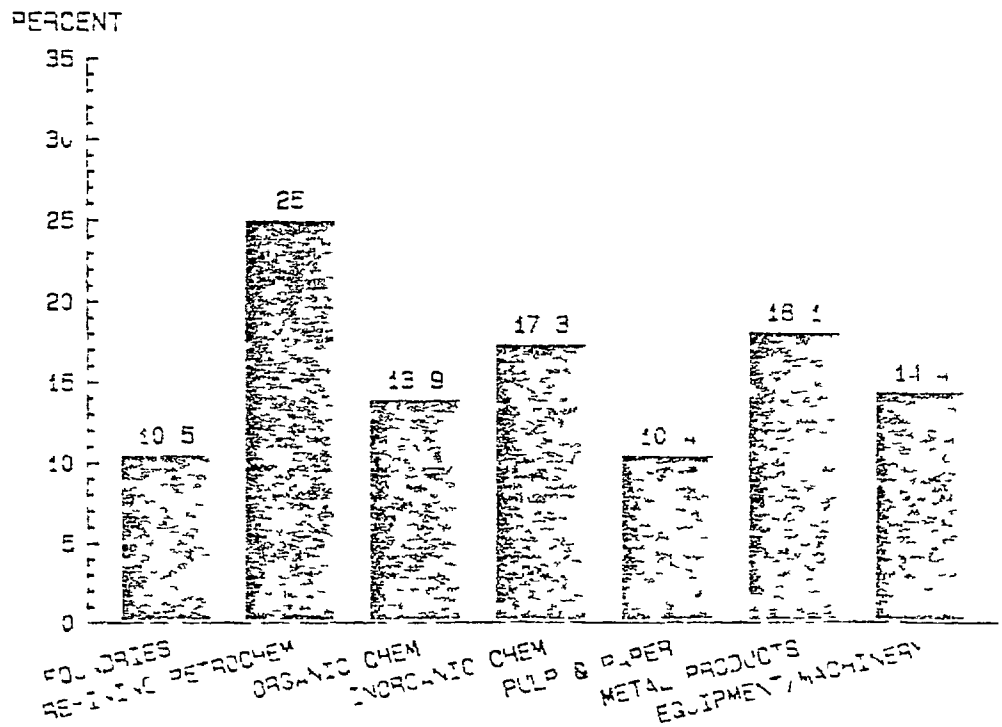
POTENTIAL ENERGY CONSERVATION BY 1992-93
AS PERCENT OF BASE YEAR CONSUMPTION



Source Hagler, Bailly & Co , EMAR/Petrotech, INTRAG

(VISUAL 14A)

POTENTIAL ENERGY CONSERVATION BY 1992/93 AS PERCENT OF BASE YEAR CONSUMPTION



Source Hagler, Bailly & Co , ENAR/Petrotech, INTRAG

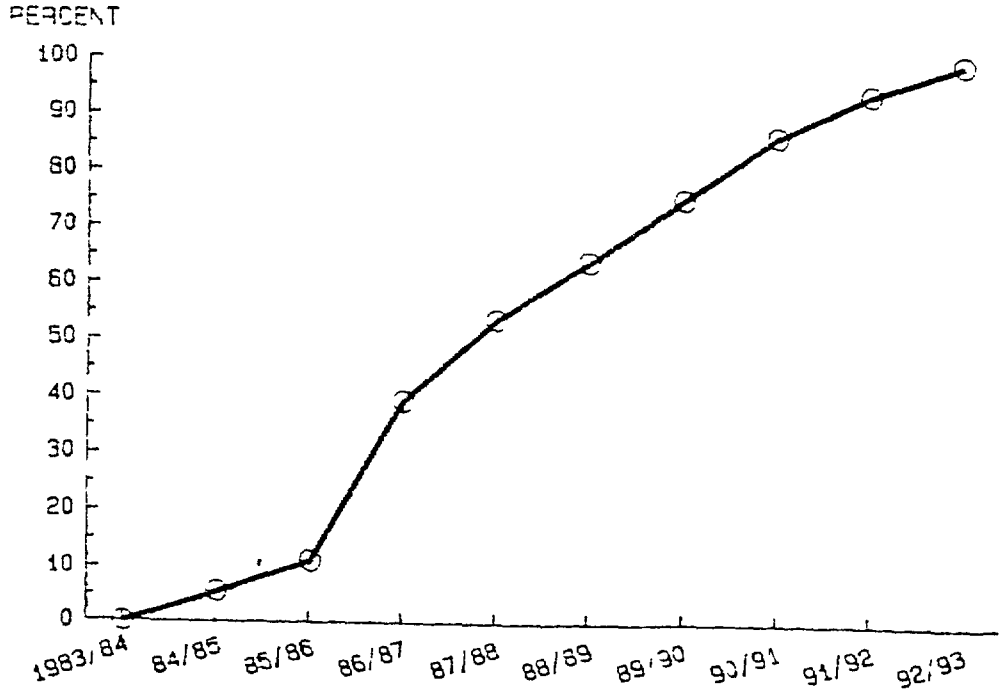
(VISUALS 14 & 14A) THIS LEVEL OF SAVINGS IS BY NO MEANS THEORETICAL IT IS TECHNICALLY AND ECONOMICALLY FEASIBLE USING PROVEN TECHNOLOGY AND PRACTICES WITH RETURN ON INVESTMENT IN LESS THAN FIVE YEARS AT CURRENT ENERGY PRICES IN INDUSTRY, FOR EXAMPLE, SAVINGS BY SUB-SECTOR ARE ESTIMATED TO RANGE BETWEEN SOME 10 AND 30 PERCENT OF THEIR CURRENT ENERGY CONSUMPTION AT CURRENT ENERGY PRICES OF COURSE, AS DOMESTIC ENERGY PRICES RISE, THE PAYBACK OF THE INVESTMENT WILL RISE AND QUICKEN

IN THE SHORT RUN, THE FOREGOING SAVINGS COULD BE TRANSLATED INTO CONTRIBUTING THE EQUIVALENT OF ANOTHER 20,000 BARRELS PER DAY IN 1987/88 TO PAKISTAN'S OIL PRODUCTION OR ALMOST EQUIVALENT TO TOTAL CURRENT INDIGENOUS PRODUCTION.

CURRENTLY EVERY BARREL OF CURRENT PRODUCTION AND IMPORTS, EVERY CUBIC FOOT OF GAS PRODUCED AND EVERY KILOWATT HOUR GENERATED IS "TAXED" AT RATES UP TO 30% BECAUSE OF THE WASTE OR INEFFICIENCY OF END USE PLEASE NOTE THAT ENERGY CONSERVATION CAN PROVIDE INCREASED SUPPLY AT A COST OF ROUGHLY $ 17 00 PER BARREL OF OIL EQUIVALENT BY 1988 OR ABOUT 60 PERCENT THE COST TODAY OF INCREASING SUPPLY BY IMPORTING OIL AS SAVINGS CONTINUE AND INCREASE, THE INVESTMENT COST PER BARREL OF OIL EQUIVALENT WILL FALL TO LESS THAN $7 50/BBL BY 1993

(VISUAL 15)

PERCENT OF 1992/93 SAVINGS POTENTIAL ACHIEVED EACH YEAR



Source Hagler, Bailly & Co.

(VISUAL 15) ANOTHER IMPORTANT ADVANTAGE OF ENERGY CONSERVATION IS THAT IT CAN BE CAPTURED QUICKLY AS SHOWN ON THIS VISUAL YOU CAN SEE THAT 50 PERCENT OF THE POTENTIAL SAVINGS CAN BE REALISTICALLY CAPTURED BY 1988

ENERGY CONSERVATION RESULTS, OBVIOUSLY, IN SUBSTANTIAL FOREIGN EXCHANGE AND DOMESTIC FINANCIAL SAVINGS THESE SAVINGS CAN THEN BE CHANNELED INTO OTHER INVESTMENTS, NOT ONLY IN THE ENERGY SECTOR SUCH AS POWER GENERATION, OIL AND GAS EXPLORATION AND DEVELOPMENT, BUT ALSO IN NON-ENERGY SECTORS SUCH AS INDUSTRY, AGRICULTURE, SCHOOLS, ROADS, AND HEALTH CARE

(VISUAL 16)

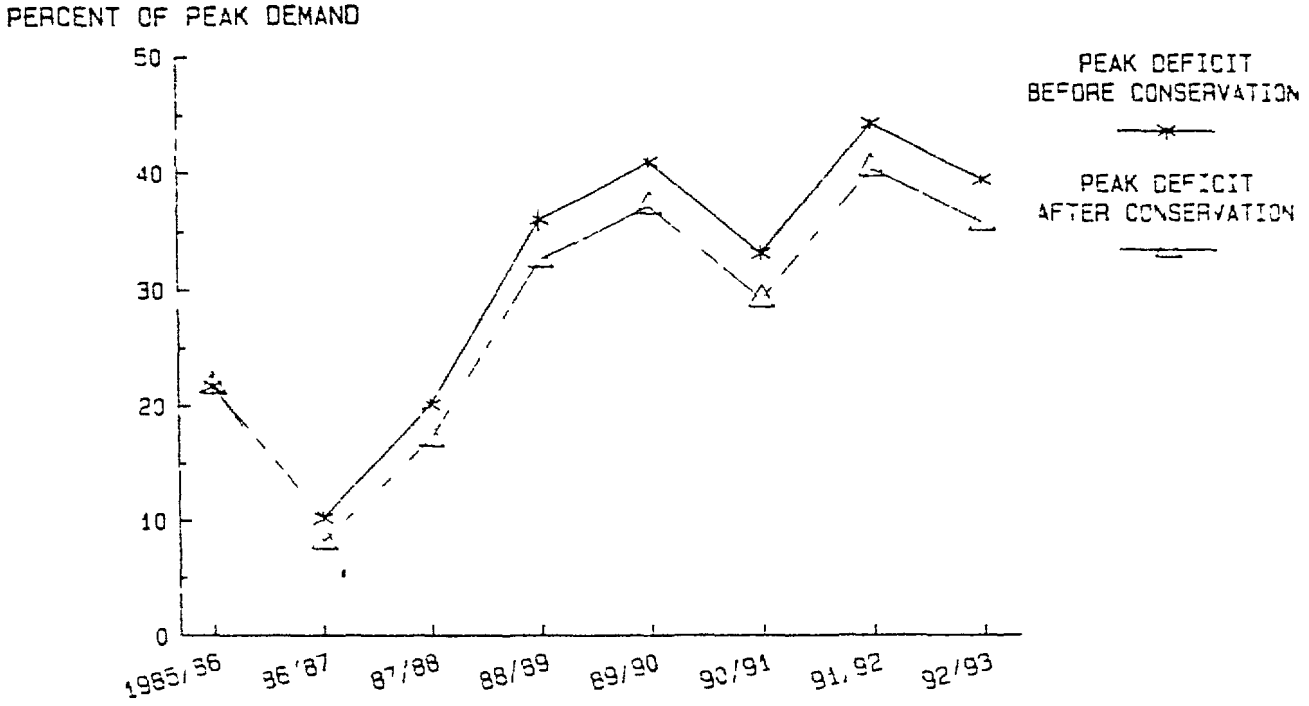
EQUIVALENT VALUE OF ONE BARREL OF IMPORTED OIL

- WHEAT TO FEED ONE MOTHER AND ONE CHILD FOR ONE YEAR
- ONE YEAR OF PRIMARY SCHOOL EDUCATION FOR ONE CHILD
- ONE YEAR OF INOCULATIONS AND VACCINES FOR 140 PEOPLE

(VISUAL 16) FOR EXAMPLE, USING PUBLISHED PAKISTAN STATISTICS, EACH BARREL OF OIL SAVED CAN BE VALUED IN TERMS OF ENOUGH WHEAT TO FEED A MOTHER AND CHILD FOR A WHOLE YEAR, OR ONE YEAR OF PRIMARY SCHOOL EDUCATION FOR A CHILD, OR ENOUGH INOCULATIONS AND VACCINES TO PROVIDE, FOR ONE YEAR, PREVENTIVE HEALTH CARE FOR TWO PEOPLE REALIZING THE ACHIEVABLE SAVINGS I JUST DISCUSSED WOULD RESULT IN CUMULATIVE NET FOREIGN EXCHANGE SAVINGS OF OVER 350 MILLION DOLLARS BY 1992/93

