



# Nuclear energy is clean and effective



Presentation  
in Malmö

21<sup>st</sup> May 2005

by Bruno Comby,  
Independent scientist,  
Director of the Comby institute  
and President of EFN  
(Environmentalists For Nuclear)



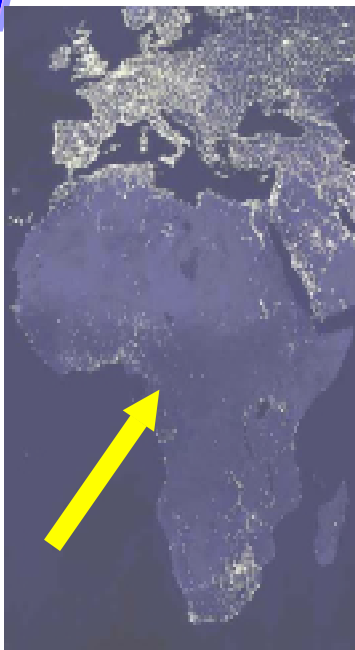
## Why an environmentalist is in favor of nuclear energy ?





**EFN**

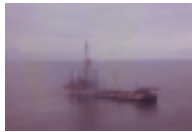
## The life of an environmentalist - childhood in nature



**France**



**Gabon**



**United States**



**Canada ...**





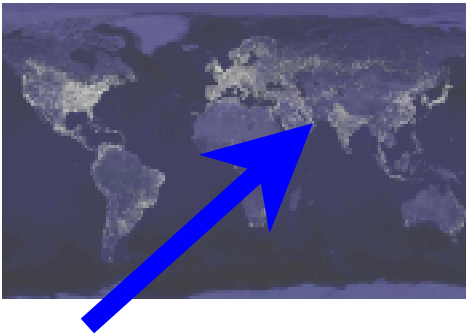
## The life of an independent scientist - Scientific background



Graduate in nuclear physics (Ecole Polytechnique Paris + National University of Technical Sciences)



## The life of an independent scientist - Military service



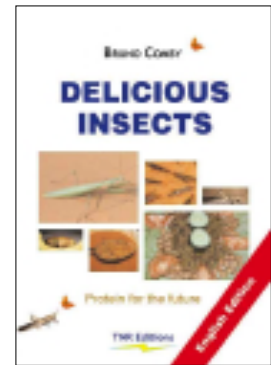
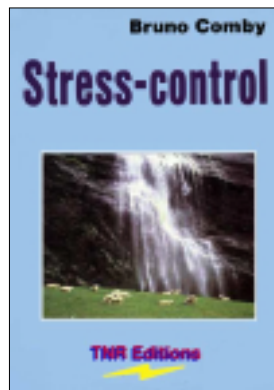
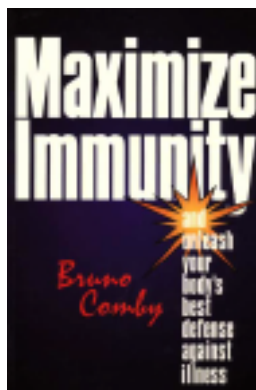
War zone :  
Persian Gulf  
Hormuz strait

Problem :  
Safety of oil tankers

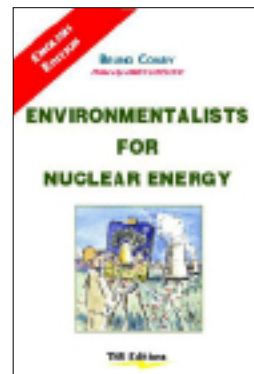


**The life of an environmentalist - research and books**  
**20 years of pioneer research on healthy living**  
**and the protection of the environment**

10 books published in 15 languages - 1 million readers



More than 1500 radio,  
TV presentations and press articles  
Popular lecturer in trade fairs





