

POST-CARBON EUROPE

A NEW ENERGY MODEL FOR THE CONSTRUCTION SECTOR
SUSTAINABLE STEADY AND MASSIVE GROWTH



Angelo Consoli
Renewable Energy and Housing
Madrid, September 26th 2012

CETRI

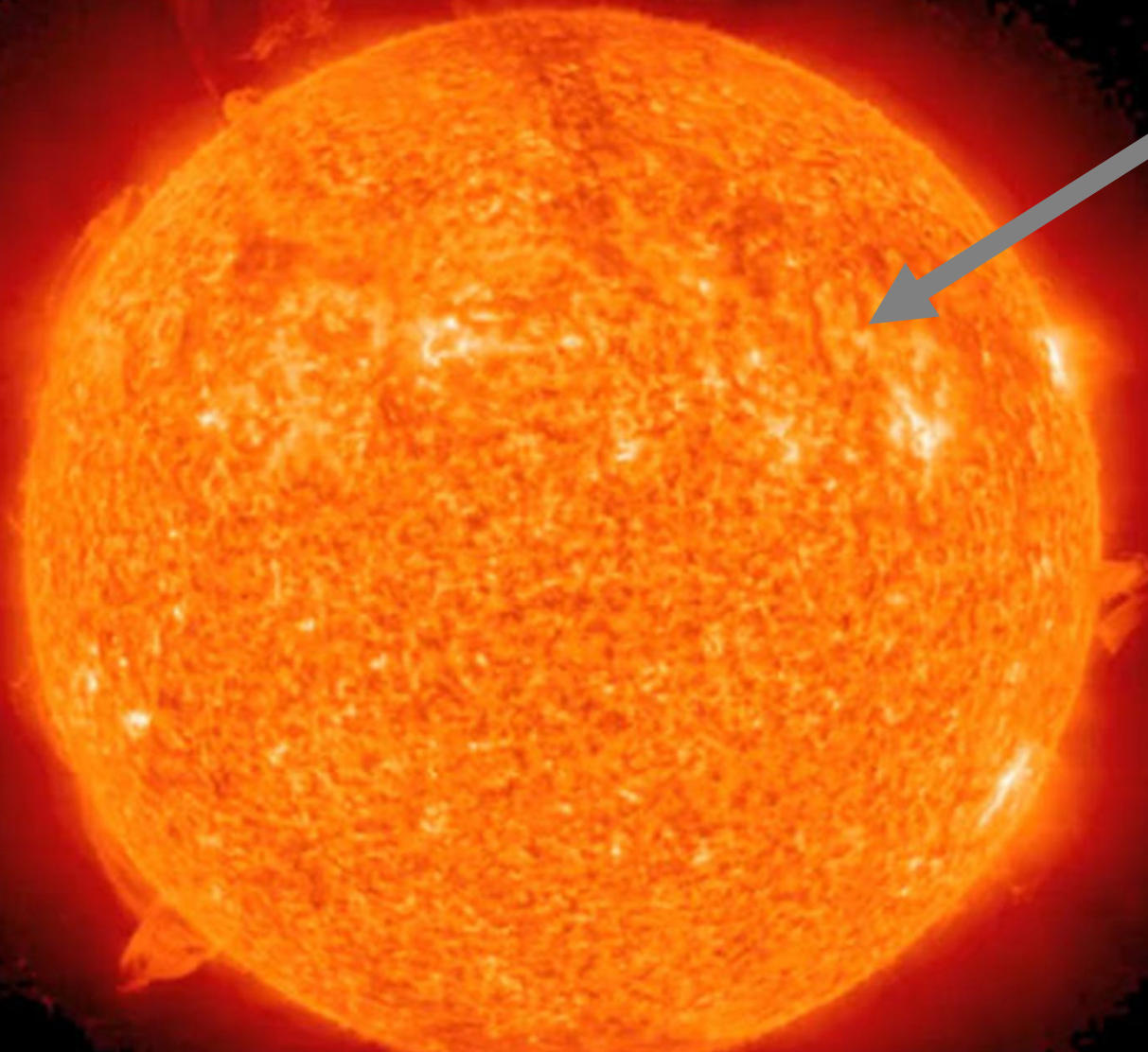
Cercle Européen pour la
Troisième Révolution Industrielle



TIRES

Third Industrial Revolution
European Society

The sun provides us with all the energy we need (15.000 times more)



Supply
80/100
BN TOE
YEAR

Demand
6/7 BN
TOE
YEAR



The biggest OAX in history



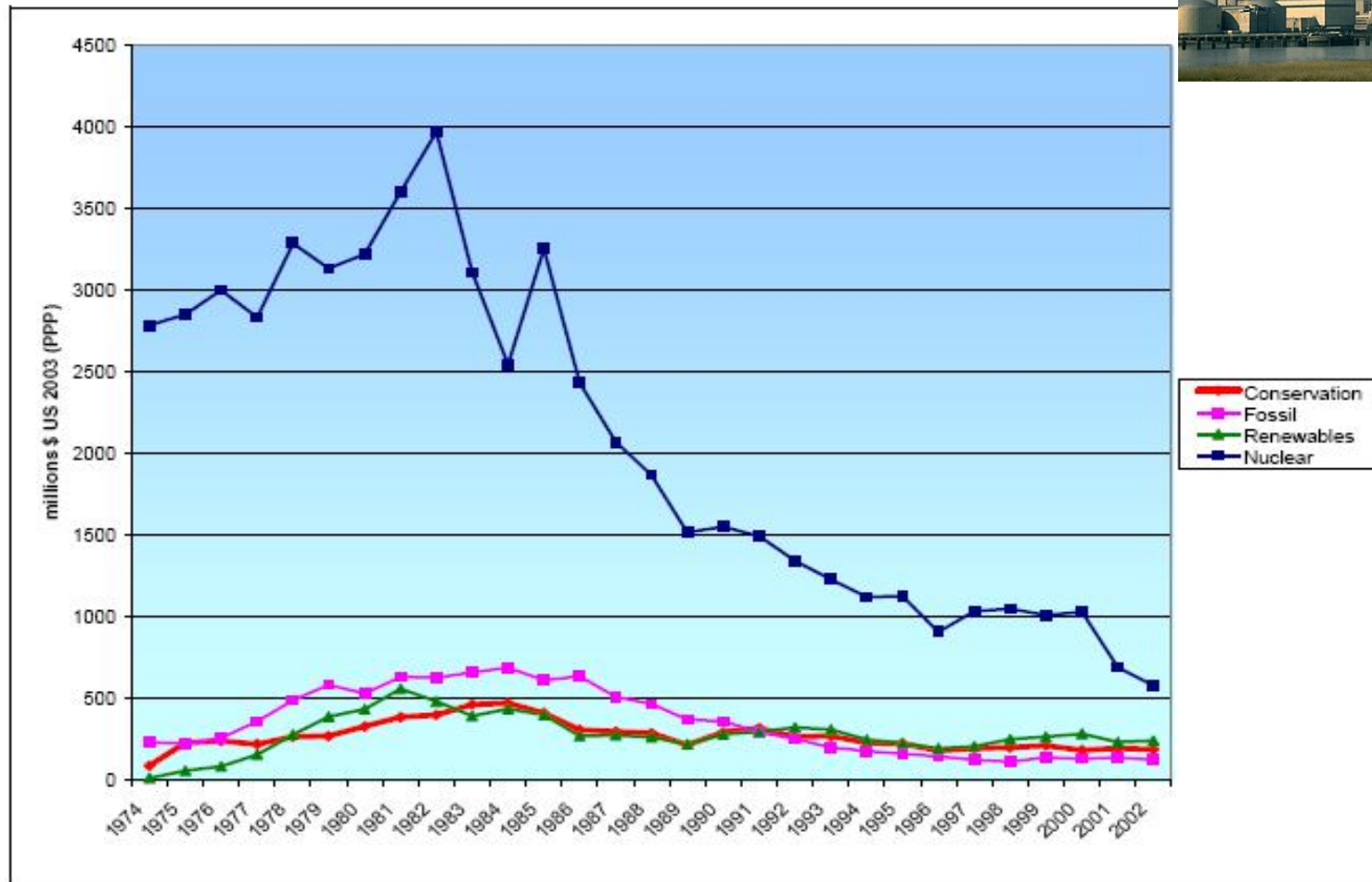
SWAPPING MARGINAL ENERGY SOURCES WITH PRINCIPAL
ENERGY SOURCES
SOLAR IS PRINCIPAL - COAL URANIUM OIL GAS ARE
MARGINAL