(VISUAL 17)

IMPACT OF INDUSTRIAL ELECTRICITY CONSERVATION ON ELECTRIC LOAD SHEDDING

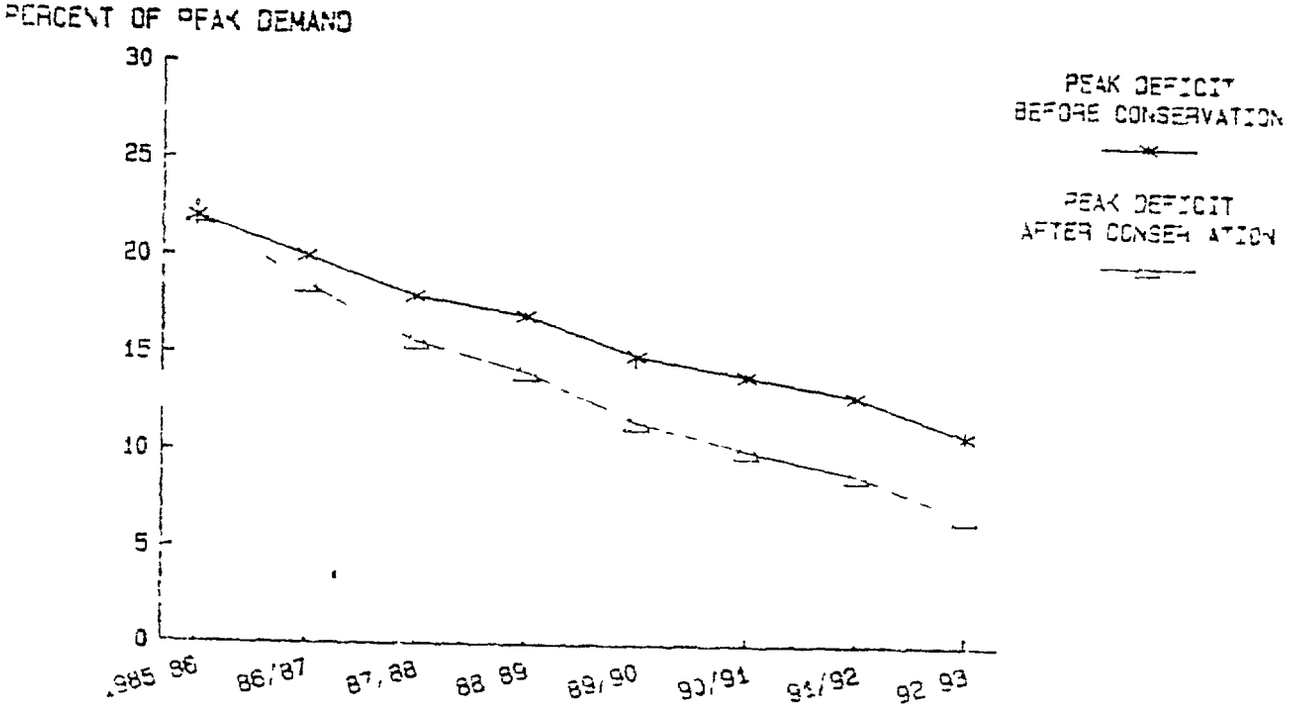


Sources Hagler, Bailly & Co , WAPDA

(VISUAL 17) ANOTHER POSITIVE ASPECT OF ENERGY CONSERVATION HAS TO DO WITH ELECTRIC POWER AND NATURAL GAS LOAD SHEDDING WE ALL KNOW THAT LOAD SHEDDING, AS DISCUSSED EARLIER IN MY PRESENTATION, WILL WORSEN IN THE COMING TWO TO THREE YEARS CAPTURING THE ACHIEVABLE CONSERVATION POTENTIAL OF ELECTRICITY IN INDUSTRY ALONE SHOULD MAKE IT POSSIBLE TO REDUCE LOAD SHEDDING BY 93 MW IN 1986/87 AND 149 MW THE FOLLOWING YEAR WHEN COMPARED WITH THE PROJECTED DEFICITS OF RESPECTIVELY 459 MW AND 995 MW THIS MEANS REDUCING LOAD SHEDDING BY 20 AND 15 PERCENT RESPECTIVELY

(VISUAL 18)

IMPACT OF INDUSTRIAL NATURAL GAS CONSERVATION ON NATURAL GAS LOAD SHEDDING



Sources Hagler, Bailly & Co , Sixth Plan

(VISUAL 18) THE SAME IS TRUE FOR NATURAL GAS LOAD SHEDDING BY 1986/87, INDUSTRIAL CONSERVATION OF GAS COULD REDUCE THE NATURAL GAS DEMAND DEFICIT PROJECTED FOR THAT YEAR BY MORE THAN 7 PERCENT, THE FOLLOWING YEAR THE REDUCTION COULD BE NEARLY 13 PERCENT

IT IS MOST IMPORTANT TO RECOGNIZE THAT ENERGY CONSERVATION WILL ALSO EASE THE TRANSITION TO HIGHER ENERGY PRICES BY STARTING TO PREPARE TO SAVE ENERGY NOW, ALL CONSUMERS LARGE AND SMALL WILL BE ABLE TO BETTER AFFORD, AND WILL RESIST LESS, THE COMING HIGHER ENERGY PRICES THEIR ENERGY BILLS WILL NOT RISE AS FAST AS THEY OTHERWISE WOULD IF ENERGY CONSERVATION MEASURES HAD NOT BEEN IMPLEMENTED ENERGY CONSERVATION THEN, ALSO MAKES PERSUASIVE POLITICAL SENSE

THERE IS ALSO AN IMPORTANT, NOT ALWAYS APPRECIATED SIDE BENEFIT OF ENERGY CONSERVATION WHICH SHOULD BE MENTIONED. THE SEARCH FOR ENERGY CONSERVATION OPPORTUNITIES IN PLANTS AND FACTORIES TYPICALLY LEADS TO OTHER COST SAVINGS AND PRODUCTIVITY IMPROVEMENTS IN AREAS SUCH AS PRODUCTION PLANNING AND SCHEDULING AND GENERAL MANAGEMENT THIS HAS HAPPENED WHEREVER SERIOUS ENERGY CONSERVATION PROGRAMS HAVE BEEN UNDERTAKEN THE PRODUCTIVITY BONUS CAN BE VERY LARGE OUR CONSULTANTS TELL US THAT, BASED ON THEIR EXPERIENCE AND PRELIMINARY INDICATIONS OF FINDINGS IN PAKISTAN, THIS ADDITIONAL IMPROVEMENT IS GENERALLY AT LEAST AS LARGE AS THE ENERGY PRODUCTIVITY IMPROVEMENT NOTE THAT THIS PRODUCTIVITY BONUS WILL NOT COST THE GOVERNMENT A SINGLE ADDITIONAL RUPEE ABOVE THE COST OF THE ENERGY CONSERVATION EFFORT IN FACT IT MAY GENERATE ADDITIONAL TAX PAYMENTS TO THE MINISTRY OF FINANCE

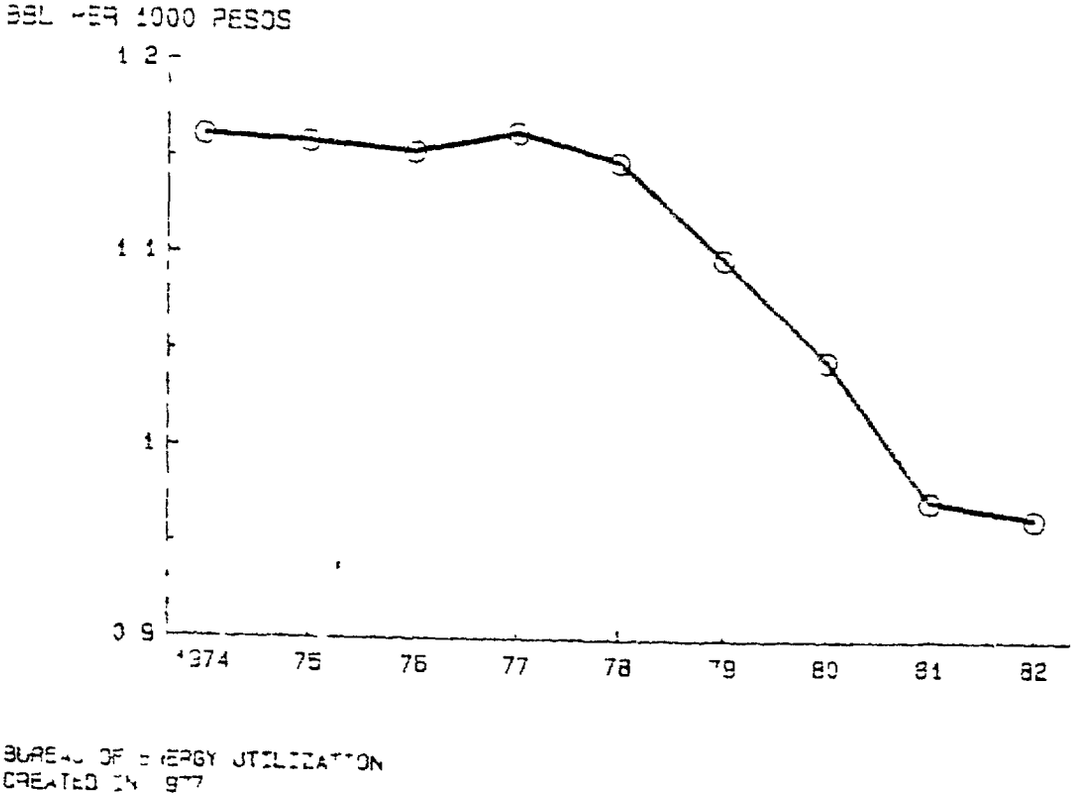
(VISUAL 19) HOW DO WE GET ENERGY CONSERVATION DONE ?

