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# Promoting International Education



*IN THE SPOTLIGHT...*

2010 AIEA Annual Conference

"Internationalizing Higher Education: Essential to our Future"

UPDATE ON LATIN AMERICA – HOW THE POLITICAL AND ECONOMIC CONTEXT RELATES TO INTERNATIONALIZATION

**THE WORLD IS MADE UP OF LAYERS OF KNOWLEDGE...**

**BUILDING A**

**SUSTAINABLE WORLD**





# **Renewable Energy Sources**

## **Higher Education for the 21st Century**

### **Building a Sustainable World**

**UPDATE ON LATIN AMERICA – HOW THE POLITICAL AND ECONOMIC CONTEXT RELATES TO INTERNATIONALIZATION**

**Prof. Francisco Paletta - PhD**

**Dean, School of Engineering - FAAP - São Paulo - Brazil**

**Dean, School of Computer Science - FAAP - São Paulo - Brazil**

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**Feb 14-17, 2010 JW Marriott - Washington DC.**

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# Renewable Energy in Latin America



Brazil ranked 12 among 123 nations around the world in terms of renewable energy use

Renewable Energy Index (REI)

- 7.5-10
- 5.0-7.5
- 2.5-5.0
- 0-2.5
- No data





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# South America in Figures



## ARGENTINA



GDP growth:	5.7%
GDP:	\$270bn (PPP: \$772bn)
Inflation:	10.5%
Population:	39.8m
GDP per head:	\$6,790 (PPP: \$19,420)

## BOLIVIA



GDP growth:	4.4%
GDP:	\$15bn (PPP: \$45bn)
Inflation:	7.3%
Population:	9.7m
GDP per head:	\$1,510 (PPP: \$4,630)

## BRAZIL



GDP growth:	4.5%
GDP:	\$1.27trn (PPP: \$1.97trn)
Inflation:	4.1%
Population:	191.9m
GDP per head:	\$6,600 (PPP: \$10,290)

## CHILE



GDP growth:	5.1%
GDP:	\$178bn (PPP: \$241bn)
Inflation:	3.8%
Population:	16.8m
GDP per head:	\$10,590 (PPP: \$14,339)

## COLOMBIA



GDP growth:	5.8%
GDP:	\$169bn (PPP: \$462bn)
Inflation:	4.5%
Population:	47.6m
GDP per head:	\$3,550 (PPP: \$9,690)

## ECUADOR



GDP growth:	1.7%
GDP:	\$45bn (PPP: \$65bn)
Inflation:	3.5%
Population:	13.8m
GDP per head:	\$3,260 (PPP: \$4,710)

## PARAGUAY



GDP growth:	4.0%
GDP:	\$13bn (PPP: \$29bn)
Inflation:	8.8%
Population:	6.2m
GDP per head:	\$2,100 (PPP: \$4,620)

## PERU



GDP growth:	5.4%
GDP:	\$111bn (PPP: \$227bn)
Inflation:	2.3%
Population:	29.2m
GDP per head:	\$3,820 (PPP: \$7,770)

## URUGUAY



GDP growth:	4.0%
GDP:	\$24bn (PPP: \$43bn)
Inflation:	7.2%
Population:	3.3m
GDP per head:	\$7,300 (PPP: \$12,780)


## VENEZUELA



GDP growth:	4.0%
GDP:	\$268bn (PPP: \$239bn)
Inflation:	19.6%
Population:	27.8m
GDP per head:	\$9,650 (PPP: \$8,620)



**Nowadays all industry sectors agree that we need radical changes in the way power and fuel are produced and consumed.**



**The world's energy system is at a crossroads.**

**Energy supply and consumption are currently unsustainable: environmentally, economically, and socially.**

**Our challenge  
today is to deliver  
secure and  
affordable supplies  
of clean water and  
energy**







**We need a real energy revolution.**

**The future of human prosperity depends on successfully tackling two central challenges:**

- ✓ **securing the supply of reliable and affordable energy;**
- ✓ **creating a system of energy supply that is low-carbon and environmentally friendly.**