SO WHY CAN'T WE HARNESS IT?

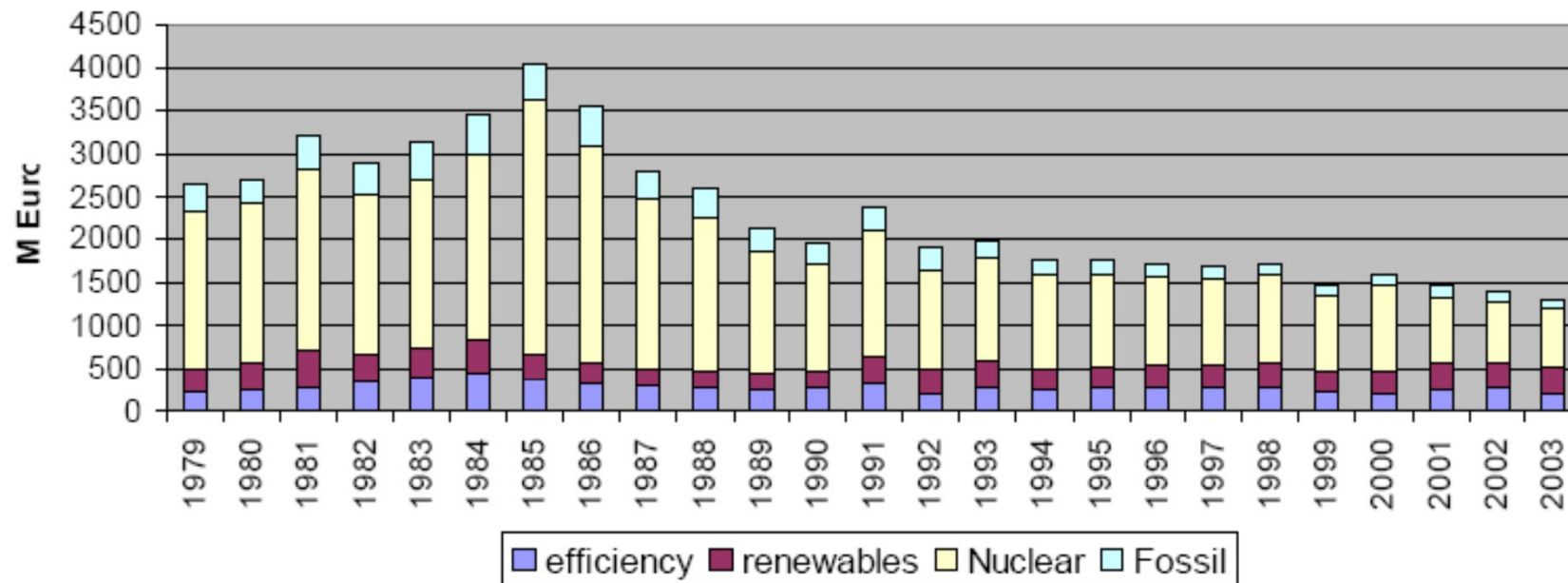
THAT IS WHY!

Figure 3. Aggregate Trends in Government Energy R&D Investment by Program Area, 1975-2003



EU RESEARCH BUDGETS EVOLUTION

National Research and Development Budgets in EU Member States



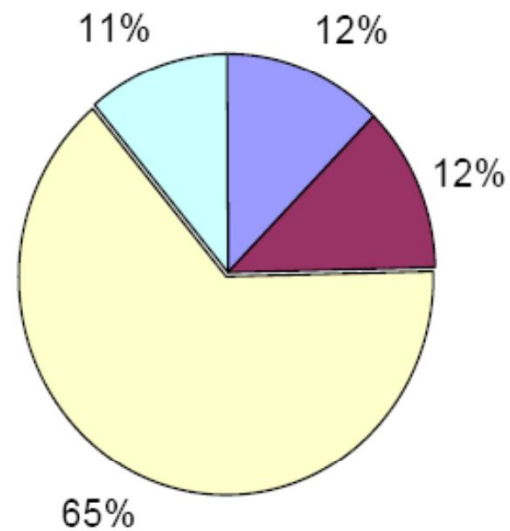


EUROPEAN
COMMISSION

Community research



Breakdown of EU-25 Government Research and Development (1979-2003)



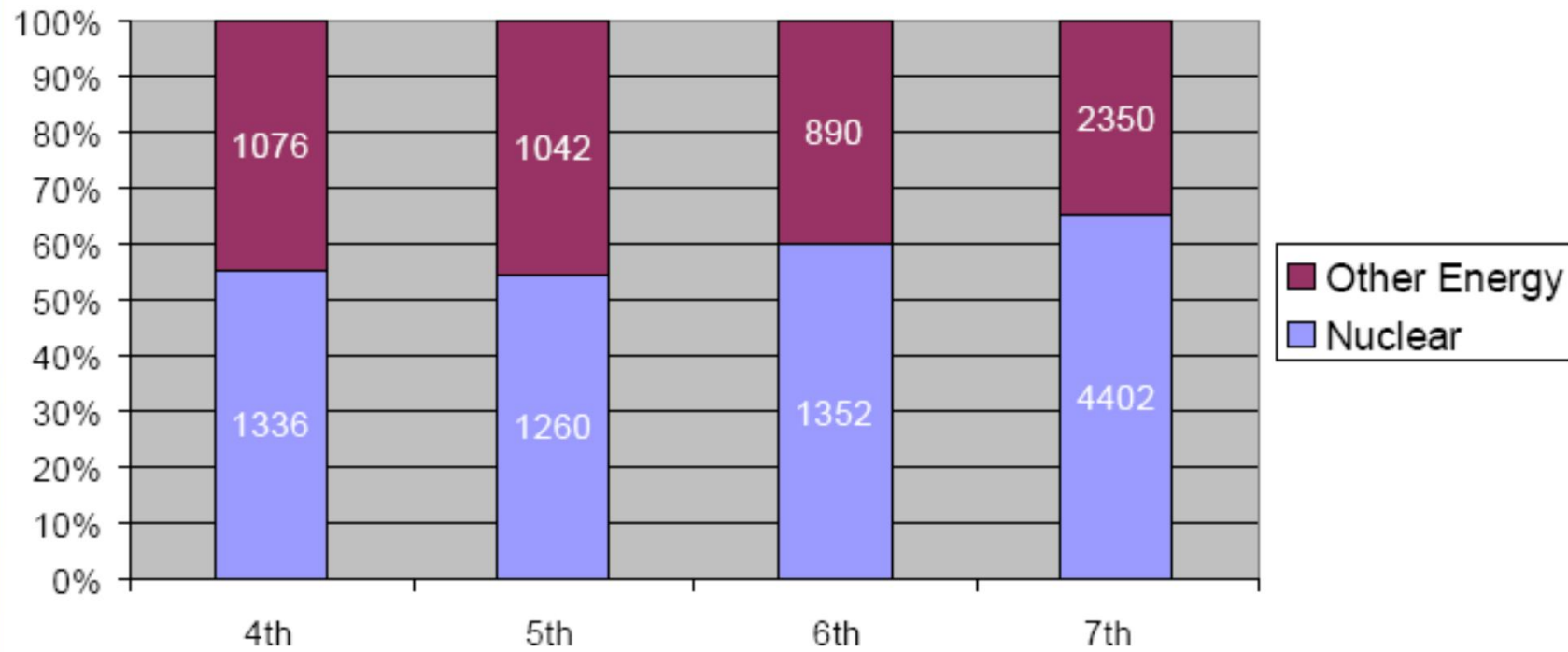
■ efficiency ■ renewables ■ Nuclear ■ Fossil