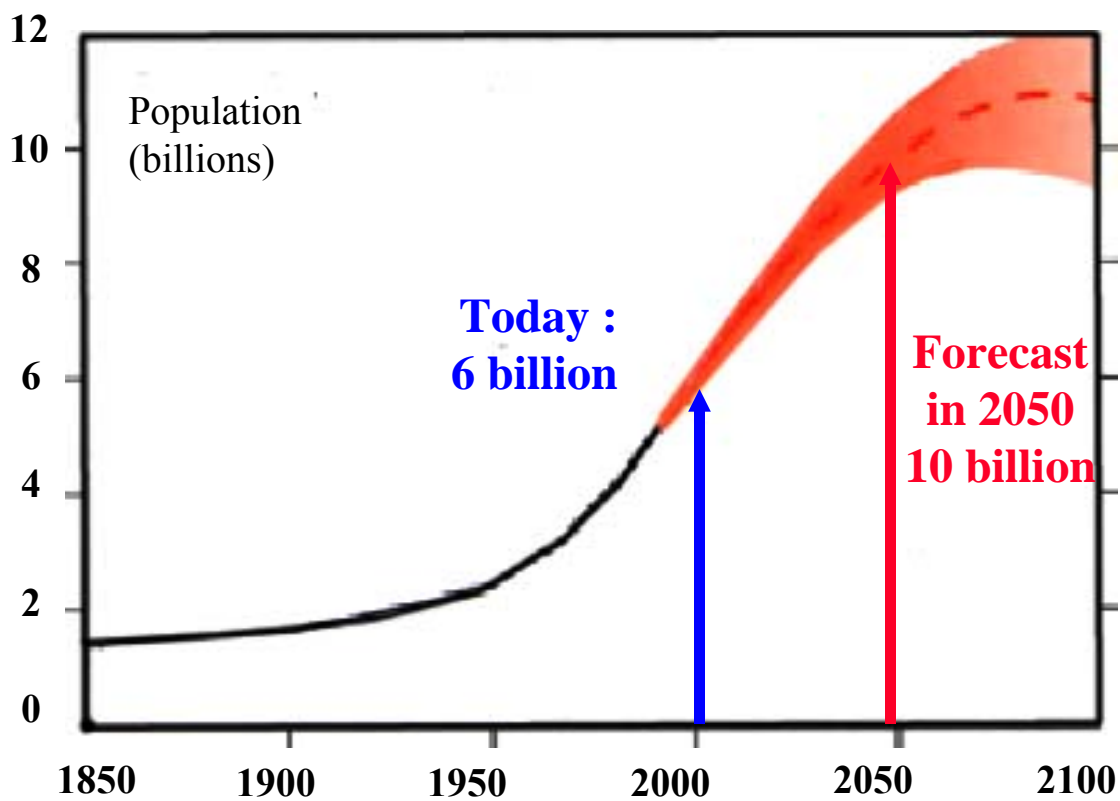
## Photo of the world at night

**Today, 20% of the world's population  
consumes 60% of the energy**

Planet Earth seen at night from outer space (reconstructed image) - © Nasa 2000