THE GOVERNMENT OF PAKISTAN HAS CLEARLY ALREADY DECIDED THAT ENERGY SAVING IS IMPORTANT BUT THAT DECISION TO BE SUCCESSFULLY IMPLEMENTED REQUIRES A TRULY SERIOUS COMMITMENT OF PERSONNEL AND FUNDS NOW BY TOP LEVEL GOP POLICY MAKERS AND PRIVATE SECTOR MANAGEMENT

IN CONSIDERING HOW TO GET ENERGY CONSERVATION DONE, WHAT CAN WE LEARN FROM OTHER COUNTRIES? FOR EXAMPLE,THE PHILIPPINES AND SRI LANKA HAVE MADE ENERGY CONSERVATION A CENTRAL THEME OF THEIR NATIONAL ENERGY STRATEGIES

(VISUAL 20)

RESULTS OF ENERGY CONSERVATION IN THE PHILIPPINES ENERGY/GNP RATIO



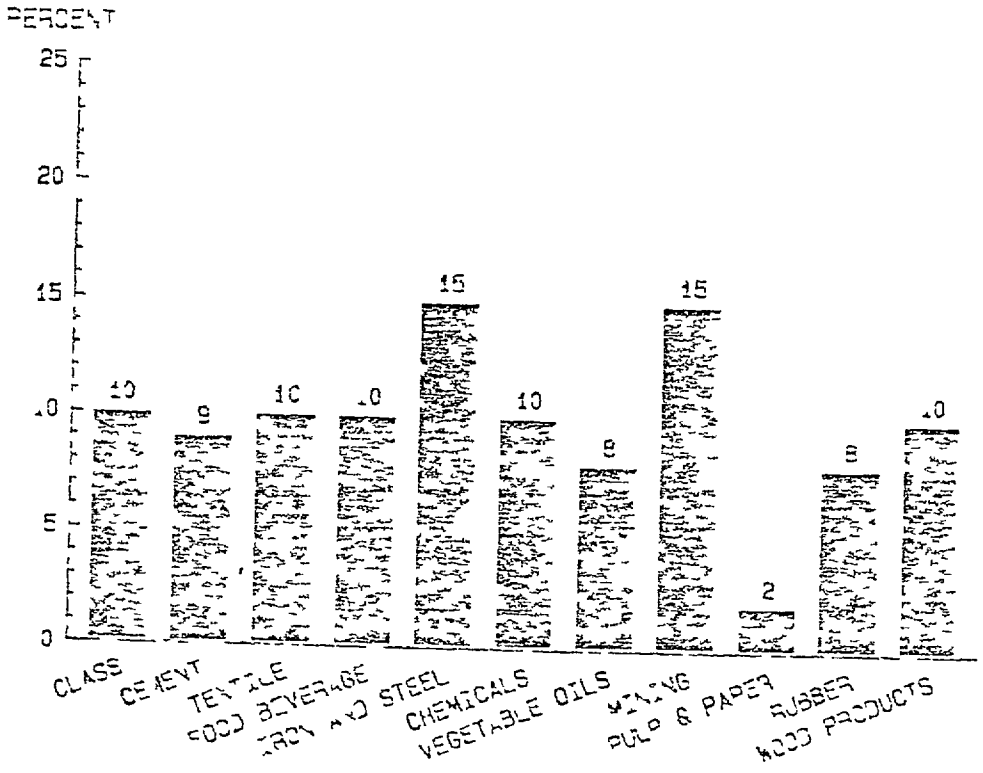
Source Philippine BEU

(VISUAL 20) IN THE PHILIPPINES, THE BUREAU OF ENERGY UTILIZATION (BEU) WAS CREATED IN 1977 AND AN OMNIBUS ENERGY CONSERVATION LAW WAS PASSED IN JUNE 1980, WHICH TOGETHER REMARKABLY ACCELERATED NATIONAL IMPROVEMENTS IN ENERGY EFFICIENCY AS YOU CAN SEE, THE REDUCTION IN THE PHILIPPINES OF ALMOST 20 PERCENT IN THE ENERGY/GNP RATIO IS CLEARLY ASSOCIATED WITH MAJOR ORGANIZATIONAL AND LEGISLATIVE ACTIONS IN THAT COUNTRY

(VISUAL 21) WHAT DID THE PHILIPPINES ACCOMPLISH? THIS CHART SHOWS ACTURAL SAVINGS ACHIEVED OVER A THREE YEAR PERIOD IN A NUMBER OF INDUSTRIAL SUBSECTORS

(VISUAL 21)

INDUSTRIAL ENERGY CONSERVATION ACHIEVEMENTS
IN THE PHILIPPINES
PERCENT SAVINGS BY INDUSTRY (1982)



Source Philippine BEU

LET'S MAKE IT CLEAR THAT PAKISTAN HAS NOT BEEN IDLE ALREADY A NUMBER OF MINISTRIES AND SOME PUBLIC SECTOR CONSULTANCY ORGANIZATIONS AND PRIVATE EQUIPMENT SUPPLYING COMPANIES HAVE STARTED TO DEAL WITH ENERGY CONSERVATION USAID AND OTHER DONORS SUCH AS THE WORLD BANK AND UNIDO ARE ALREADY FUNDING SOME OF THESE PROGRAMS AND ARE PLANNING OTHERS STILL OTHER DONORS ARE DEMONSTRATING ACTIVE INTEREST (ASIAN DEVELOPMENT BANK, CIDA, GERMANS, FRENCH, ITALIANS, AND DUTCH FOR EXAMPLE)

HERE ARE SOME EXAMPLES OF THESE EFFORTS (VISUAL 22)

(VISUAL 22)

PAKISTAN'S ONGOING EFFORTS

- MINISTRY OF PRODUCTION
- WAPDA
- MINISTRY OF PETROLEUM AND NATURAL RESOURCES
- MINISTRY OF INDUSTRY
- MINISTRY OF PLANNING AND DEVELOPMENT

THE MINISTRY OF PRODUCTION THROUGH ITS ENERGY ENGINEERING AND TECHNICAL CONSULTANCY ORGANIZATION ENAR/PETROTECH HAS COMPLETED A NUMBER OF STUDIES INCLUDING A SURVEY OF ENERGY USE WHICH SHOWS POTENTIAL ENERGY SAVINGS RANGING FROM 20 TO 40 PERCENT OF ENERGY CONSUMED IN THE MINISTRY'S 60-70 FACILITIES, WHICH TOGETHER ACCOUNT FOR APPROXIMATELY ONE HALF OF PAKISTAN'S INDUSTRIAL ENERGY CONSUMPTION THE STATE CEMENT CORPORATION IS INITIATING MATERIALS AND ENERGY SAVINGS STUDIES IN 6 OF ITS PLANTS ALSO, THE BIGGEST INTEGRATED REFINERY IN PAKISTAN, NATIONAL REFINERY LIMITED, IS IMPLEMENTING A 3-YEAR PROGRAM BASED ON STUDIES FUNDED BY THE WORLD BANK TO SAVE UP TO 38 PERCENT OF ITS ENERGY USE, WITH ASSISTANCE, HOPEFULLY, FOR SOME EQUIPMENT FINANCING UNDER THE USAID ENERGY COMMODITY AND EQUIPMENT PROGRAM AND POSSIBLY FROM THE WORLD BANK

WAPDA, WITH USAID ASSISTANCE, IS CURRENTLY DEVELOPING A COMPREHENSIVE PROGRAM TO REDUCE ENERGY LOSSES IN ITS POWER DISTRIBUTION SYSTEM AND TO ENCOURAGE ITS CUSTOMERS TO USE ELECTRICITY MORE EFFICIENTLY TO DATE USAID HAS EARMARKED 27 MILLION DOLLARS FOR THIS EFFORT WAPDA IS ALSO DESIGNING A COMPREHENSIVE ENERGY CONSERVATION PROGRAM FOR ITS THERMAL POWER GENERATION PLANTS WITH WORLD BANK AND USAID ASSISTANCE INITIAL PARTIAL FUNDING FOR THIS EFFORT IS ALREADY AVAILABLE FROM THE USAID'S ENERGY PLANNING AND DEVELOPMENT PROJECT AND USAID'S ENERGY COMMODITY AND EQUIPMENT PROGRAM

THE MINISTRY OF PETROLEUM AND NATURAL RESOURCES IS CARRYING OUT A SERIES OF INITIAL ENERGY AUDITS FINANCED BY UNIDO IT IS OUR CONSULTANTS' UNDERSTANDING THAT PRELIMINARY RESULTS BASED ON EIGHT PLANT AUDITS IN THE TEXTILE AND METALS INDUSTRIES SHOW POTENTIAL AVERAGE ENERGY SAVINGS IN THESE PLANTS OF 35 PERCENT OF ENERGY CONSUMED WE UNDERSTAND THE MINISTRY OF INDUSTRY WILL CARRY OUT A SURVEY OF ENERGY USE IN THE PRIVATE INDUSTRY SECTOR WITH WORLD BANK ASSISTANCE

YOU ARE ALSO AWARE THAT THE MINISTRY OF PLANNING AND DEVELOPMENT, OTHER GOP ENTITIES, AND USAID ARE COOPERATING ON THE ENERGY PLANNING AND DEVELOPMENT PROJECT, IN WHICH 3 75 MILLION DOLLARS HAVE ALREADY BEEN EARMARKED FOR ENERGY CONSERVATION INCLUDING AUDITS, BANKABLE PROPOSAL PREPARATION, TRAINING, AND OTHER TECHNICAL ASSISTANCE THIS AMOUNT COULD BE INCREASED

FINALLY, AS INDICATED EARLIER, THE FIRST 22 MILLION OF THE USAID $100 MILLION ENERGY COMMODITY AND EQUIPMENT PROGRAM ARE NOW BEING MADE AVAILABLE TO THE PRIVATE SECTOR AND TO THE GOP A SECOND TRANCHE OF SOME $48 MILLION IS PLANNED FOR FISCAL YEAR 1985 ENERGY CONSERVATION IS ONE OF THE MAJOR ACTIVITIES TO BE SUPPORTED UNDER THIS PROGRAM, ALONG WITH INDIGENOUS ENERGY PRODUCTION

IF ALL OF THESE ACTIVITES HAVE BEEN INITIATED ALREADY, ONE MAY ASK WHY A NATIONAL ENERGY CONSERVATION PROGRAM IS NEEDED AT ALL OR WHY ENERGY CONSERVATION ISN'T WIDESPREAD THROUGHOUT PAKISTAN? LET ME JUST CITE SOME OF THE REASONS WHICH ARE GENERALLY BROUGHT FORWARD WHEN PLANT MANAGERS AND ENGINEERS ARE ASKED WHY THEY DON'T INVEST IN ENERGY CONSERVATION LACK OF CAPITAL, LACK OF KNOWLEDGE OF ENERGY CONSERVATION EQUIPMENT AND TECHNIQUES, LACK OF GOVERNMENT INCENTIVES FOR ENERGY CONSERVATION, LACK OF TRAINED STAFF ONE OF THE OBJECTIVES OF A CONCERTED NATIONAL PROGRAM IS TO REMOVE OR MINIMIZE THESE BARRIERS

(VISUAL 23)

ACCELERATION OF ENERGY CONSERVATION REQUIRES

- A NATIONAL COOPERATIVE EFFORT
- CENTRAL COORDINATION
- DECENTRALIZED IMPLEMENTATION

(VISUAL 23) IT IS CLEAR FROM THIS BRIEF OVERVIEW THAT THE ENERGY CONSERVATION PROCESS HAS STARTED IN PAKISTAN BUT THIS EFFORT SHOULD BE GREATLY ACCELERATED BY REPLACING THE CURRENT APPROACH WITH A MORE SYSTEMATIC AND PLANNED NATIONAL COOPERATIVE EFFORT, CENTRALLY COORDINATED BUT DECENTRALLY IMPLEMENTED THIS APPROACH WILL ENSURE THAT THE EFFORTS ALREADY UNDERTAKEN DO NOT WITHER AWAY AND THAT THE LESSONS LEARNED CAN BE TRANSFERRED TO OTHER SECTORS OF THE ECONOMY

(VISUAL 24)

A NATIONAL ENERGY CONSERVATION CENTER IS NEEDED

ENERCON

WITH

PRESIDENTIAL MANDATE

PRESIDENTIALLY APPOINTED LEADERSHIP

TOP LEVEL MOBILIZATION COUNCIL

(VISUAL 24) OUR OPINION IS THAT A NATIONAL ENERGY CONSERVATION CENTER WHICH MIGHT BE CALLED ENERCON - IS THE BEST WAY TO MARSHALL THE NATIONAL COOPERATIVE EFFORT WE STRONGLY SUGGEST THAT IT MUST HAVE A PRESIDENTIAL MANDATE, PRESIDENTIALLY APPOINTED LEADERSHIP, AND A TOP LEVEL ENERGY CONSERVATION MOBILIZATION COUNCIL TO ADVISE THE PRESIDENTIAL APPOINTEE ENERCON WOULD SERVE AS THE SECRETARIAT TO THE APPOINTEE AND THE COUNCIL, AND HAVE A CORE STAFF OF ENGINEERING, BUSINESS, ECONOMIC, PLANNING AND COMMUNICATION PROFESSIONALS

(VISUAL 25)

ENERGY CONSERVATION MOBILIZATION COUNCIL

HIGH LEVEL PUBLIC AND PRIVATE SECTOR REPRESENTATION FROM

- MAJOR ENERGY PRODUCING AND CONSUMING MINISTRIES
- FEDERATION OF CHAMBERS OF COMMERCE AND INDUSTRY
- MAJOR TRADE ASSOCIATIONS