Evoluzione dei fondi di ricerca sul nucleare



Allocation of Community Funding between Nuclear and Non-Nuclear Research and Development



CHANGE OF ENERGY CYCLE

From the carbon cycle

to the solar cycle



Respecting the laws of thermodynamics

The Crisis of the 2nd Industrial Revolution

2/3 of the human race has no access or limited access to energy

50 % has never seen a telephone. Today.

3.5 BN unemployed or under employed living on 2 dollars day

300 richest persons in the world have the combined wealth of

3BN poorest people in the world

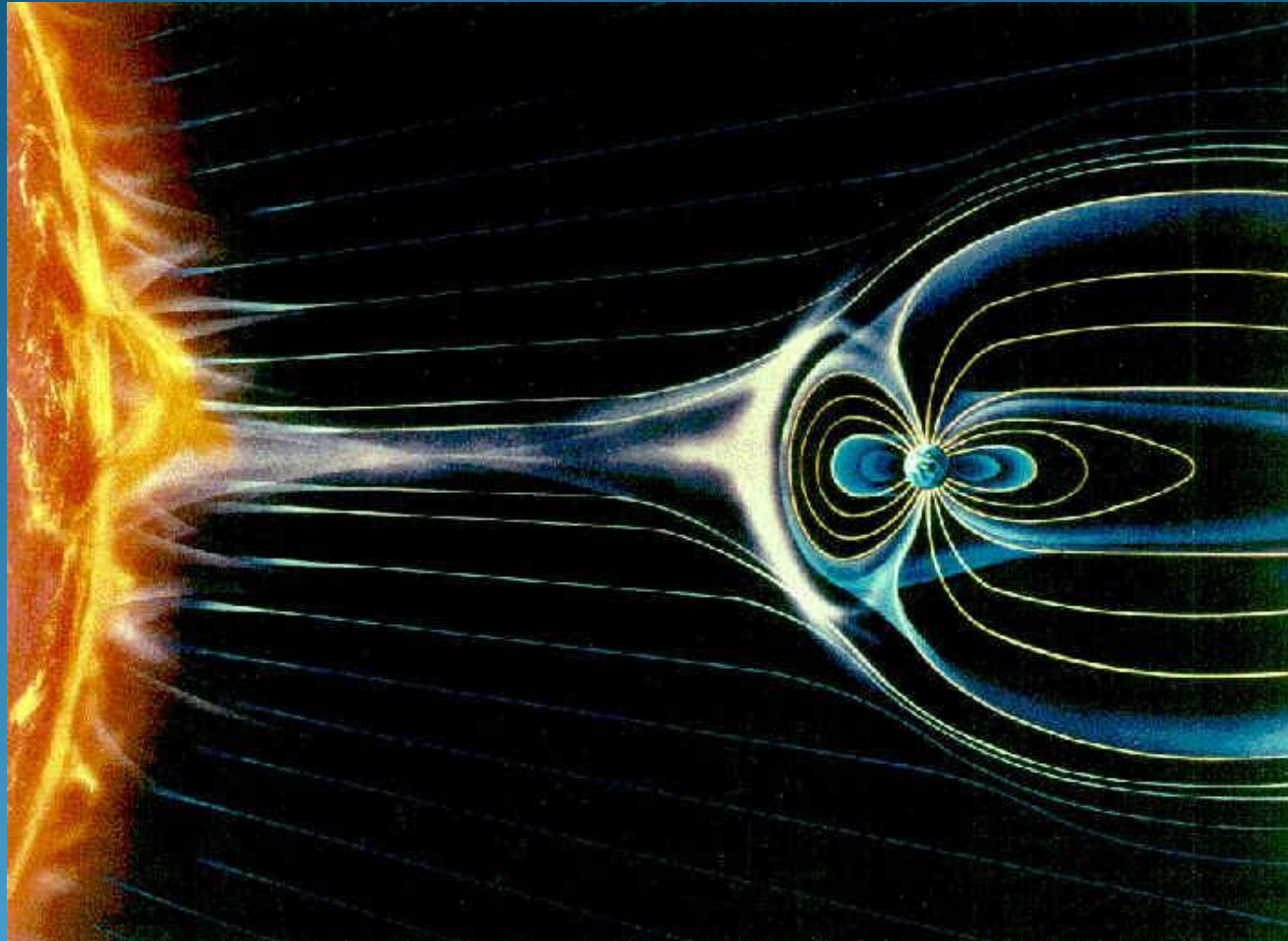
ENERGY SCALED LATERALLY

- UNFAIR
- UNSUSTAINABLE
- UNSAFE
- UNSTABLE

CENTRALIZED WORLD



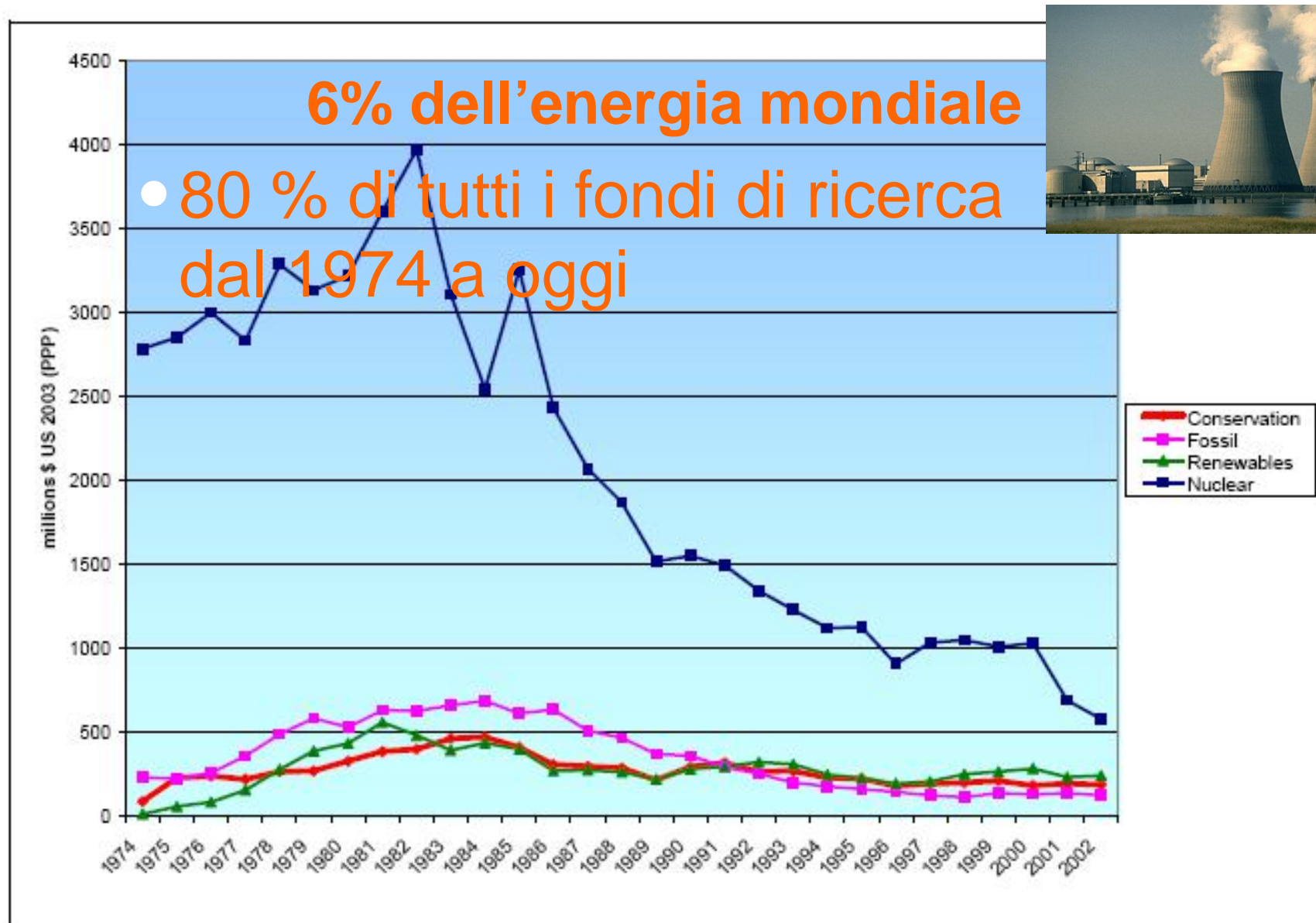
I flussi energetici



ENTROPIA DEI FLUSSI ENERGETICI

Sole -----Terra

Figure 3. Aggregate Trends in Government Energy R&D Investment by Program Area, 1975-2003



The Crisis of the 2nd Industrial Revolution

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CENTRALIZED WORLD



A NEW ECONOMIC SCENARIO



The Third Industrial Revolution energy
SCALES Laterally
“lateral power”



A NEW ECONOMIC SCENARIO

The Third Industrial Revolution scenario
occasion for a redistribution of
energy power wealth
THE 5 PILLARS



THE THIRD INDUSTRIAL REVOLUTION IN THE EU STRATEGY

The European Parliament

having regard to Rule 114 of its Rules of Procedure,

having regard to the debate launched by the European Parliament and the policy and climate change,