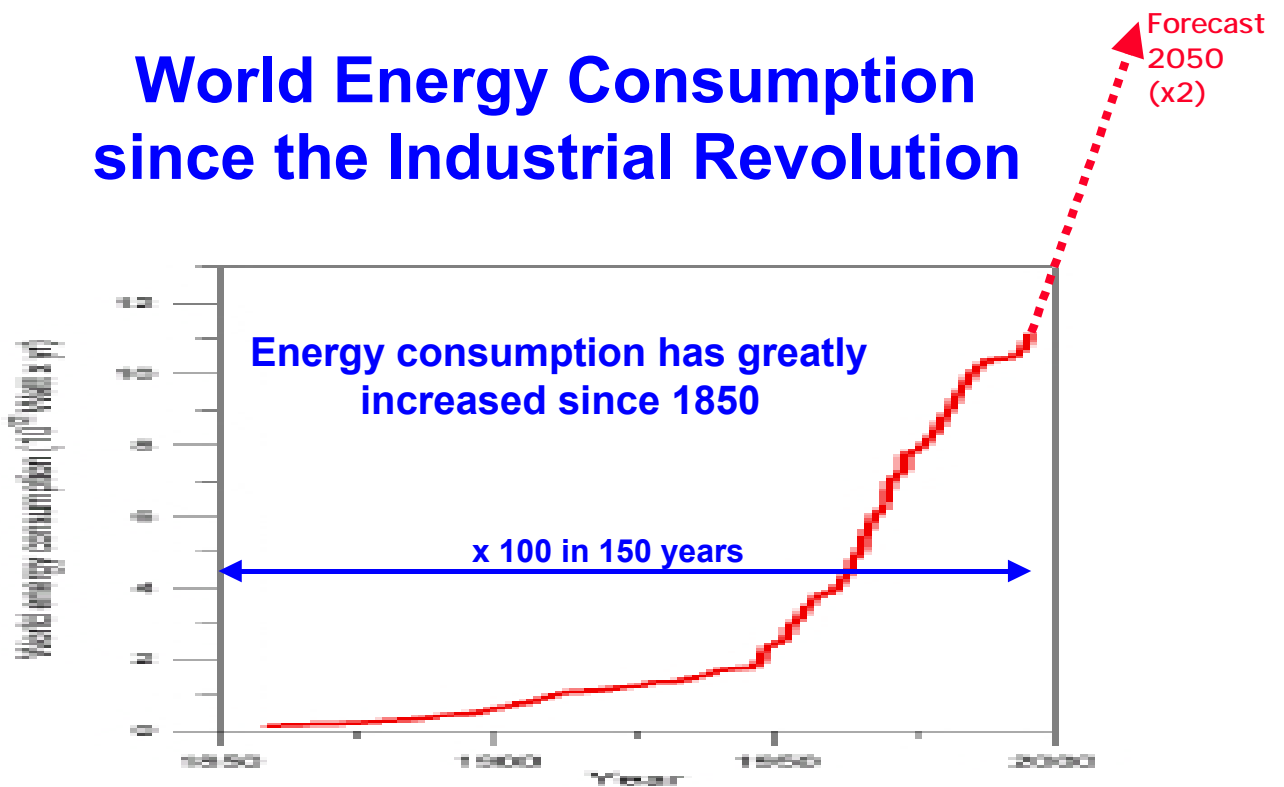
# World population







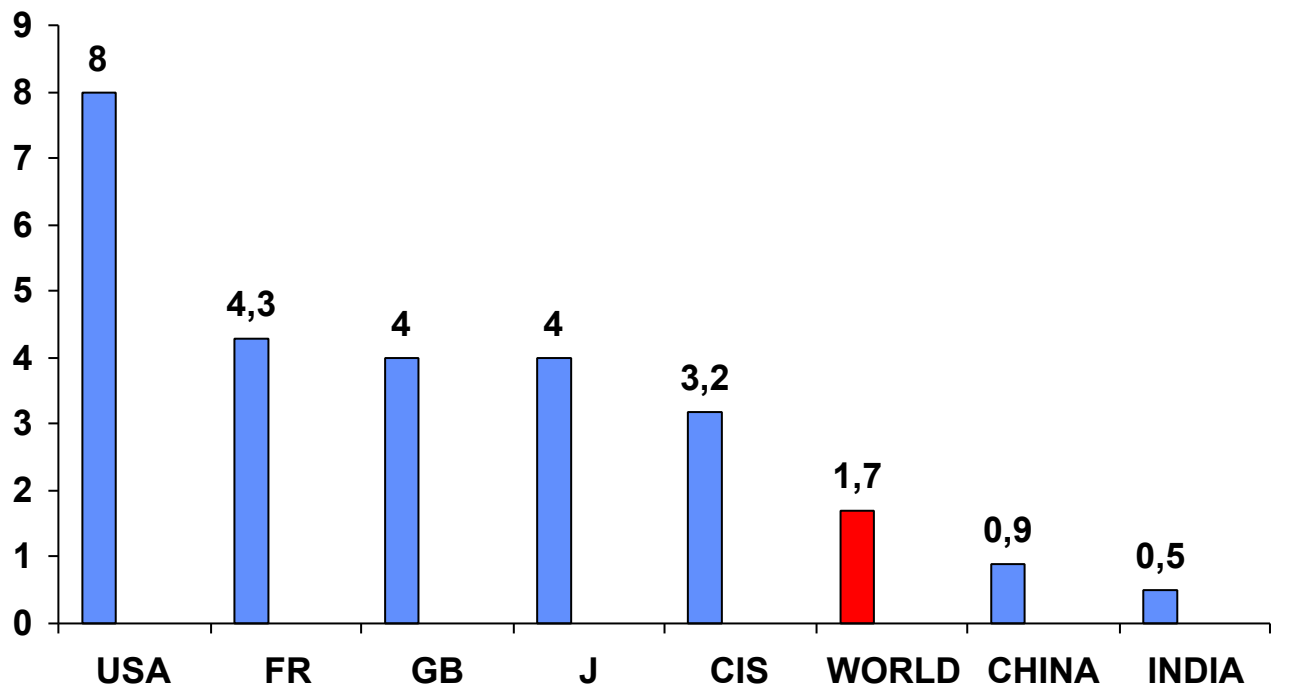
# World Energy Consumption since the Industrial Revolution



Today, energy consumption is increasing