(VISUAL 25) THE ENERGY CONSERVATION MOBILIZATION COUNCIL SHOULD CONSIST OF HIGH LEVEL REPRESENTATIVES OF EACH MINISTRY WHOSE SECTOR IS A MAJOR ENERGY PRODUCER OR CONSUMER THE PRIVATE SECTOR SHOULD BE REPRESENTED BY SENIOR LEVEL REPRESENTATIVES, FOR EXAMPLE, OF THE FEDERATION OF CHAMBERS OF COMMERCE AND INDUSTRY AND MAJOR TRADE ASSOCIATIONS EACH OF THE ORGANIZATIONS REPRESENTED ON THE COUNCIL SHOULD CREATE (IF THEY HAVEN'T ALREADY DONE IT) AN ENERGY CONSERVATION TEAM REPORTING TO THE ENERGY CONSERVATION OFFICER WHO WILL SERVE ON THE COUNCIL

AS A COORDINATING BODY, ENERCON WILL STIMULATE, CHANNEL, STRENGTHEN AND INTEGRATE THE CAPABILITIES WHICH ALREADY EXIST IN NATIONAL MINISTRIES (SUCH AS THE MINISTRIES OF PRODUCTION, PETROLEUM, WATER & POWER, INDUSTRIES, SCIENCE AND TECHNOLOGY JUST TO CITE A FEW), IN PROVINCIAL PUBLIC SECTOR INSTITUTIONS, AND IN THE PRIVATE SECTOR (E G FEDERATION OF CHAMBERS OF COMMERCE AND INDUSTRIES, LOCAL CHAMBERS, TRADE ASSOCIATION, ENGINEERING FIRMS, ENGINEERING AND MANAGEMENT SCHOOLS, BANKS) LET ME REEMPHASIZE THAT

IMPLEMENTATION ACTIVITIES PER SE, I E., IMPLEMENTATION OF SPECIFIC ENERGY CONSERVATION MEASURES AND INVESTMENTS, SHOULD REST WITH THESE NATIONAL AND PROVINCIAL GOVERNMENT BODIES AND THE PRIVATE SECTOR AND NOT WITH ENERCON -- ALTHOUGH ENERCON, IN CONCERT WITH THE MINISTRIES OF FINANCE AND PLANNING CAN PROVIDE INVESTMENT GUIDELINES (VISUAL 26)

(VISUAL 26)

THE NATIONAL ENERGY CONSERVATION PROGRAM MUST BE DECENTRALIZED TO BUILD UPON THE STRENGTHS OF EXISTING PUBLIC AND PRIVATE SECTOR ORGANIZATIONS

FOR THE NATIONAL PROGRAM TO BE SUCCESSFUL, THE TECHNICAL, ECONOMIC, REGULATORY AND INSTITUTIONAL BARRIERS WHICH HAMPER ENERGY CONSERVATION MUST BE DEALT WITH AND OVERCOME WHEREVER POSSIBLE THIS WILL NOT ALWAYS BE PLEASANT FOR ALL PARTIES CONCERNED IN SOME CASES, NEW LEGISLATION WILL BE REQUIRED, IN OTHER CASES, EXISTING REGULATIONS WILL HAVE TO BE CHANGED OR RESCINDED BUDGETS NEED TO BE PREPARED, FUNDS ALLOCATED, DECISIONS NEED TO BE MADE ON ORGANIZATIONAL AND PERSONNEL ISSUES ALL THIS CALLS FOR A NATIONAL ENERGY CONSERVATION CENTER WITH A PRESIDENTIALLY APPOINTED DIRECTOR CAPABLE OF MARSHALLING THE EFFORTS REQUIRED TO ACHIEVE THE NATION'S ENERGY CONSERVATION GOALS

IN ORDER FOR ENERCON TO BE ABLE TO GET ON WITH THE TASK, THE GOP WILL HAVE TO MAKE SOME FINANCIAL AND PERSONNEL RESOURCES AVAILABLE TO IT WE BELIEVE THAT THE BUDGET REQUIREMENTS WILL BE QUITE MODEST A SUBSTANTIAL PORTION OF THE FOREIGN EXCHANGE REQUIREMENTS FOR SUCH A "COMMAND STRUCTURE" ARE ALREADY CONTEMPLATED IN THE USAID SUPPORTED ENERGY PLANNING AND DEVELOPMENT PROJECT WHICH WAS APPROVED BY ECNEC ON OCTOBER 24TH, 1984

THE ISSUE AS TO WHERE THE NATIONAL ENERGY CONSERVATION CENTER SHOULD BE LOCATED (I E IN WHICH MINISTRY, IF ANY) IS IMPORTANT THE CENTER MUST HAVE AUTONOMY, AUTHORITY, AND NATIONAL VISIBILITY OUR VIEW, AND I UNDERSTAND THAT OF THE WORLD BANK ALSO, IS THAT THE CENTER SHOULD NOT BE LOCATED IN AN ENERGY PRODUCING OR ENERGY CONSUMING MINISTRY THE CENTER SHOULD BE AUTONOMOUS AND PROTECTED FROM THE SPECIAL INTERESTS AND LESS-THAN-NATIONAL PERSPECTIVE WHICH SINGLE PURPOSE ORGANIZATIONS OFTEN POSSESS

ANOTHER POINT TO KEEP IN MIND IS THAT EXPERIENCE HAS SHOWN IN OTHER COUNTRIES THAT IT IS ONLY WHEN ENERGY CONSERVATION RECEIVES THE PERSONAL ATTENTION OF A VERY HIGH LEVEL OFFICIAL OF THE GOVERNMENT, IN MOST CASES THE PRESIDENT HIMSELF, THAT IT FULFILLS ITS POTENTIAL WHAT PAKISTAN NEEDS TO DO IS DECLARE WAR ON ENERGY WASTE -- THAT WAR NEEDS A STRONG AND EFFECTIVE COMMANDER, WHO IS NOT OBLIGED BECAUSE OF HIS LOCATION, TO PURSUE A PARTICULAR APPROACH

(VISUAL 27)

RESPONSIBILITIES OF ENERCON

- DEFINE AND INITIATE ACTIVITIES ASSOCIATED WITH THE NATIONAL PROGRAM
- COORDINATE AND FACILITATE PUBLIC AND PRIVATE SECTOR ACTIVITIES IN ENERGY CONSERVATION
- MOBILIZE PUBLIC AND PRIVATE FINANCE FROM WITHIN PAKISTAN AND FROM EXTERNAL DONORS
- RECOMMEND AND PROMOTE LEGISLATION AND OTHER POLICY REFORMS
- MONITOR THE PROGRESS OF THE ENERGY CONSERVATION PROGRAM

(VISUAL 27) THE RESPONSIBILITIES OF THIS "COMMAND STRUCTURE", THE NATIONAL ENERGY CONSERVATION CENTER, WILL BE TO

- DEFINE AND INITIATE THE ACTIVITIES ASSOCIATED WITH THE NATIONAL PROGRAM THIS RESPONSIBILITY INCLUDES WORKING WITH ALL THOSE INSTITUTIONS (MINISTRIES, PUBLIC OR PRIVATE SECTOR SERVICE ORGANIZATIONS) WHICH WILL BE RESPONSIBLE FOR EXECUTING SPECIFIC PROGRAM ACTIVITIES IN CERTAIN CASES THIS MIGHT MEAN PROVIDING GUIDELINES OR DETAILED WORK PROGRAMS TO THE IMPLEMENTING INSTITUTIONS

- COORDINATE AND FACILITATE GOVERNMENT AND PRIVATE-SECTOR ACTIVITIES IN ENERGY CONSERVATION. THE CENTER WILL THUS BECOME THE CLEARINGHOUSE FOR ALL ENERGY CONSERVATION ACTIVITIES IN THE COUNTRY, AS WELL AS THE OFFICIAL VOICE FOR ENERGY CONSERVATION

OF MAJOR IMPORTANCE, IT WILL HELP TO MOBILIZE PUBLIC AND PRIVATE FINANCE BOTH WITHIN PAKISTAN AND FROM EXTERNAL DONORS.

- RECOMMEND AND PROMOTE LEGISLATIVE AND OTHER POLICY REFORMS AND INITIATIVES THE CENTER WILL BE RESPONSIBLE FOR PROPOSING SOLUTIONS TO OVERCOMING BARRIERS TO ENERGY CONSERVATION THIS MIGHT MEAN, FOR EXAMPLE, DRAFTING AND PROMOTING A NEW LAW AND SPECIAL FINANCIAL INCENTIVES FOR ENERGY CONSERVATION INVESTMENTS

- MONITOR THE PROGRESS OF THE ENERGY CONSERVATION EFFORTS BECAUSE THE CENTER IS NOT AN IMPLEMENTING ENTITY, IT WILL BE IN AN OBJECTIVE POSITION TO EVALUATE THE PROGRAM'S SUCCESS OR LACK OF IT WHENEVER NECESSARY, THE CENTER WILL RECOMMEND ADJUSTMENTS OR MODIFICATIONS TO THE RELEVANT IMPLEMENTING INSTITUTIONS

IMPLEMENTATION OF THE PROGRAM ITSELF MUST BE DECENTRALIZED TO THE FULLEST EXTENT POSSIBLE TO BUILD UPON EXISTING PUBLIC AND PRIVATE SECTOR ORGANIZATIONS STRENGTHS IMPLEMENTING ORGANIZATIONS MUST BE HELD ACCOUNTABLE FOR THEIR ENERGY CONSERVATION PERFORMANCE A GUIDING PRINCIPLE OF ENERCON SHOULD BE TO LEND SUPPORT TO ACTIVITIES ALREADY UNDER WAY AND TO CATALYZE NEW ACTIVITIES

(VISUAL 28)

COMPONENTS OF A NATIONAL ENERGY CONSERVATION PROGRAM

- PLANNING
- DATA BASE DEVELOPMENT
- TECHNICAL SUPPORT
- TRAINING
- OUTREACH
- IMPLEMENTATION AND MONITORING

(VISUAL 28) FROM THE EXPERIENCE OF OTHER COUNTRIES AND AN ASSESSMENT OF THE PAKISTAN SITUATION, EMERGES THE FRAMEWORK OF A NATIONAL ENERGY CONSERVATION PROGRAM FOR PAKISTAN, UNDER THE COORDINATION OF ENERCON. SUCH A PROPOSED PROGRAM HAS BEEN PREPARED, IN DETAIL, BY OUR CONSULTANTS.