whereas a post-fossil fuel and post-nuclear energy project of the European Union,

whereas the five key factors for reducing global warming are: reducing renewable energy, establishing energy efficiency and energy storage,

1. Calls on the EU institutions to pursue a 20% increase in energy efficiency, reduce greenhouse gas emissions by 30% and 25% of electricity and 25% of oil resources by 2020,

2. Instructs the President to forward this declaration, to the Commission and the Member States

... and a third industrial revolution regions and cities, SMEs

... regarding to the future of energy

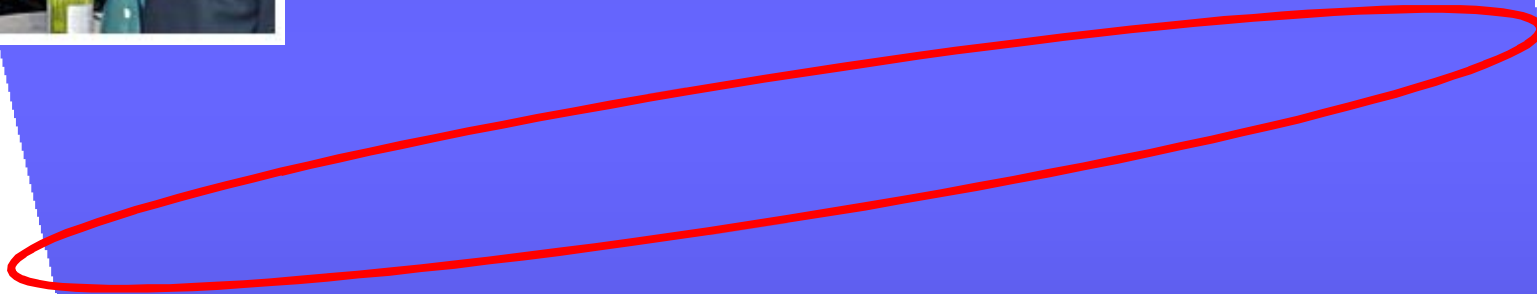
... important

... efficiency of





20 20 20 : An Hystoric decision 2007





STRATEGIE ENERGETICHE EUROPEE TERZA FASE ROAD MAP -2050

2050: LESS 95% GHG emissions

270 MLD: Annual TIR investment (1,5%GDP)

320 MLD: Annual savings

400 MLD COSTS BAU scenario

88 MLD: HEALTHY COSTS REDUCED ANNUALLY

50 MLD: investments in R&D X 10 Y

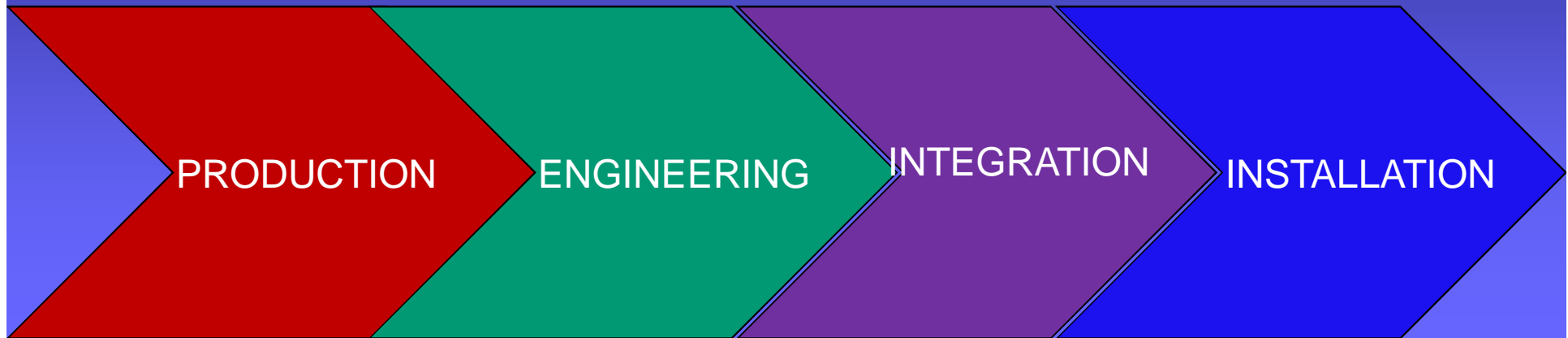
National initiatives: post carbon energy

Employment: ??? to be assessed

TIR PILLAR ONE RENEWABLE ENERGIES



LOCAL VALUE ADDED CHAIN



PV potential on Sicilian roofs

ROOFS (regional record)	RESIDENTIAL		NON RESIDENTIAL		TOTAL	
	N°	hectars	N°	hectars	N°	hectars
Sicilian Construction 2008	1.378.539	27.414	42.890	1.526	1.421.428	28.940
%	97,0%	94,7%	3,0%	5,3%	100,0%	

6,5 of the available roofs in Sicily would cover half of the family electricity consumption **1000 Mwp**

PIE IN THE SKY? - Not at all!