rapidly in developing countries, and moderately in industrial countries.



# ENERGY CONSUMPTION (toe/capita/year)



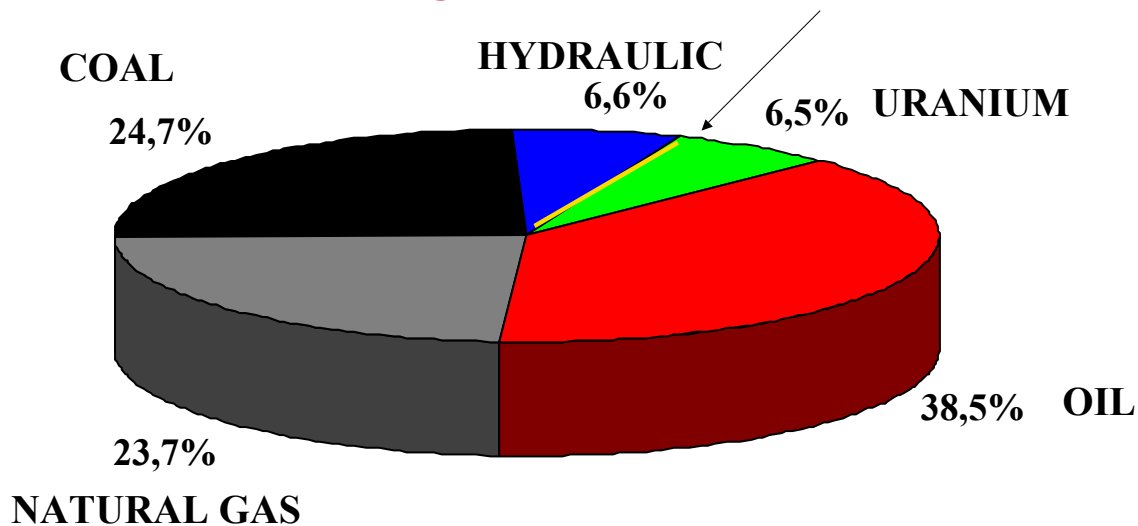


# ENERGY SOURCES

excluding biomass - fire wood (world 2002)

