

A NEW WAY FOR ENERGY

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AS THE 21ST CENTURY APPROACHES

ENERGY SYSTEMS CONTINUE TO BE
IN A CRISIS

[CRISIS = SITUATION THAT DOES
NOT PERMIT CONTINUATION OF
OLD PATTERNS OF BEHAVIOR]



MANY DIMENSIONS OF CRISIS OF ENERGY SYSTEMS

- **CAPITAL CRISIS**
- **EQUITY/ACCESS CRISIS**
- **SELF-RELIANCE CRISIS**
- **ENVIRONMENTAL CRISIS**



CAPITAL CRISIS

**THE DEMANDS FOR CAPITAL ARE
OUTSTRIPPING THE TRADITIONAL
SOURCES OF CAPITAL**



EQUITY/ACCESS CRISIS

- **DISTRIBUTION OF THE BENEFITS OF ENERGY ARE HIGHLY SKEWED**
- **LARGE SECTIONS OF THE POPULATION OF DEVELOPING COUNTRIES (PARTICULARLY THE POOR, WOMEN AND RURAL AREAS) ARE DEPRIVED OF ACCESS TO MODERN ENERGY SERVICES**



SELF-RELIANCE CRISIS

LIMITED POPULAR PARTICIPATION AND EMPOWERMENT IN THE PLANNING, MANAGEMENT AND CONTROL OVER ENERGY SYSTEMS



ENVIRONMENTAL CRISIS

- **LOCALLY** --> IMPOSSIBLY HIGH LEVELS OF POLLUTION
- **REGIONALLY** --> DEFORESTATION AND DESERTIFICATION OF VAST AREAS
- **GLOBALLY** --> DISCERNIBLE CHANGES IN THE GLOBAL ATMOSPHERE CARRYING THE THREAT OF CLIMATE CHANGE.



**DESPITE CRISIS, ENERGY DOES
NOT GET THE GLOBAL
ATTENTION IT DESERVES**

**WHY? PERHAPS BECAUSE
DECISION-MAKERS FEEL
THAT THERE ARE OTHER
MORE IMPORTANT GLOBAL
ISSUES**



OTHER IMPORTANT GLOBAL ISSUES

- POVERTY
- GENDER DISPARITY
- POPULATION
- UNDER-NUTRITION & FOOD SCARCITY
- HEALTH
- ACIDIFICATION
- CLIMATE CHANGE
- LAND DEGRADATION
- INVESTMENT REQUIREMENTS
- FOREIGN EXCHANGE IMPACTS
- NATIONAL SECURITY
- NUCLEAR WEAPONS PROLIFERATION



**ENERGY CAN BE SHOWN
TO BE LINKED TO ALL
THESE GLOBAL ISSUES**



**FURTHER, CURRENT
ENERGY PATTERNS ARE
AGGRAVATING ALL
THESE MAJOR GLOBAL
ISSUES**



**HENCE, ENERGY CANNOT BE
IGNORED**

**IN FACT, ENERGY
STRATEGIES MUST
CONTRIBUTE TO THE
SOLUTION OF THE OTHER
MAJOR PROBLEMS**



ENERGY AND MAJOR GLOBAL ISSUES

- **ALTERNATIVE ENERGY APPROACHES ARE REQUIRED TO TACKLE THESE ISSUES**
- **FORTUNATELY, NEW TECHNOLOGICAL OPPORTUNITIES ON DEMAND & SUPPLY SIDES**



TWO DISTINCT TRENDS IN CURRENT DISCUSSIONS OF ENERGY SYSTEMS

**EITHER, THE GOAL IS *GREENHOUSE GAS
ABATEMENT AND PREVENTION/
MINIMISATION OF CLIMATE CHANGE***

OR, THE GOAL IS *SUDEVELOPMENT*



**GOAL OF GREENHOUSE GAS ABATEMENT
AND PREVENTION/MINIMISATION OF
CLIMATE CHANGE**

- EMPHASIS ON ENERGY *TECHNOLOGIES*, PARTICULARLY RENEWABLE ENERGY TECHNOLOGIES (RETS) AND EFFICIENCY IMPROVEMENTS (EIS).
- MAXIMISATION OF (CENTRALISED AND DECENTRALISED) RETS AND/OR EIS BECOMES THE *OBJECTIVE FUNCTION*.