SUCH A PROGRAM WILL HAVE TO ADDRESS SIX MAJOR AREAS PLANNING, DATA BASE DEVELOPMENT, TECHNICAL SUPPORT, TRAINING, OUTREACH, AND, IMPLEMENTATION AND MONITORING LET ME GIVE YOU SOME SPECIFIC EXAMPLES OF THE TYPE OF ACTIVITIES IN THESE AREAS WHICH WILL HAVE TO BE CARRIED OUT UNDER THE NATIONAL ENERGY CONSERVATION PROGRAM NOTE THAT SOME ACTIVITIES ALONG THESE LINES HAVE ALREADY BEEN STARTED INDEPENDENTLY BY SEVERAL MINISTRIES

(VISUAL 29)

PLANNING ACTIVITIES

- DEFINE SECTORAL AND SUBSECTORAL TARGETS AND GOALS
- INTEGRATE PROCESS OF ENERGY CONSERVATION INTO NATIONAL PLANNING
- CONDUCT SPECIAL POLICY STUDIES

(VISUAL 29) PLANNING ACTIVITIES INCLUDE DEFINING SECTORAL AND SUB-SECTORAL QUANTITATIVE TARGETS AND GOALS FOR ENERGY CONSERVATION, INTEGRATING ENERGY CONSERVATION INTO THE NATIONAL ENERGY PLANNING PROCESS, CONDUCTING SPECIAL STUDIES TO ANALYZE CURRENT POLICIES AT ALL LEVELS (NATIONAL, REGIONAL AND PRIVATE) THAT AFFECT ENERGY CONSERVATION --- E G PRICING, IMPORT DUTIES, LENDING POLICIES, AND INCENTIVES TO THE PRIVATE SECTOR

(VISUAL 30)

DATA BASE ACTIVITIES

- COLLECT, VALIDATE, AND INTEGRATE ENERGY USE AND TECHNOLOGY PERFORMANCE DATA
- CONDUCT SYSTEMATIC ENERGY AUDITS AND SURVEYS

(VISUAL 30) DATA BASE ACTIVITIES CONSIST OF THE COLLECTION, VALIDATION, INTEGRATION AND REGULAR UPDATING OF ENERGY USE AND TECHNOLOGY PERFORMANCE DATA AT THE PLANT LEVEL, ENERGY USE DATA MUST BE COLLECTED THROUGH SYSTEMATIC ENERGY AUDITS OF COURSE, THIS MUST BE DONE WITHOUT VIOLATING CONFIDENTIALITY OF INFORMATION THE ISSUE OF CONFIDENTIALITY OF INFORMATION HAS PROVEN TO BE PARTICULARLY OF CONCERN TO PRIVATE SECTOR COMPANIES PARTICIPATING IN ENERGY SURVEYS AND AUDITS SECTORAL AND NATIONAL ENERGY USE DATA BASES MUST ALSO BE DEVELOPED FOR EFFECTIVE PLANNING AND FOR MONITORING THE LEVEL OF ENERGY SAVINGS

THE MINISTRY OF PRODUCTION, BASED ON ITS RECENT ENERGY USE SURVEY, SHOULD PROCEED IMMEDIATELY WITH THE HIGHEST PRIORITY AUDITS AND BANKABLE PROPOSAL PREPARATION THE WORLD BANK TECHNICAL ASSISTANCE CREDIT AND ENERGY SECTOR LOAN SHOULD SUPPORT THESE, WITH SOME EQUIPMENT FUNDING UNDER USAID'S ENERGY COMMODITIES AND EQUIPMENT PROGRAM IT APPEARS APPROPRIATE FOR ENAR PETROTECH TO TAKE THE LEAD ON THE GOP SIDE FOR THESE THE MINISTRY OF INDUSTRY SHOULD PROCEED IMMEDIATELY WITH ITS ENERGY USE SURVEY USING FUNDS AVAILABLE UNDER THE WORLD BANK TECHNICAL ASSISTANCE CREDIT.

THE MINISTRY OF WATER & POWER AND WAPDA SHOULD PROCEED IMMEDIATELY WITH A STUDY OF THERMAL POWER PLANT EFFICIENCY FOR WAPDA AND KESC. WE HAVE RECEIVED FROM WAPDA A REQUEST TO ASSIST IT TO DESIGN SUCH A PROGRAM AND IT IS OUR INTENTION TO HONOR THIS REQUEST THE GOP SHOULD ALSO ARRANGE FINANCING WITH THE WORLD BANK AND OTHER INSTITUTIONS TO CARRY OUT THE RESULTING RECOMMENDATIONS

(VISUAL 31)

TECHNICAL SUPPORT ACTIVITIES

- SPONSOR FEASIBILITY STUDIES
- CONDUCT DEMONSTRATION PROGRAMS
- PROVIDE TECHNICAL AND FINANCIAL ASSISTANCE

(VISUAL 31) THE GOP WILL ALSO HAVE TO PROVIDE TECHNICAL AND, IN SOME CASES, FINANCIAL SUPPORT TO USERS AND EQUIPMENT SUPPLIERS ALIKE. FOR EXAMPLE, IT SHOULD SPONSOR FEASIBILITY STUDIES, DEMONSTRATION PROGRAMS AND PROVIDE TECHNICAL ASSISTANCE AN INFORMAL DONOR GROUP SHOULD BE ESTABLISHED TO EXPLORE WAYS AND MEANS TO WORK COOPERATIVELY AND COMPLEMENTARLY ON IMPLEMENTING THESE AND OTHER ACTIVITIES THE GOP SHOULD PROCEED IMMEDIATELY TO PREPARE BANKABLE PROPOSALS BASED ON THE AUDITS ALREADY CONDUCTED BY THE MINISTRY OF PRODUCTION AND THE MINISTRY OF PETROLEUM

(VISUAL 32)

TRAINING ACTIVITIES

- CONDUCT MANAGEMENT TRAINING
- CONDUCT TECHNICAL TRAINING
- CONDUCT VOCATIONAL TRAINING

(VISUAL 32) OBVIOUSLY TRAINING MUST BE A KEY COMPONENT OF THE NATIONAL PROGRAM AS THERE IS A GENERAL LACK OF UNDERSTANDING OF ENERGY CONSERVATION PRACTICES AT THE MANAGEMENT LEVEL AS WELL AS THE EQUIPMENT OPERATOR LEVEL

(VISUAL 33)

OUTREACH ACTIVITIES

- DISSEMINATE INFORMATION
- BUILD PUBLIC SUPPORT AND ENTHUSIASM FOR CONSERVATION
- ESTABLISH ENERGY MANAGERS' ASSOCIATION OF PAKISTAN

(VISUAL 33) THROUGH A NATIONAL OUTREACH EFFORT, THE PROGRAM MUST DISSEMINATE AS WIDELY AS POSSIBLE INFORMATION ABOUT HOW TO SAVE ENERGY THE PROGRAM MUST ALSO BUILD PUBLIC

SUPPORT AND ENTHUSIASM FOR ENERGY CONSERVATION BY ESTABLISHING CONSERVATION ACHIEVEMENT AWARDS, GIVEN FROM PRESIDENTIAL, MINISTERIAL AND TOP CORPORATE LEVELS, AND RECEIVING MORE ATTENTION IN THE MEDIA ENERCON SHOULD ALSO ESTABLISH AN ENERGY MANAGER'S ASSOCIATION, UNDER PRESIDENTIAL SPONSORSHIP, IN ORDER TO ACCELERATE THE FLOW OF TECHNICAL INFORMATION IN THE INDUSTRY, IN THE POWER GENERATION AND BUILDINGS SECTORS, AND TO BUILD A CADRE OF PROFESSIONAL MANAGERS, ENGINEERS, FINANCIERS AND EQUIPMENT SUPPLIERS, ALL MOTIVATED AND COMMITTED TO ENERGY EFFICIENCY THE GOP SHOULD BEGIN TO WORK WITH THE FEDERATION OF CHAMBERS OF COMMERCE AND INDUSTRY IMMEDIATELY TO SET UP A STANDING COMMITTEE ON ENERGY CONSERVATION, TO PROMOTE CONSERVATION THROUGH LOCAL CHAMBERS AND TRADE ASSOCIATIONS TO COMPLEMENT THE WAPDA/KESC PROGRAMS UNDER THE RURAL ELECTRIFICATION PROGRAM, THE GOP SHOULD WORK WITH PSO AND THE NATIONAL GAS DISTRIBUTION COMPANIES TO MINIMIZE DISTRIBUTION LOSSES AND TO DEVELOP CONSUMER EDUCATION PROGRAMS TO ELIMINATE WASTE SEVERAL DONORS, INCLUDING USAID, ARE READY TO FINANCE SOME OF THESE ACTIVITIES

(VISUAL 34)

IMPLEMENTATION AND MONITORING ACTIVITIES

(VISUAL 34) FINALLY IT COMES AS NO SURPRISE THAT ENERGY CONSERVATION MEASURES MUST BE IMPLEMENTED - WHETHER THEY ARE TECHNICAL OR NON-TECHNICAL MEASURES, AT THE NATIONAL LEVEL IN THE CASE, FOR EXAMPLE, OF NEW LEGISLATION OR AT THE PLANT LEVEL, FOR EXAMPLE, IN REPLACING AN OLD AND INEFFICIENT BOILER IMPLEMENTATION RESPONSIBILITY AND

ACCOUNTABILITY SHOULD REST WITH THOSE PUBLIC AND PRIVATE SECTOR ENTITIES WHICH ARE ALREADY DIRECTLY INVOLVED WITH THE PROBLEM AND WHICH, OFTEN, ARE ALSO THE MOST LIKELY BENEFICIARIES A SUBSTANTIAL PORTION OF USAID'S ENERGY COMMODITY AND EQUIPMENT IMPORT PROGRAM SHOULD GO FOR IMPLEMENTATION OF ENERGY CONSERVATION PROJECTS IN THE PRIVATE AND PUBLIC SECTORS

LET US NOW TURN TO OTHER PRESSING QUESTIONS

WHAT WILL PAKISTAN REALISTICALLY BE ABLE TO ACHIEVE? WHAT WILL IT COST? (VISUAL 35)

THE PAY OFF FOR PAKISTAN OF A COORDINATED AND COMPREHENSIVE NATIONAL ENERGY CONSERVATION EFFORT CAN BE ENORMOUS LET ME BRIEFLY OUTLINE WHAT A REALISTIC AND ACHIEVABLE EFFORT MIGHT LOOK LIKE

(VISUAL 36)

THE INDUSTRY AND POWER SECTORS SHOULD BE GIVEN THE HIGHEST PRIORITY, FOR QUICKEST ACHIEVEMENT OF SAVINGS

- HIGH CONCENTRATION OF USE IN A SMALL NUMBER OF FACILITIES
- LARGE PROPORTION OF SECTORS ARE PUBLICLY OWNED - GOP CAN TAKE THE LEAD

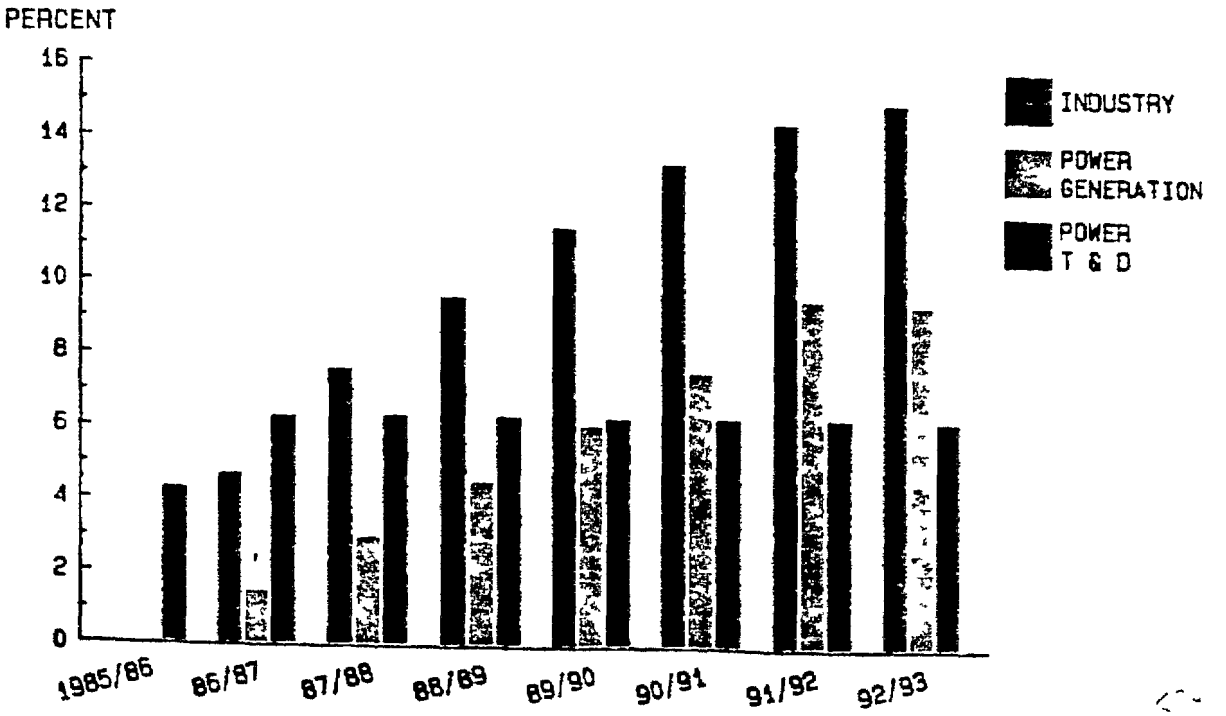
(VISUAL 36) FIRST, WE RECOMMEND THAT THE INDUSTRY AND POWER SECTORS BE GIVEN FIRST PRIORITY THERE ARE GOOD REASONS FOR THIS LESS THAN 100 EASILY IDENTIFIABLE INDUSTRIAL FACILITIES AND THERMAL POWER PLANTS ACCOUNT FOR OVER 70 PERCENT OF COMMERCIAL ENERGY CONSUMPTION IN THESE TWO SECTORS AND CLOSE TO 40 PERCENT OF THE COUNTRY'S

FURTHERMORE, MOST OF THESE PLANTS ARE IN THE PUBLIC SECTOR, ALLOWING THE GOP TO SET AN EXAMPLE AND TO DEMONSTRATE QUICKLY THE BENEFITS OF ENERGY CONSERVATION WITHIN THESE TWO SECTORS, THE HIGHEST PRIORITY TARGETS SHOULD BE THE LARGEST CONSUMERS OF GAS, ELECTRICITY AND REFINED PETROLEUM PRODUCTS.