**87% of the energy is fossil (coal, oil, gas) and contributes to the greenhouse effect**

**Wind + geothermal + solar = less than 1%**

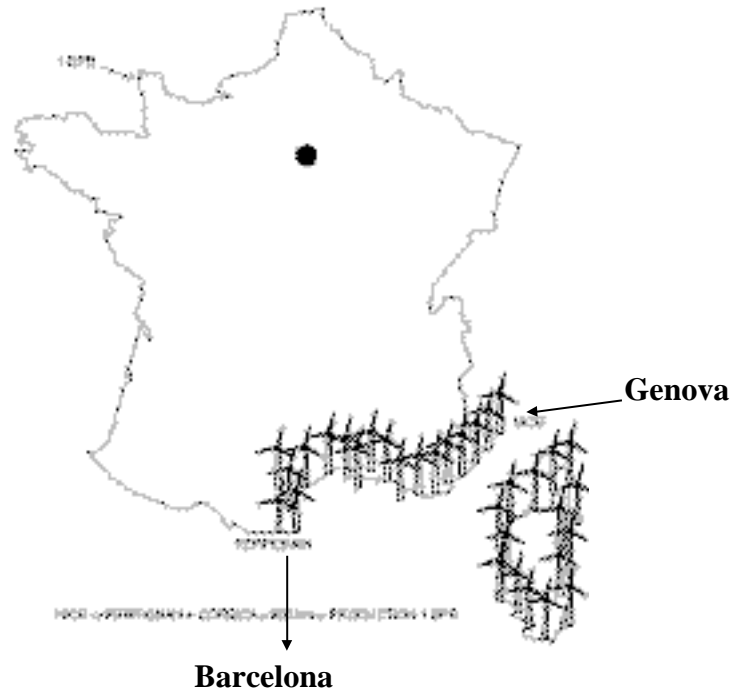


**9,1 Gtoe/yr + biomass  $\sim$  10 Gtoe/yr**

Source : BP 2002



# WIND ENERGY CAN HELP, BUT WILL NOT SAVE THE PLANET





# SOLAR ENERGY CAN HELP A LITTLE, BUT IS NOT ENOUGH





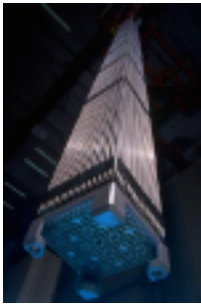
## NUCLEAR ENERGY



- Is quite compact
- Factor 1 million  
(1g U = 1 Ton oil)
- Consumes very little uranium  
(20 T=1m<sup>3</sup> per year)
- Produces very small volumes of waste



## **NUCLEAR WASTE IS NOT A PROBLEM**



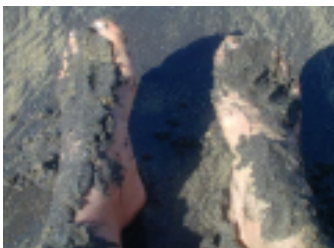
- **The volume of the waste is small**
- **Nuclear waste is confined - not rejected**
- **Nuclear waste decays spontaneously**



- **Initial toxicity decreases very rapidly**
- **Few meters of earth stops the radiation**
- **Used fuel can be reprocessed**



# Radioactivity is natural



- Usual background :  
0.1  $\mu\text{Sv}/\text{hour}$



Airplane : 5  $\mu\text{Sv}/\text{hour}$

In Ramsar or Kerala :  
30  $\mu\text{Sv}/\text{hr}$  (some houses)

In Guarapari/Brazil :  
up to 40  $\mu\text{Sv}/\text{hr}$  (beach)

- La Hague or NPP vicinity  
(maximum additional exposure) : 0.001  $\mu\text{Sv}_{\text{eq}}/\text{hour}$