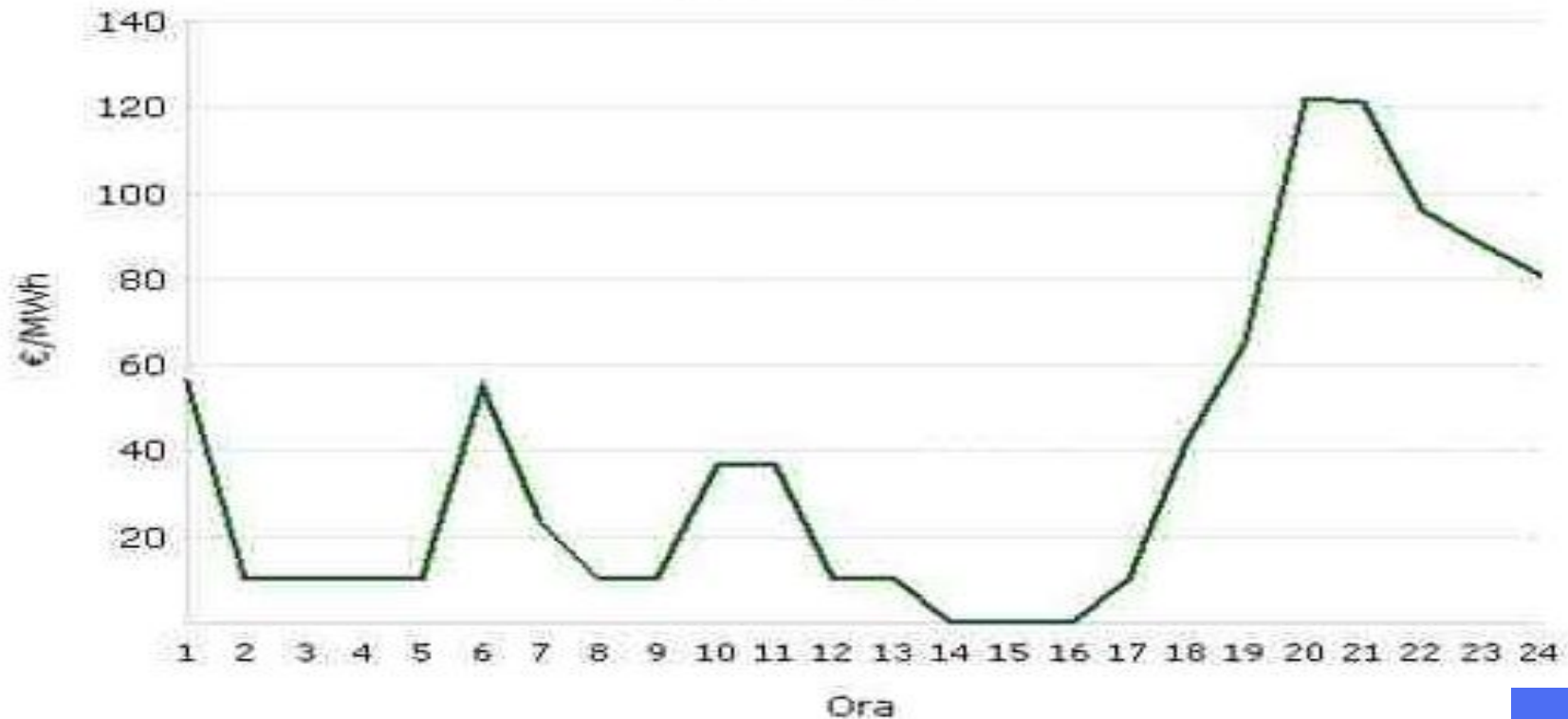


REGIONAL ELECTRICITY PRICE IN SICILY ON EASTER DAY 2012

esiti MGP - prezzi

09/04/2012

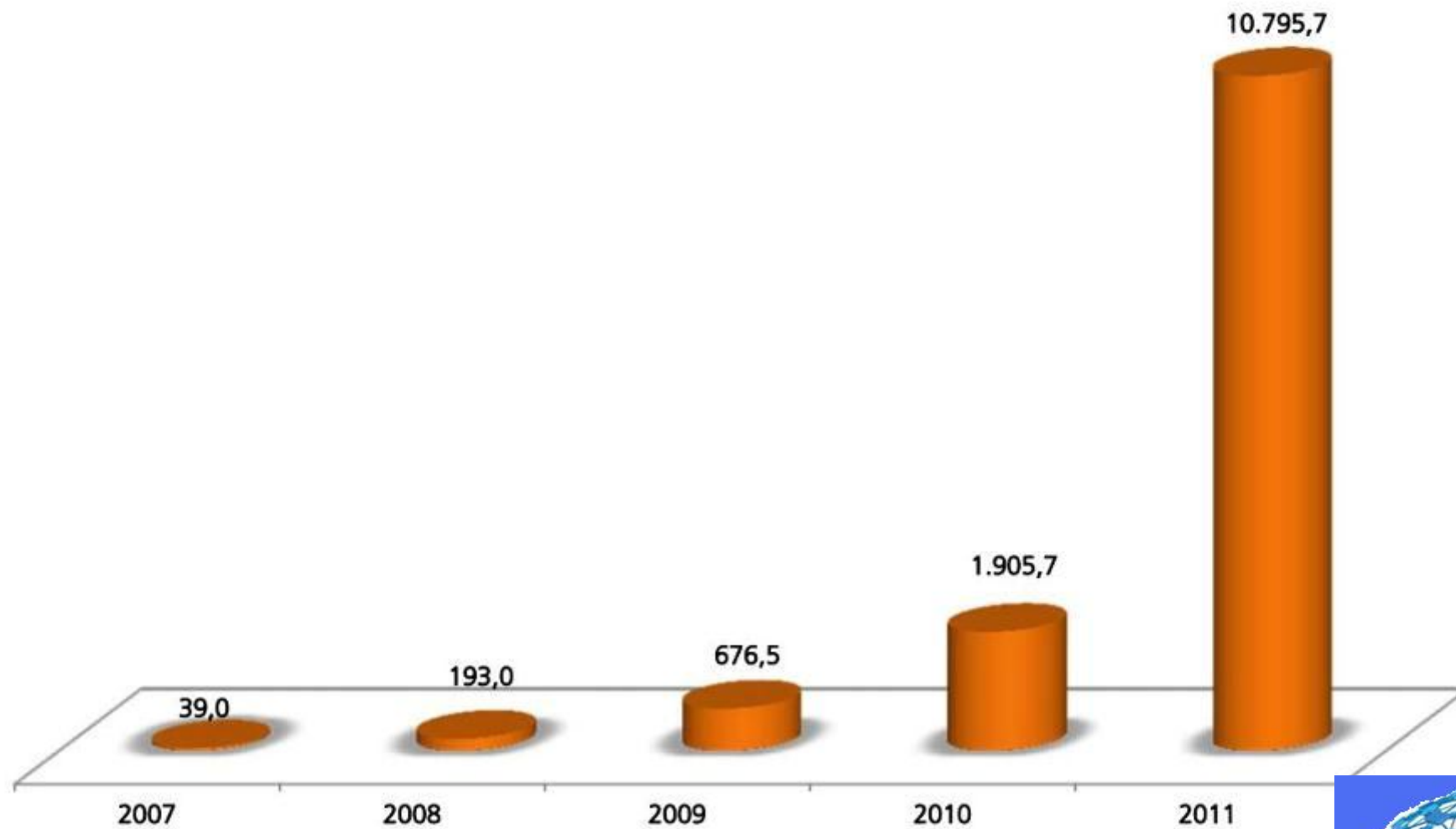
Zona: Sicilia



Produzione degli impianti fotovoltaici in Italia

ITALIAN PV ANNUAL GROWTH 2007-2011

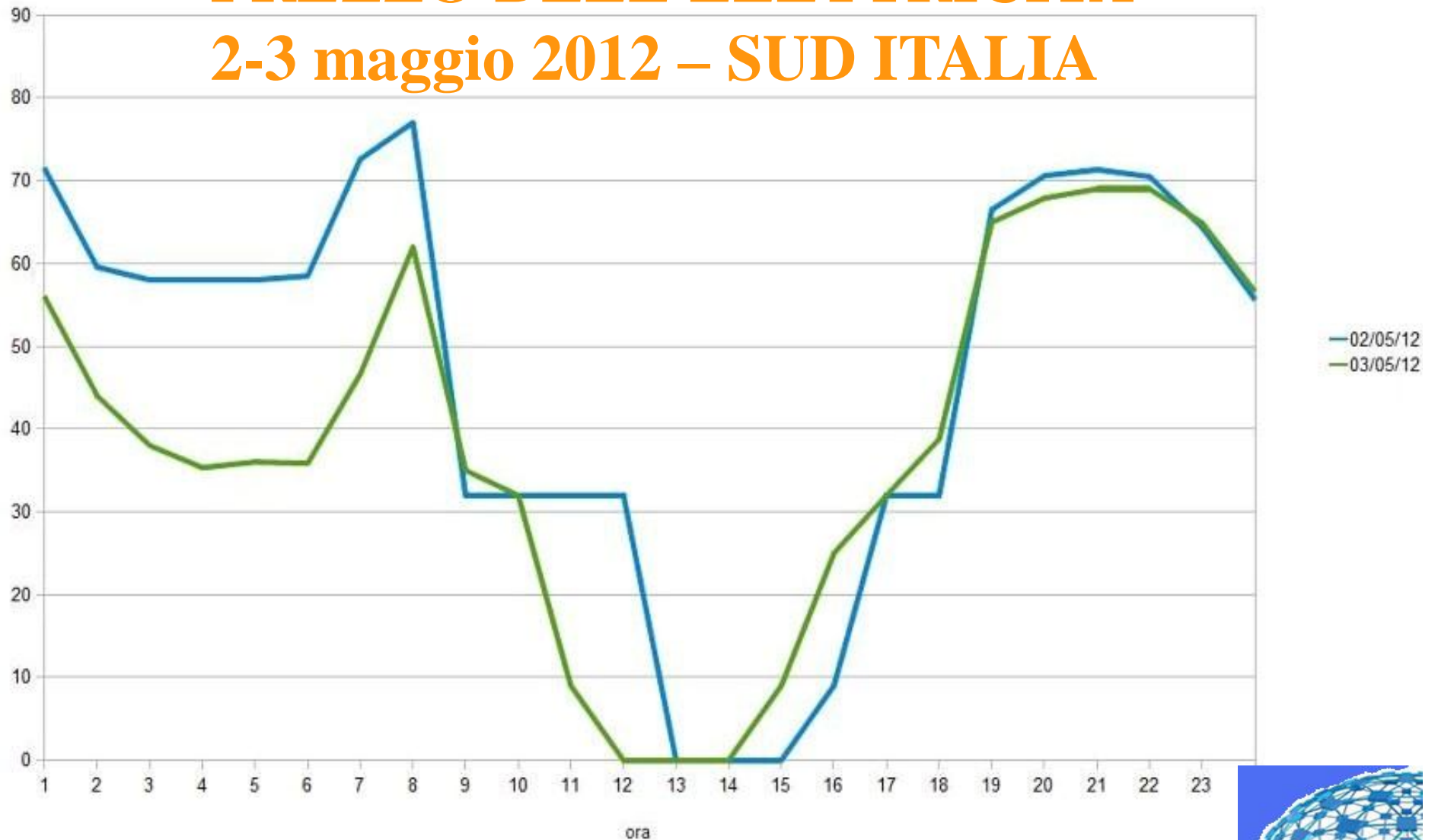
GWh



Esiti MGP

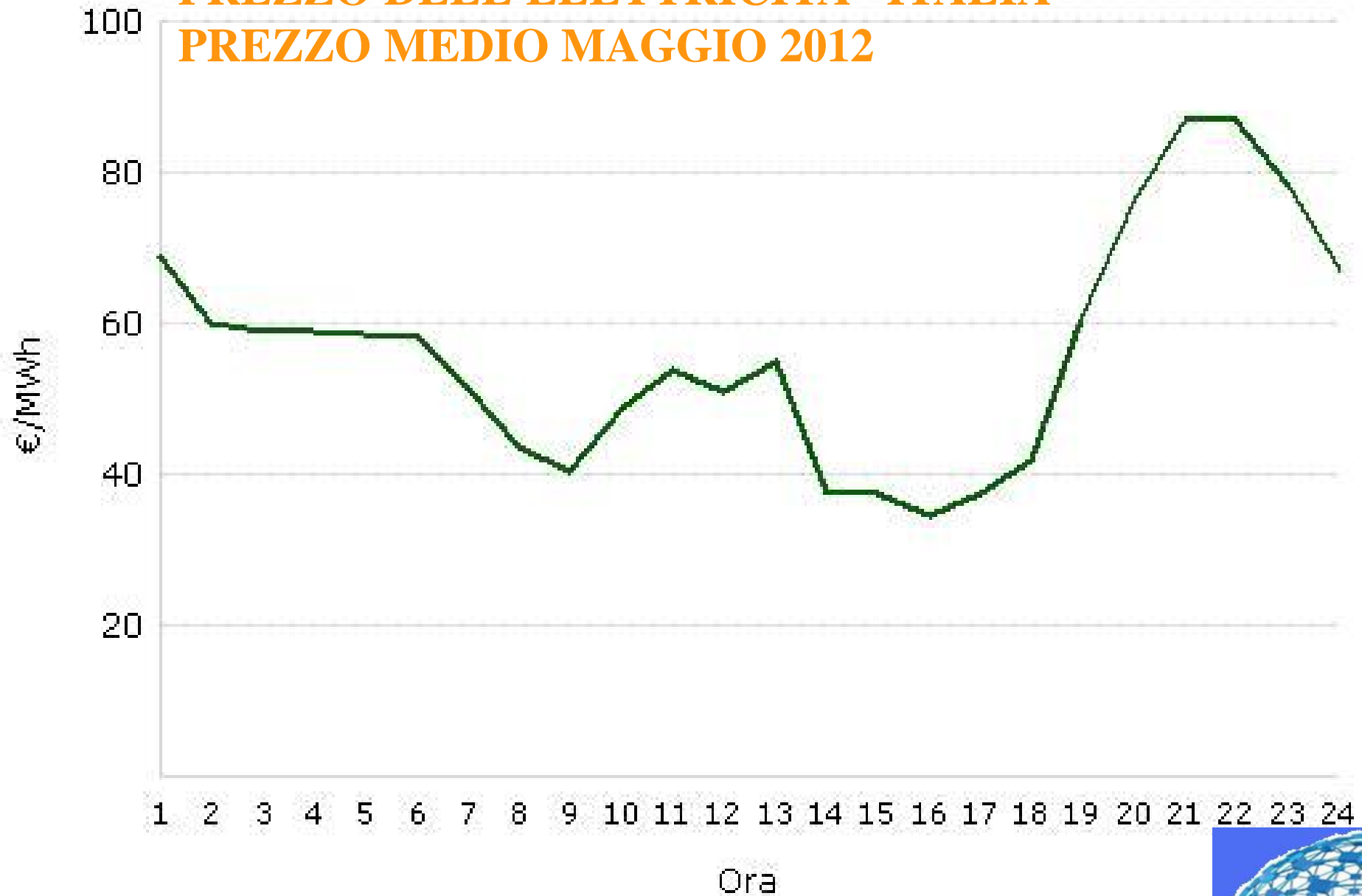
Zona Sud

PREZZO DELL'ELETTRICITA' 2-3 maggio 2012 – SUD ITALIA



Zona: Italia

PREZZO DELL'ELETTRICITA' ITALIA PREZZO MEDIO MAGGIO 2012



THE GREEN ECONOMY IN SICILY

Contracts for the SMEs

Provincia	Impiantisti e imprese edili
Agrigento	667