ENERGY CONSERVATION IN OTHER SECTORS, PARTICULARLY TRANSPORTATION AND RESIDENTIAL/ COMMERCIAL SECTORS, IS ALSO QUITE IMPORTANT BUT THESE SECTORS ARE EXTREMELY DISPERSED AND HAVE LONGER LEAD TIMES FOR SAVINGS. THIS IS NOT TO SAY THAT NOTHING SHOULD BE DONE IN THESE SECTORS THE POTENTIAL SAVINGS CAN BE QUITE LARGE FOR EXAMPLE OUR CONSULTANTS' PRELIMINARY CALCULATIONS INDICATE THAT 13 PERCENT OF ANNUAL ENERGY CONSUMPTION IN THE TRANSPORTATION SECTOR COULD BE EASILY SAVED WITH VERY MODEST INVESTMENT THIS PERCENTAGE CORRESPONDS TO NEARLY 2 MILLION BARRELS OF OIL PER YEAR BY 1993

(VISUAL 37)

ACHIEVABLE SAVINGS TARGETS AS PERCENT OF BASE YEAR CONSUMPTION



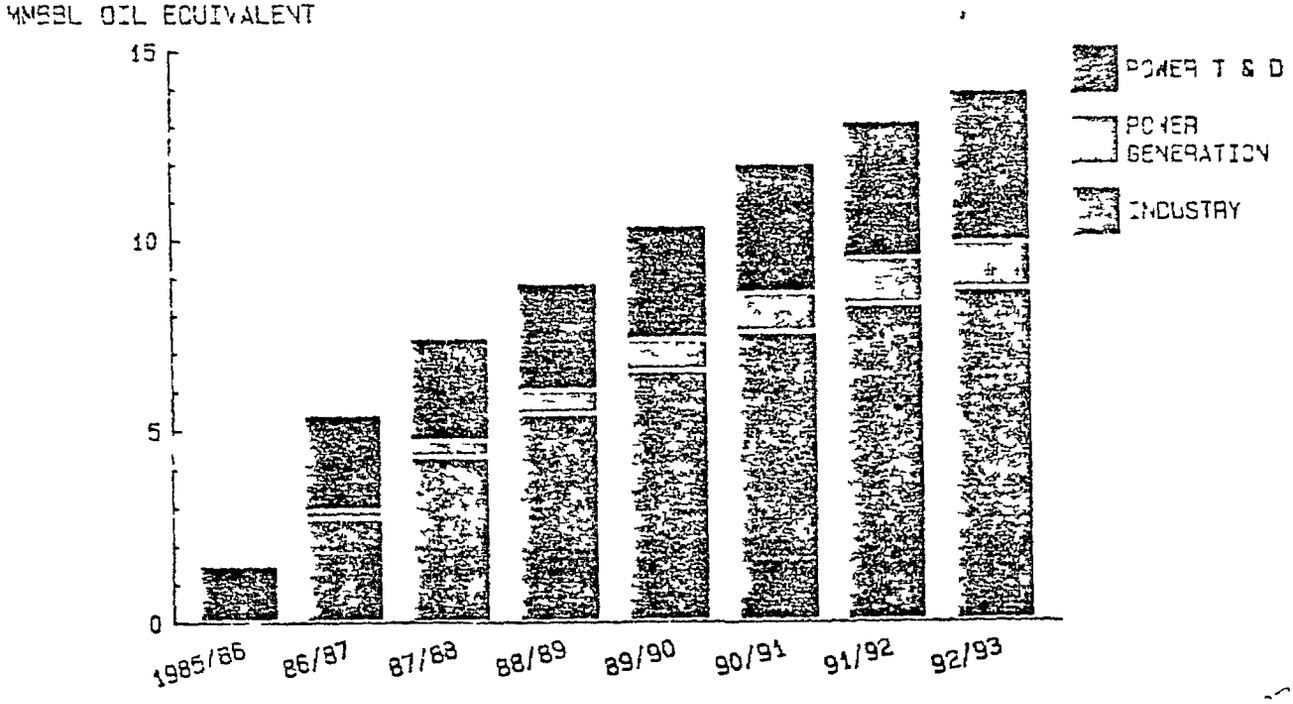
Source. Hagler, Bailly & Co.

(VISUAL 37) SECOND, REALISTIC AND ACHIEVABLE ANNUAL ENERGY SAVINGS TARGETS MUST BE SET BASED ON OUR CONSULTANTS' ANALYSIS, WE ARE CONFIDENT THAT TARGET SAVINGS OF ALMOST 8 PERCENT FOR THE INDUSTRY SECTOR, 3 PERCENT FOR POWER GENERATION AND OVER 6 PERCENT FOR POWER TRANSMISSION AND DISTRIBUTION ARE ACHIEVABLE BY 1987/88 FOR 1992/93 EVEN HIGHER PERCENTAGES SAVINGS ARE ACHIEVABLE FOR INDUSTRY AND POWER GENERATION -- RESPECTIVELY 15 AND 10 PEPCENT

THESE TARGETS ARE NOT BASED ON RECOVERING EVERY LAST UNIT OF WASTED ENERGY THEY WERE DEVELOPED TAKING INTO ACCOUNT THE NEED TO MAKE INVESTMENTS WITH GOOD RETURN, AND THE TIME NEEDED TO MAKE CHANGES IN THE CURRENT OPERATING ENVIRONMENT

(VISUAL 38)

LEVEL OF SAVINGS ACHIEVED EACH YEAR
IN MILLIONS OF BARRELS OF OIL EQUIVALENT

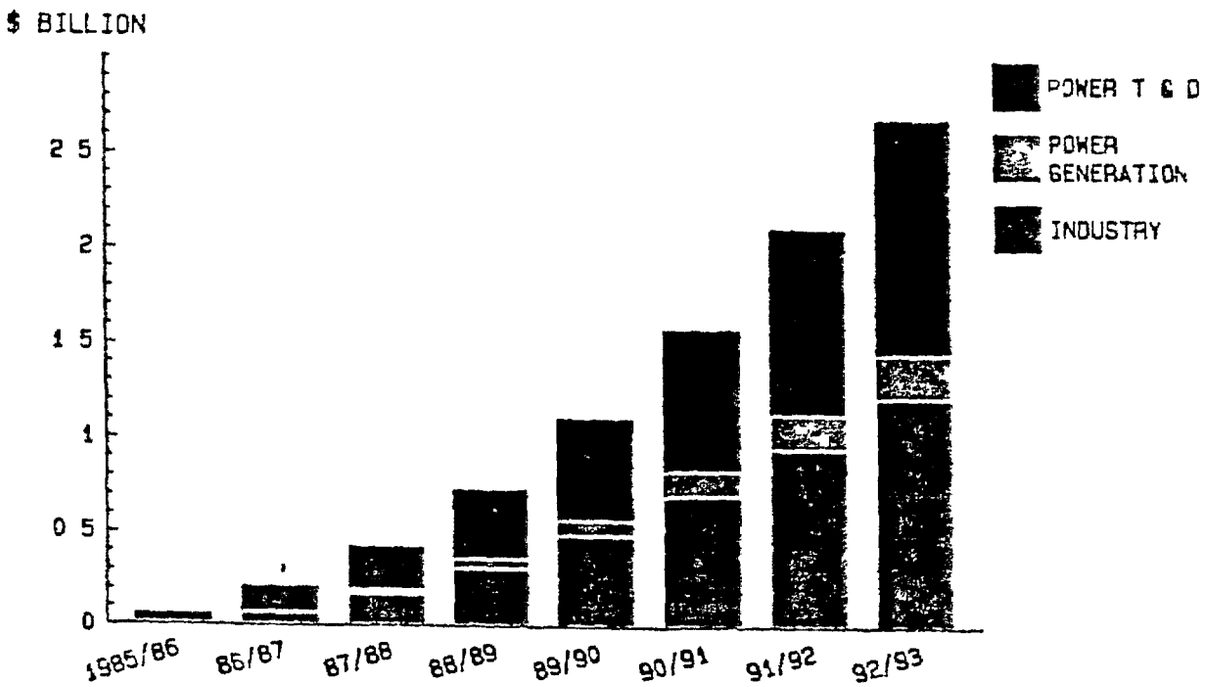


Source Hagler, Bailly & Co

(VISUAL 38) IF THESE TARGETS ARE ACHIEVED, THE ANNUAL SAVINGS WILL AMOUNT TO MORE THAN 7 MILLION BARRELS OF OIL EQUIVALENT (APPROXIMATELY ONE MILLION TOE) BY 1987/88 AND NEARLY 14 MILLION BARRELS OF OIL EQUIVALENT (ABOUT 2 MILLION TOE) BY 1992/93. THIS IS LARGER THAN THE COUNTRY'S PRESENT PRODUCTION OF OIL (VISUAL 39) ACHIEVING THESE TARGETS REPRESENTS $ 430 MILLION IN CUMULATIVE ENERGY SAVINGS BY 1987/88 AND CLOSE TO $ 2 7 BILLION BY 1992/93

(VISUAL 39)

CUMULATIVE ENERGY COST SAVINGS
IN BILLIONS OF DOLLARS



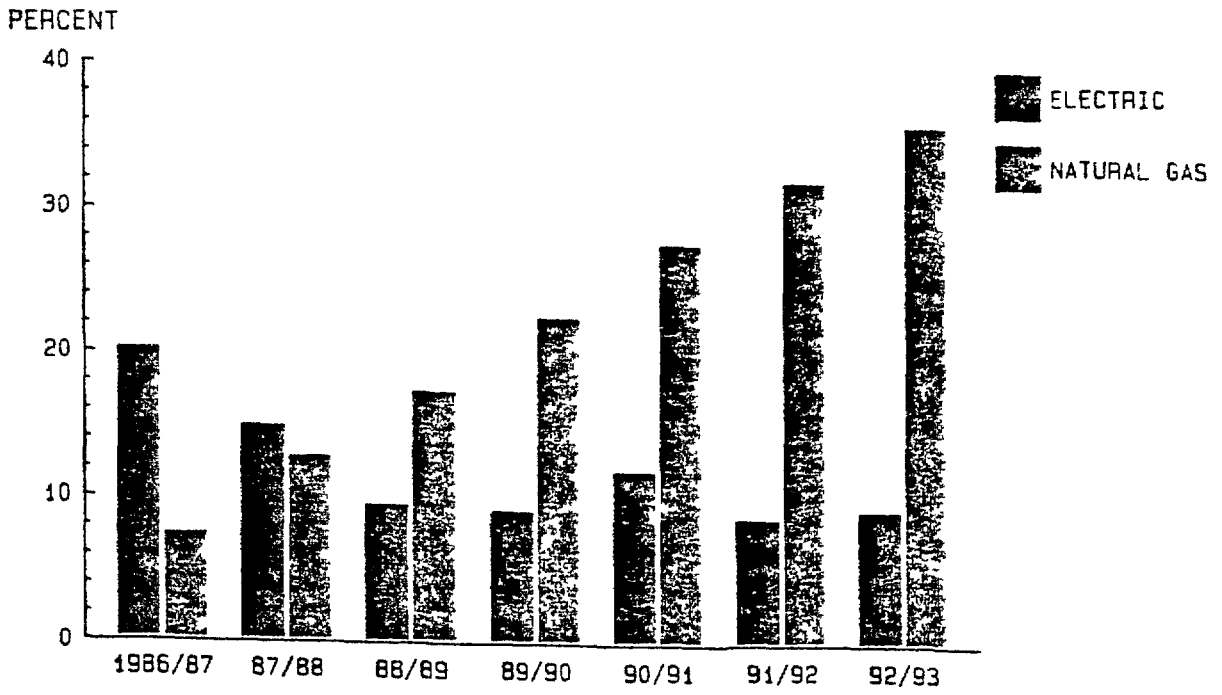
Source Hagler, Bailly & Co

(VISUAL 40) AS SHOWN ON THIS EXHIBIT, IT SHOULD ALSO REDUCE ELECTRICITY AND NATURAL GAS LOAD SHEDDING IN THE SHORT-TERM ELECTRICITY LOAD SHEDDING COULD BE REDUCED BY MORE THAN 20 PERCENT IN 1986/87 AND 15 PERCENT IN 1987/88 UNFORTUNATELY AS THE ELECTRICITY