**GOAL OF GREENHOUSE GAS ABATEMENT
AND PREVENTION/MINIMISATION OF
CLIMATE CHANGE**

- RETS AND EIS BECOME *ENDS IN THEMSELVES*
- THE PROPONENTS BECOME RET AND/OR EI ENERGY *FUNDAMENTALISTS*
- THEY EVEN DEMAND THAT THE PLAYING FIELD HAS TO BE DISTORTED TO FAVOUR THESE TECHNOLOGIES



GOAL OF SUDEVELOPMENT

- CLIMATE CHANGE BECOMES A VITAL BUT *SUBSIDIARY* CONCERN
- ISSUES OF *EQUITY/ACCESS AND EMPOWERMENT* ARE CRUCIAL
- AND OF COURSE, *ECONOMIC EFFICIENCY AND ENVIRONMENTAL SOUNDNESS*



NORTHERN AND SOUTHERN PERCEPTIONS

- BY AND LARGE, CLIMATE CHANGE IS A PREOCCUPATION OF THE INDUSTRIALISED COUNTRIES
- SUDEVELOPMENT A PRIORITY OF THE DEVELOPING COUNTRIES.



GLOBAL TRENDS

- GLOBALIZATION
- MARKETIZATION
- DEMOCRATIZATION (POPULAR PARTICIPATION IN DECISION-MAKING)
- CORPORATIZATION OF UTILITIES
- CHANGING EXTERNAL FUNDING (MAGNITUDE AND SOURCES)



CONSTRAINTS

- DECLINING AVAILABILITY OF TRADITIONAL CAPITAL (INTERNALLY FROM GOVERNMENTS AND EXTERNALLY FROM ODA)
- CUT-BACKS IN GOVERNMENT SPENDING



A NEW ENERGY PARADIGM IS EMERGING

- IN NEP, ENERGY IS NOT AN
END IN ITSELF
- ENERGY IS AN INSTRUMENT
FOR THE ACHIEVEMENT OF
THE SOCIO-ECONOMIC GOAL
OF SUDEVELOPMENT



**IN THE ANCIENT INDIAN LANGUAGE
SANSKRIT, THE PREFIX "SU" STANDS
FOR "GOOD"**

**HENCE, "SUDEVELOPMENT" MEANS
"GOOD DEVELOPMENT"**



CRITERIA OF SUDEVELOPMENT

- ECONOMIC EFFICIENCY,
- EQUITY/ACCESS (PARTICULARLY FOR THE POOR, WOMEN AND RURAL AREAS),
- EMPOWERMENT/SELF-RELIANCE,
- ENVIRONMENTAL SOUNDNESS AND
- PEACE.



NEW ENERGY PARADIGM

- FOCUS ON ENERGY SERVICES (NOT MERELY ENERGY CONSUMPTION)
- UNIVERSAL ACCESS TO ENERGY SERVICES (OBLIGATION TO SERVE)
- RATIONALLY DERIVED MIX OF CLEAN FOSSIL-FUEL TECHNOLOGIES, RENEWABLES & END-USE EFFICIENCY IMPROVEMENTS



NEW ENERGY PARADIGM (CONTD)

- ESTABLISHMENT & MAINTENANCE OF A LEVEL PLAYING FIELD
- PROMOTION AND SAFEGUARDING OF COMPETITION



NEW ENERGY PARADIGM (CONTD)

- INDIGENOUS CAPACITY BUILDING
- KEY ROLE FOR PRIVATE SECTOR
- ROLES FOR ALL STAKE-HOLDERS
- POLICY INSTRUMENTS THAT ARE NO/LOW COST TO TREASURIES