# Reactors of the future

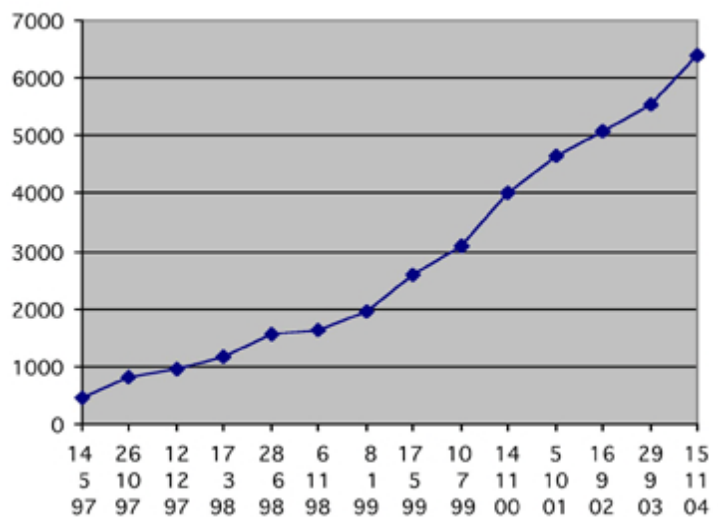


- Advanced reactors :
- EPR, AP 600-1000, ABWR, ACR
  
- New HTR reactors :
- Small, very safe reactors
- For developing countries
- Worst case not dangerous
  
- Generation IV :
- Resources x100
- Less waste
- 6 concepts (SFR, LFR, GFR, VHTR, MSR, SCWR)



## EFN : Environmentalists For Nuclear Energy

- An international organization gathering over 7000 members and supporters in favor of clean nuclear energy
- Growing rapidly
- In >50 countries
- On all 5 continents.



**EFN's mission :**  
**information about energy and the environment**



# EFN's activities

in English, in French,  
in German, in Italian,  
and in 15 languages



The Civaux Nuclear Power Plant

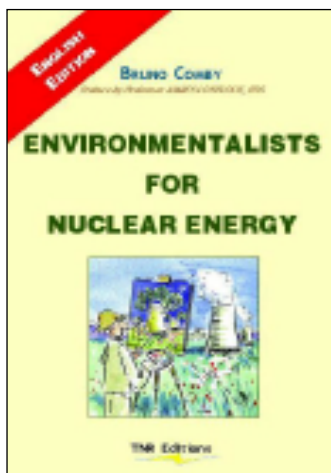


Web site : [www.ecolo.org](http://www.ecolo.org)



## The book:

Bruno Comby's books have informed over one million readers on ecology and the environment published in French, Japanese, English.



Published  
in English

by TNR  
Editions.

Preface by Pr. James Lovelock

[www.comby.org](http://www.comby.org)

-> click on « books »



In preparation : Chinese, Italian,  
Russian, German, Spanish, Dutch...



## Pr. James Lovelock



- Historical father of environmental thinking since the 1960 's
- author of the Gaia theory
- member of EFN

« Nuclear energy is THE ONLY ecological solution »

“ The dangers of continuing to burn fossil fuels as our main energy source (...) threaten not just individuals but civilization itself (...) I hope that it is not too late for the world to emulate France and make nuclear power our principal source of energy. There is at present no other safe, practical and economic substitute for the dangerous practice of burning carbon fuels. ” (in his preface to Bruno Comby's book)



# We have only one planet



© Luc Massart/ IBC



# A livable future for our children



**and future generations...**

A photograph of a nuclear power plant with two large cooling towers, set against a blue sky with light clouds. In the foreground, there is a field of bright yellow sunflowers. The text is overlaid on the image.

# CONCLUSION

**NUCLEAR ENERGY  
WELL DESIGNED, WELL BUILT,  
WELL OPERATED IS**

**SAFE, CLEAN, AND ESSENTIAL  
FOR OUR FUTURE.**





**More information :**  
**[www.ecolo.org](http://www.ecolo.org)**

**The book : [www.comby.org](http://www.comby.org)**

**Contact : [bruno@ecolo.org](mailto:bruno@ecolo.org)**

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