Caltanissetta	460
Catania	2502
Enna	309
Messina	1505
Palermo	2937
Ragusa	673
Siracusa	763
Trapani	811

Totale : 10.627

Provincia	Progettisti (architetti geometri, ingegneri)
Agrigento	2422
Caltanissetta	1454
Catania	4978
Enna	997
Messina	4317
Palermo	4875
Ragusa	2264
Siracusa	2033
Trapani	2676

Totale : 26016

TOTAL 36.643
partite IVA

TIR pillars have to develop simultaneously to create multiplier effect and job intensity

Without value added chain:



5 jobs per MWp

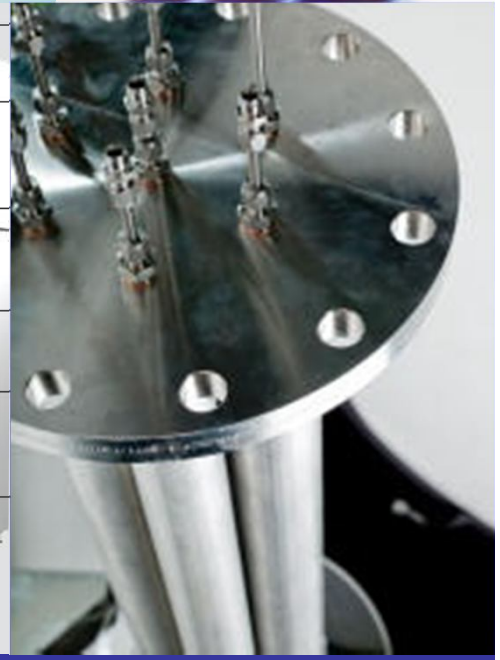
With Value added chain:



14 jobs per MWp



TIR Pillar 2: storage H2 technologies the digital energy storage