MARKET-BARRIERS

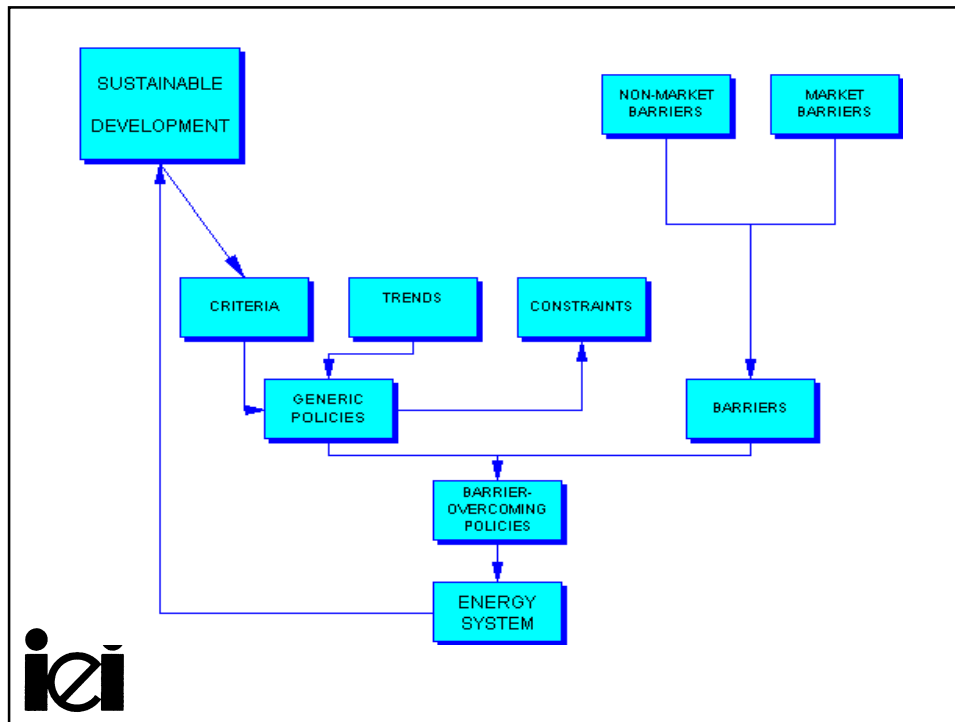
- SUBSIDIES TO CONVENTIONAL ENERGY
- PRICES DO NOT REFLECT NEGATIVE ENVIRONMENTAL IMPACTS
- IMPERFECT INFORMATION
- FIRST-COST SENSITIVITY
- SPLIT INCENTIVES
- INDIFFERENCE TO ENERGY COSTS



NON-MARKET BARRIERS

- SUPPLY-BIASED PARADIGM
- INSTITUTIONAL OBSTACLES
- DECLINING R & D EXPENDITURES





ENERGY AND SOCIAL ISSUES

- POVERTY
- GENDER DISPARITY
- POPULATION
- UNDERNUTRITION AND FOOD

ENERGY AND ENVIRONMENT

- HEALTH
- ACIDIFICATION
- CLIMATE CHANGE
- LAND DEGRADATION



ENERGY AND THE ECONOMY

- INVESTMENT
REQUIREMENTS
- FOREIGN EXCHANGE
IMPACTS



ENERGY AND SECURITY

- ENERGY AND NATIONAL SECURITY
- NUCLEAR ENERGY & NUCLEAR WEAPONS PROLIFERATION



ENERGY AFTER RIO: PROSPECTS AND CHALLENGES

- IMPLICATIONS OF SUSTAINABLE ENERGY (Global energy scenarios; Implications for Developing and energy-exporting countries; and general implications)
- ENERGY IS AN INSTRUMENT OF SUSTAINABLE DEVELOPMENT
- MAKING IT HAPPEN



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