DEFICIT IS PROJECTED TO INCREASE TO MORE THAN 3000 MW BY THE END OF THE SEVENTH PLAN, ELECTRICITY CONSERVATION WILL, ON A PERCENTAGE BASIS, DECREASE TO APPROXIMATELY 9 PERCENT OF THE 1992/93 PROJECTED DEFICIT. SIMILARLY THE CONSERVATION OF NATURAL GAS WILL ALSO REDUCE THE NATURAL GAS LOAD SHEDDING BY MORE THAN 7 PERCENT IN 1986/87 AND SOME 13 PERCENT IN 1987/88 BECAUSE THE NATURAL GAS DEFICIT IS PROJECTED TO SHRINK EACH YEAR THE IMPACT OF NATURAL GAS CONSERVATION ON LOAD SHEDDING WILL (CONTRARY TO WHAT IS EXPECTED TO HAPPEN IN ELECTRICITY LOAD SHEDDING) INCREASE TO A 36 PERCENT REDUCTION OF THE DEFICIT BY 1992/93

(VISUAL 40)

IMPACT OF CONSERVATION ON PEAK DEMAND AS PERCENT OF PEAK DEFICIT



Sources Hagler, Bailly & Co , WAPDA, Sixth Plan

HOW ARE THESE SAVINGS ACHIEVED? **(VISUAL 41)**

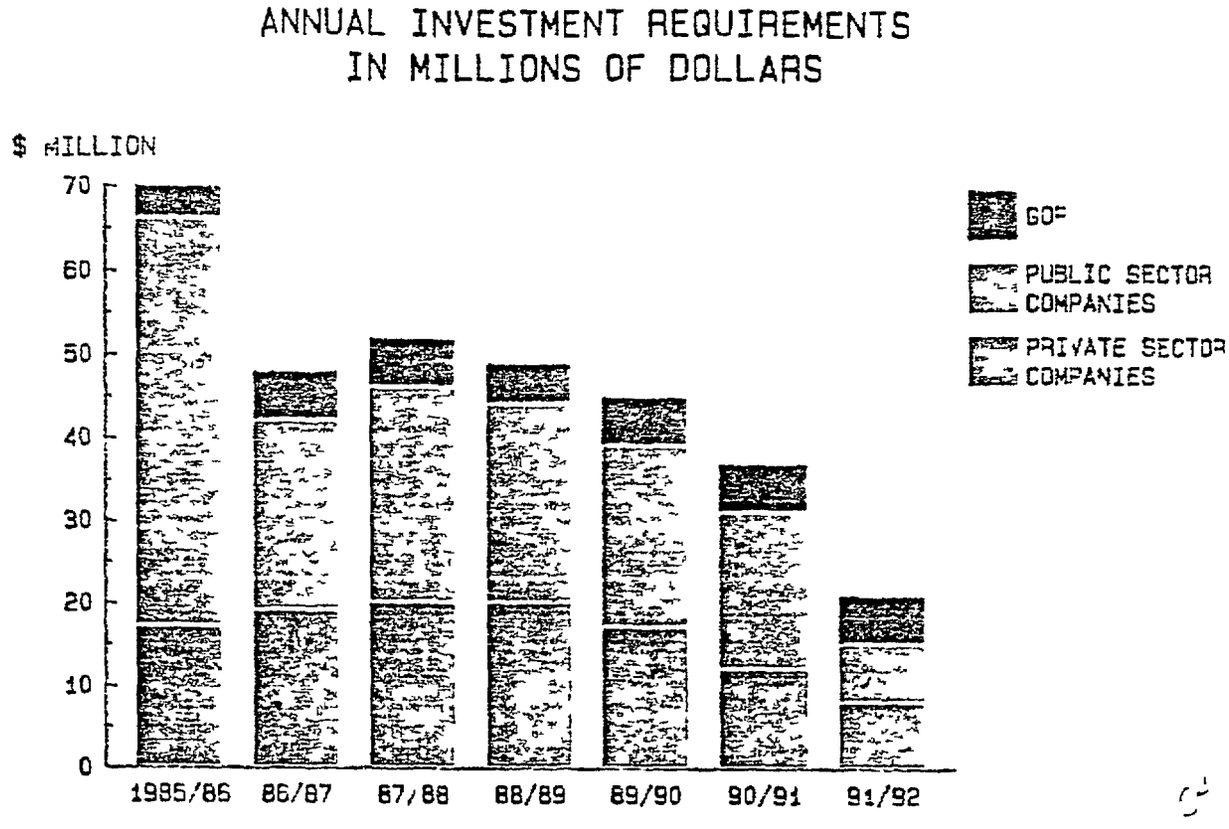
A RECENT STUDY OF ENERGY USE IN SOME TYPICAL INDUSTRIAL PLANTS IN PAKISTAN INDICATED THAT ON THE AVERAGE SOME 35 PERCENT OF THE ENERGY USED BY THE PLANTS CAN BE SAVED ENERGY CAN BE SAVED BY SOME SIMPLE AND WELL PROVEN MEASURES SUCH AS

- RECOVERY OF WASTE HEAT,
- POWER FACTOR IMPROVEMENT,
- REDUCED HOT WATER AND CONDENSATE LOSSES,
- IMPROVED DRYING EQUIPMENT AND PROCEDURES,
- IMPROVEMENT IN BOILER OPERATION AND MAINTENANCE,
- REPAIR OF STEAM DISTRIBUTION SYSTEMS, AND
- IMPROVE PROCESS CONTROL

FORTUNATELY, THESE SAVINGS WILL BE RELATIVELY CHEAP TO DEVELOP I SAID CHEAP, NOT FREE INDEED, ENERGY AUDITS WILL HAVE TO BE CARRIED OUT, ENGINEERING DONE, EQUIPMENT PURCHASED AND INSTALLED, OPERATORS TRAINED WHAT DO WE MEAN BY "CHEAP"?

PAKISTAN NOW PAYS AT LEAST $ 28 FOR A BARREL OF OIL ON A NET PRESENT VALUE BASIS THE COST OF CONSERVING A BARREL OF OIL EQUIVALENT BY 1993 WOULD COME TO ABOUT $ 7 50 IN EFFECT THE PRICE OF AN IMPORTANT PROPORTION OF OIL CONSUMED WOULD DROP BY MORE THAN 70 PERCENT WHICH SAYS SOMETHING ABOUT THE WISDOM OF INVESTING IN ENERGY CONSERVATION

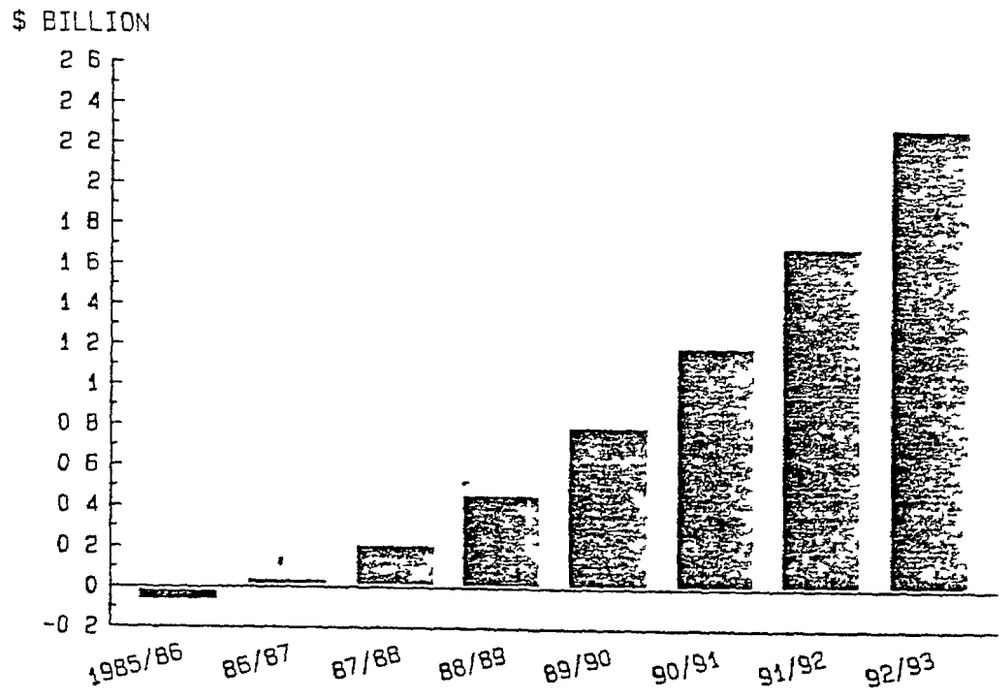
(VISUAL 42)



(VISUAL 42) OUR CONSULTANTS HAVE CALCULATED THE ANNUAL INVESTMENT REQUIREMENTS TO MEET THE TARGETS I PREVIOUSLY SET FORTH. THEY HAVE ESTIMATED THAT TO MEET THE TARGETS WILL REQUIRE TOTAL CUMULATIVE PUBLIC AND PRIVATE EXPENDITURES OF $ 220 MILLION DURING THE REMAINING 3 YEARS OF THE SIXTH PLAN AND ABOUT $ 160 MILLION DURING THE SEVENTH PLAN PERIOD. APPROXIMATELY 30 PERCENT OF THIS INVESTMENT WILL NEED TO BE MADE BY THE PRIVATE SECTOR INVESTMENTS BY NATIONALIZED COMPANIES INCLUDING WAPDA WILL REPRESENT APPROXIMATELY 60 PERCENT OF THESE FIGURES BUT MUCH OF THE SAVINGS WILL ALSO ACCRUE TO THE GOP

(VISUAL 43)