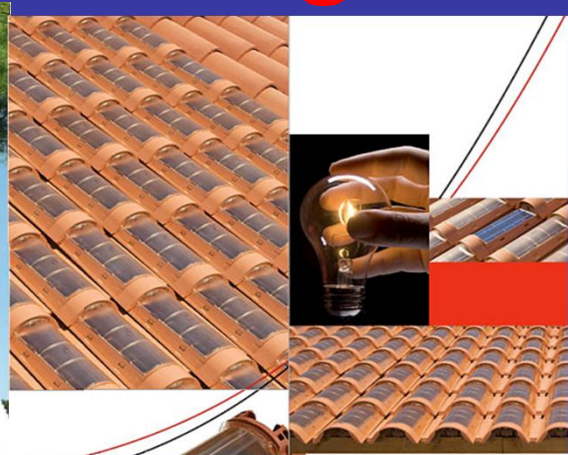
TIR Pillar 4 Smart Grids



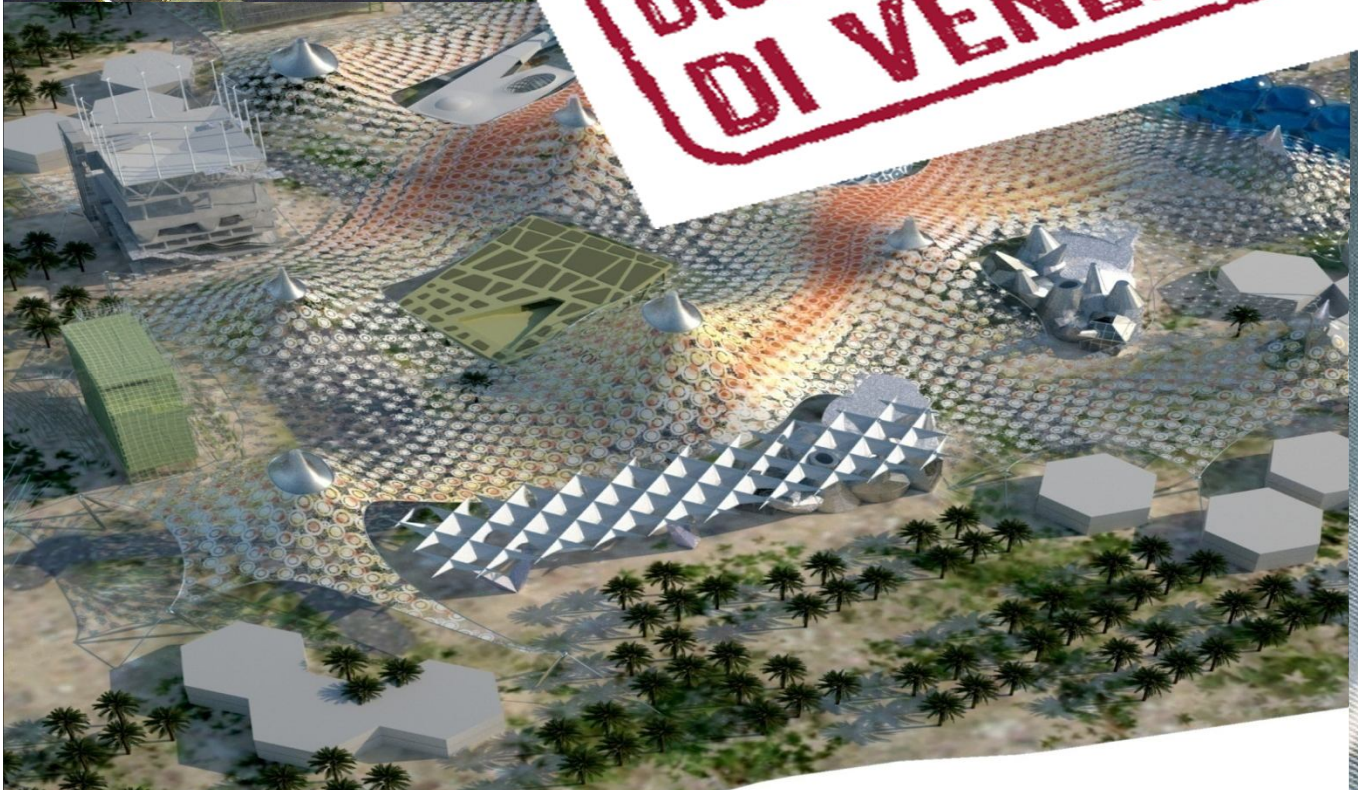
THE INTERNET OF ENERGY



TIR Pillar 5 Positive energy buildings



**DICHIARAZIONE
DI VENEZIA**



Positive energy buildings

THE GREEN OFFICE WILL PRODUCE 64 KWH OF ENERGY, MORE THAN THE 61 KWH THAT IT WILL CONSUME FOR ITS OWN OPERATION



POSITIVE ENERGIES

Bouygues Immobilier recently unveiled its version of the office of the future. The Green Office, in the Paris suburb of Meudon, will be the first large, positive-energy office building; that is, one that produces more energy than it consumes.

Positive energy buildings



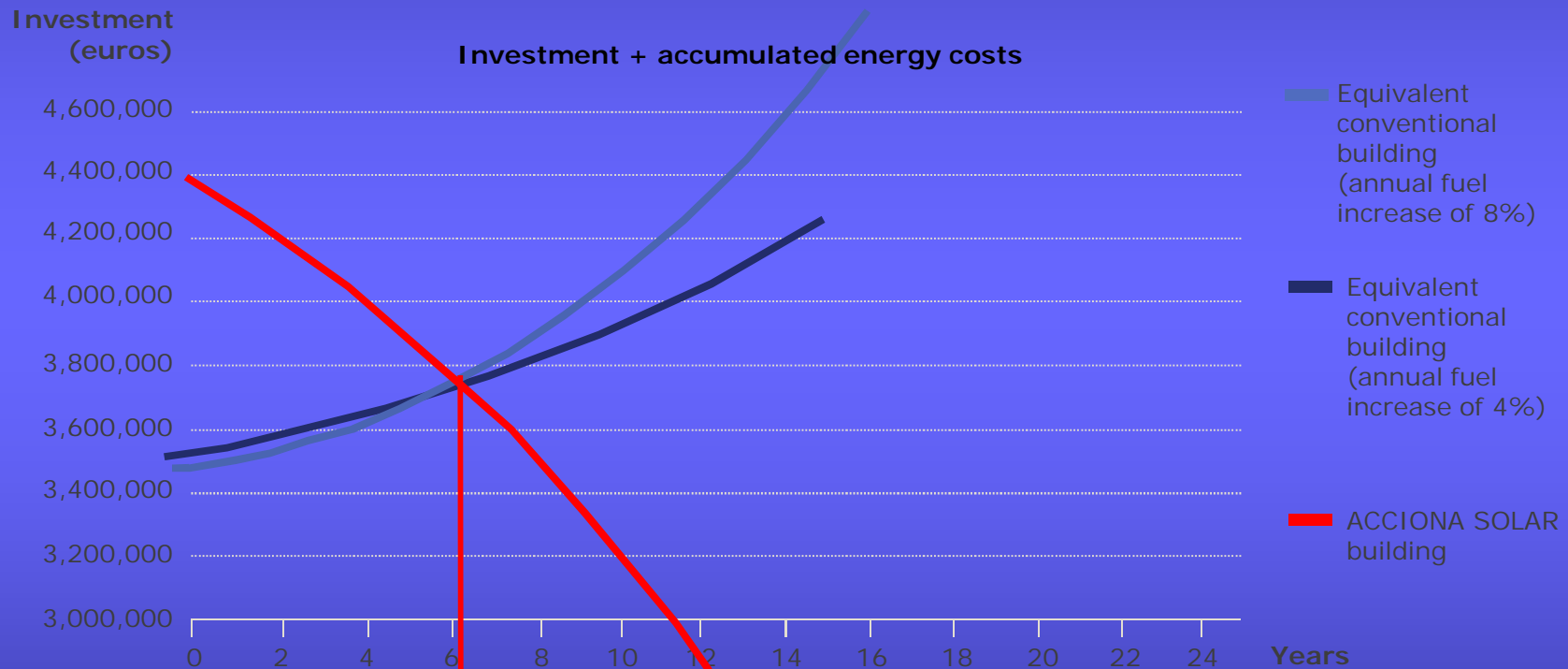
ACCIONA SOLAR BUILDING

Positive energy buildings



4. Results: a sustainable building

Economic efficiency



The higher investment in the zero emissions building is paid off in ten years (13%)



“MILLIONS OF JOBS TO RE-CONVERT
ENERGETICALLY THE EXISTING BUILDING
STOCK IN EUROPE” J.Rifkin

EURO ACE PLAN-RENOVATING EUROPE



- ▶ TRAINING SWITCH TO THE NEW TIR MODEL
- ▶ **FROM THE CONCENTRATED ENERGY SOURCES KNOWLEDGE TO THE DISTRIBUTED SOLAR ONE**

- ▶ **ENVIRONMENT SOLAR / HYDROGEN RELATED JOBS**



- ▶ From Oil and nuclear engineers



THE THIRD INDUSTRIAL REVOLUTION

HUMAN CAPITAL FACTOR

TRAINING AND ESTABLISHING NEW PROFESSIONAL PROFILES

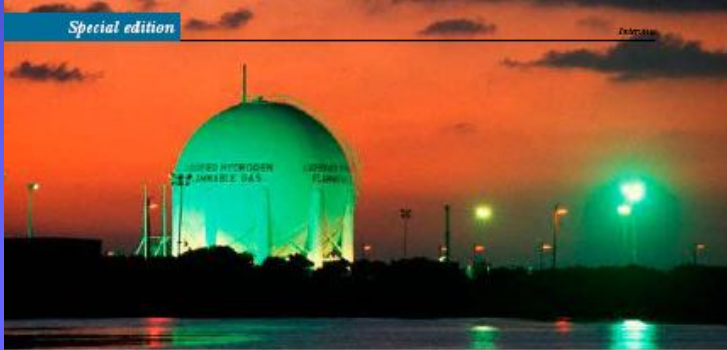
J.Rifkin



The Third Industrial Revolution Manifesto



Special edition



Addressing the Triple Threat of the Global Financial Crisis, Energy Crisis, and Climate Change

Leading the Way to the Third Industrial Revolution

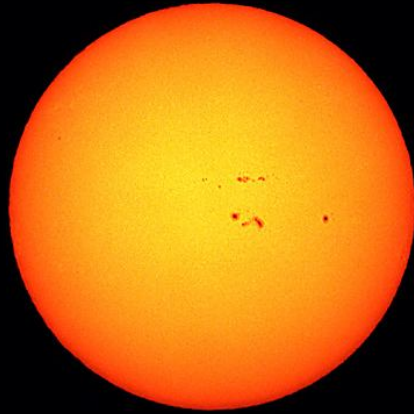
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* The opinions presented in this article are personal to the authors and do not necessarily reflect the views of the European Commission

We are at a precarious point in history. We are facing the real prospect of an economic meltdown on the scale of the Great Depression. The credit crisis is compounded by the global energy crisis and the climate change crisis, creating a potential cataclysm for civilization. There is a way out: we need to radically overhaul the way we use energy in our society.

Special edition | December 2008 | European Energy Review

4



One nuclear reactor, carefully designed and conveniently placed at the security distance of 150 millions km from Planet Earth is more than sufficient to give us all the energy we need

Amory Lovins