CUMULATIVE NET CASH FLOWS GENERATED BY A NATIONAL ENERGY CONSERVATION PROGRAM IN BILLIONS OF DOLLARS



Source Hagler, Bailly & Co

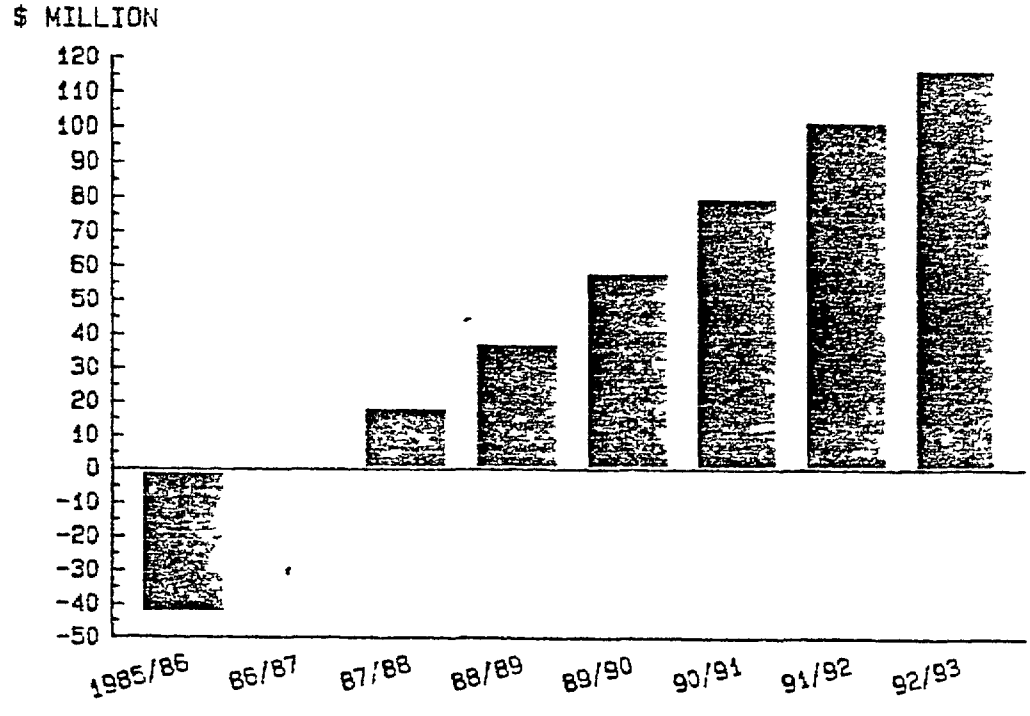
LET ME OFFER A FEW COMMENTS ON THIS PROJECTED INVESTMENT. FIRST, AS INDICATED, SOME TWO-THIRDS REPRESENT PUBLIC SECTOR INVESTMENT BY REVENUE PRODUCING STATE COMPANIES SECOND, THIS INVESTMENT WILL YIELD QUICK AND HIGH RETURNS, SO THAT THE NET COST TO THESE COMPANIES WILL, WITHIN A FEW YEARS, BECOME NEGATIVE

(VISUAL 43) THIS LAST POINT IS CAPTURED IN THIS CHART WHICH PROJECTS THE CUMULATIVE CASH FLOWS ASSOCIATED WITH A NATIONAL ENERGY CONSERVATION PROGRAM IN PAKISTAN AS YOU CAN SEE, THE PROGRAM IS MORE THAN SELF-FINANCING AND REACHES THAT POSITION IN TWO TO THREE YEARS IN ESTABLISHING THE ENERGY CONSERVATION PROGRAM, THE LOW COST, QUICK

RETURN ENERGY CONSERVATION MEASURES ARE IMPLEMENTED FIRST. THIS ALLOWS THE SAVINGS GENERATED TO BE REINVESTED IN THE HIGHER COST, LONGER RETURN MEASURES IF PROPERLY ESTABLISHED, THE PROGRAM WILL BE FINANCED ENTIRELY BY ITS OWN SAVINGS

(VISUAL 44)

NET ANNUAL FOREIGN EXCHANGE SAVINGS
IN MILLIONS OF DOLLARS

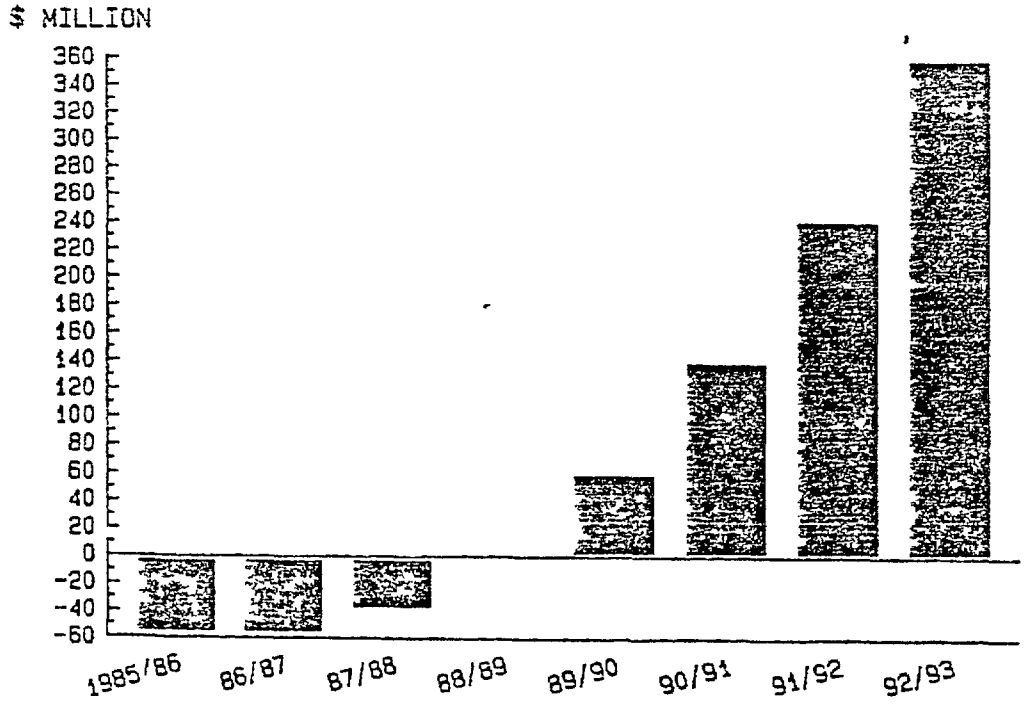


(VISUAL 44) LET ME REEMPHAZISE THE IMPACT ON FOREIGN EXCHANGE NET FOREIGN EXCHANGE SAVINGS TO THE NATION WILL BE SUBSTANTIAL ON THE ORDER OF $ 18 MILLION ANNUALLY BY 1987/88, AND $ 117 MILLION ANNUALLY BY 1992/93

ON A CUMULATIVE BASIS, IN TERMS OF FOREIGN EXCHANGE, THE PROGRAM WILL BREAKEVEN BY 1988/89 AND RESULT IN CULUMATIVE NET FOREIGN EXCHANGE SAVINGS OF $ 358 MILLION BY 1992/93 **(VISUAL 45)**

(VISUAL 45)

NET CUMULATIVE FOREIGN EXCHANGE SAVINGS
IN MILLIONS OF DOLLARS



Source Hagler, Bailly & Co

IT IS DIFFICULT, IF NOT IMPOSSIBLE, TO TRACK THE EXACT IMPLICATIONS THIS PROGRAM WOULD HAVE ON THE NATIONAL BUDGET INDEED, MOST OF THE STAFF REQUIRED FOR ITS IMPLEMENTATION ARE ALREADY EMPLOYED BY THE GOVERNMENT OR ITS AGENCIES, EXISTING BUDGETS FOR OPERATIONS AND MAINTENANCE AND NEW EQUIPMENT ALREADY INCLUDE SOME OF THE EXPENDITURES REQUIRED BY THE PROGRAM THE NET IMPACT ON THE FEDERAL GOVERNMENT BUDGET WOULD, UNDER ALL

CIRCUMSTANCES, BE SMALL -- ACCORDING TO OUR CONSULTANTS PROBABLY NO MORE THAN 150 MILLION RUPEES PER YEAR NOTE THAT AN IMPORTANT SHARE OF THIS EXPENDITURE COULD BE FINANCED FROM EXTERNAL DONOR SOURCES

WE HAVE CONCLUDED THAT THE PUBLIC AND PRIVATE SECTOR INVESTMENT REQUIRED BY THIS PROGRAM, PARTICULARLY GIVEN THE ECONOMIC, SOCIAL AND POLITICAL BENEFITS RESULTING FROM IT IN THE NEAR-TERM, IS WELL WITHIN PAKISTAN'S CAPABILITIES NEEDLESS TO SAY USAID, AND I BELIEVE THE WORLD BANK, THE ASIAN DEVELOPMENT BANK AND THE OTHER MULTILATERAL AND BILATERAL FINANCING INSTITUTIONS ARE PREPARED TO CONTINUE TO FINANCE TECHNICAL ASSISTANCE, TRAINING, AND FOREIGN EXCHANGE TO ASSIST THE GOP TO IMPLEMENT A NATIONAL ENERGY CONSERVATION PROGRAM

(VISUAL 46) IF I MAY, LET ME SUMMARIZE SOME OF THE SAVINGS AND BENEFITS WE HAVE DESCRIBED DURING THIS PRESENTATION

(VISUAL 46)

SUMMARY OF PROGRAM BENEFITS
INDUSTRY AND POWER SECTORS ONLY

	1987/88	1992/93
CUMULATIVE SAVINGS (BOE)	15 1 MILLION	72 8 MILLION
REDUCED ELECTRICITY DEFICIT (%)	15	9 3
REDUCED NATURAL GAS DEFICIT (%)	12 7	36
COST SAVINGS ($)	430 MILLION	2 7 BILLION
FOREIGN EXCHANGE SAVINGS ($)	(37 MILLION)	358 MILLION

NOTE ALL DOLLAR AMOUNTS ARE CUMULATIVE

Source Hagler, Bailly & Co

(VISUAL 47) THESE RESULTS ARE OBVIOUSLY ATTRACTIVE WHAT STEPS SHOULD THE ENERGY POLICY BOARD TAKE TODAY TO LAUNCH PAKISTAN ON THE ROAD TO THESE BENEFITS? I WOULD SUGGEST THAT THE FIRST ORDER OF BUSINESS FOR THE ENERGY POLICY BOARD IS TO ACT ON THE FIVE POINTS I MENTIONED AT THE BEGINNING OF THIS PRESENTATION LET ME RESTATE THEM FOR YOU

(VISUAL 47)

OBJECTIVES FOR THE BOARD

- AGREE IN PRINCIPLE TO PROPOSED PROGRAM
- AGREE TO STUDY PROGRAM AND TO RECOMMEND APPROPRIATE NEXT STEPS
- IMMEDIATELY SET UP GROUP TO STUDY PROGRAM
- ARRANGE FOR GROUP TO MEET WITH USAID AND CONSULTANTS
- APPROVE ESTABLISHMENT OF INFORMAL GROUP OF DONORS

THE FIRST ORDER OF BUSINESS IS FOR THE ENERGY POLICY BOARD TO AGREE IN PRINCIPLE TO THE NATIONAL ENERGY CONSERVATION PROGRAM WHICH I HAVE JUST OUTLINED

SECOND, THE BOARD SHOULD AGREE TO STUDY THE PROGRAM AND RECOMMEND THE APPROPRIATE NEXT STEPS TO THE PROPER GOP OFFICIALS INCLUDING POSSIBLY THE CABINET AND THE PRESIDENT

THIRD, THE BOARD SHOULD IMMEDIATELY SET UP A GROUP (POSSIBLY THE ENERPLAN STAFF AND OTHER APPROPRIATE OFFICIALS) TO STUDY THE PROGRAM IT SHOULD ALSO SET UP A SPECIFIC TIME FRAME FOR REVIEWING THE GROUP'S RECOMMENDATIONS

FOURTH, THE BOARD SHOULD DIRECT THIS GROUP TO MEET WITH USAID STAFF AND ITS CONSULTANTS (AND POSSIBLY ALSO WITH WORLD BANK STAFF AND OTHER ACTIVELY INTERESTED DONORS) THIS WEEK (WHILE OUR CONSULTANTS ARE STILL IN TOWN) TO DISCUSS AND REVIEW IN DETAIL THE PROPOSED PROGRAM AND THE UNDERLYING ANALYSIS

FINALLY, THE BOARD SHOULD APPROVE THE ESTABLISHMENT OF AN INFORMAL DONOR GROUP TO WORK WITH ENERPLAN ON HOW TO COORDINATE DONOR ACTIVITIES RELATED TO ENERGY CONSERVATION

THANK YOU VERY MUCH GENTLEMEN FOR YOUR TIME AND ATTENTION IF YOU ANY QUESTIONS WE WILL BE GLAD TO ANSWER THEM