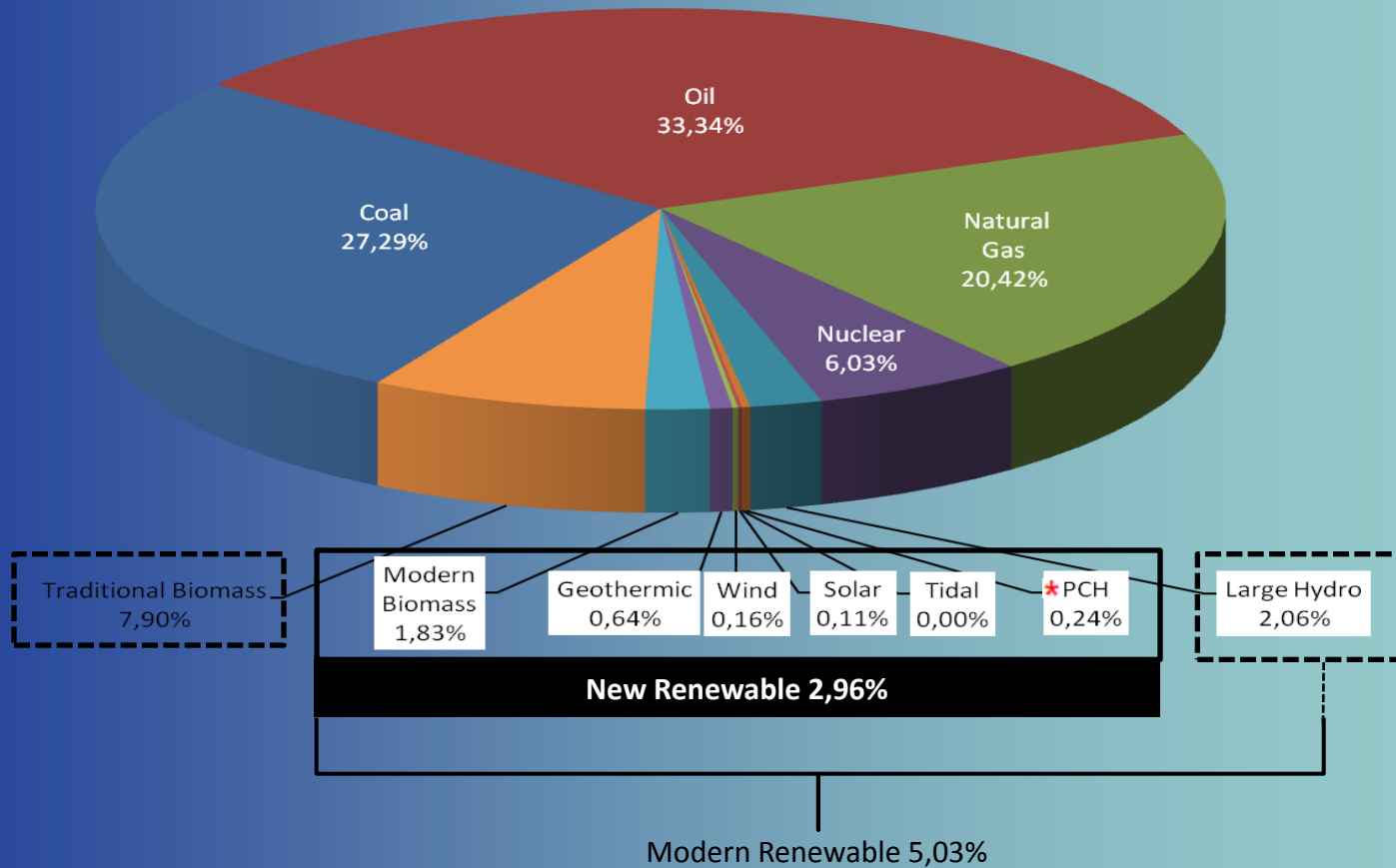


**Innovative solutions are fundamental to address these challenges.**

**They also will bring economic growth to those who are able to deliver them.**



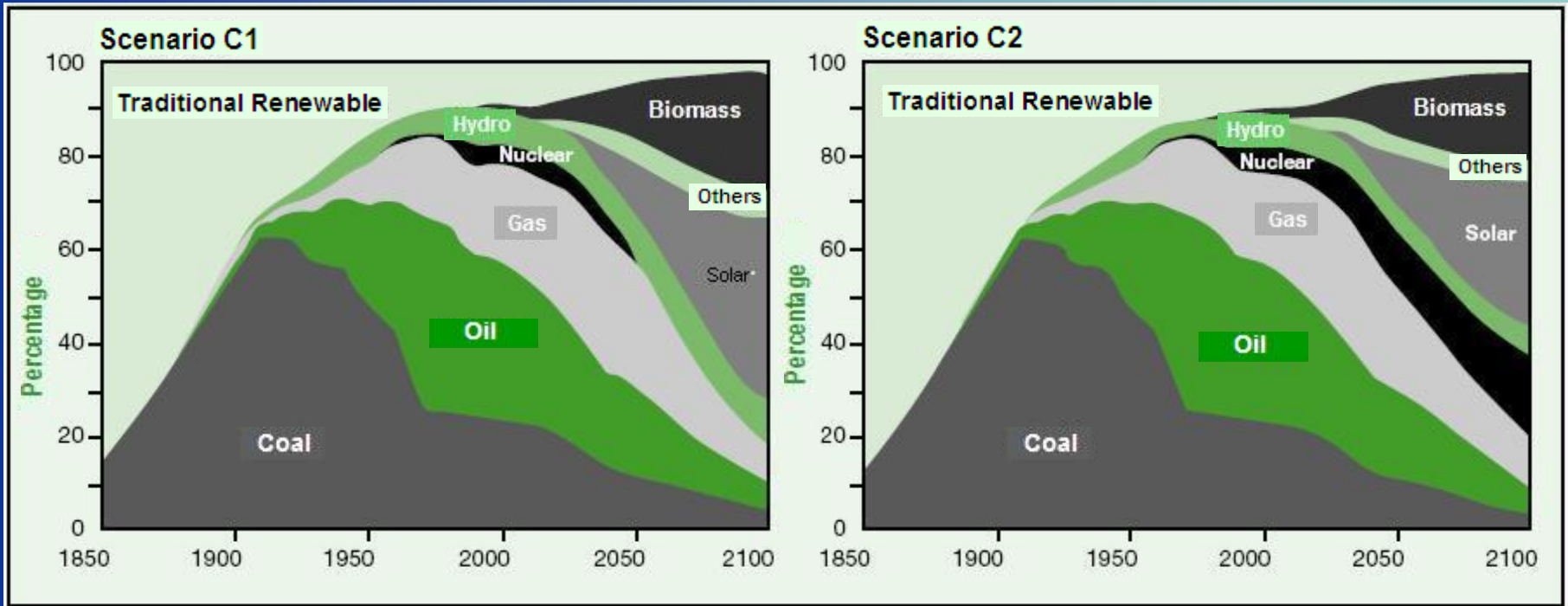
# World Demand for Primary Energy (2008)



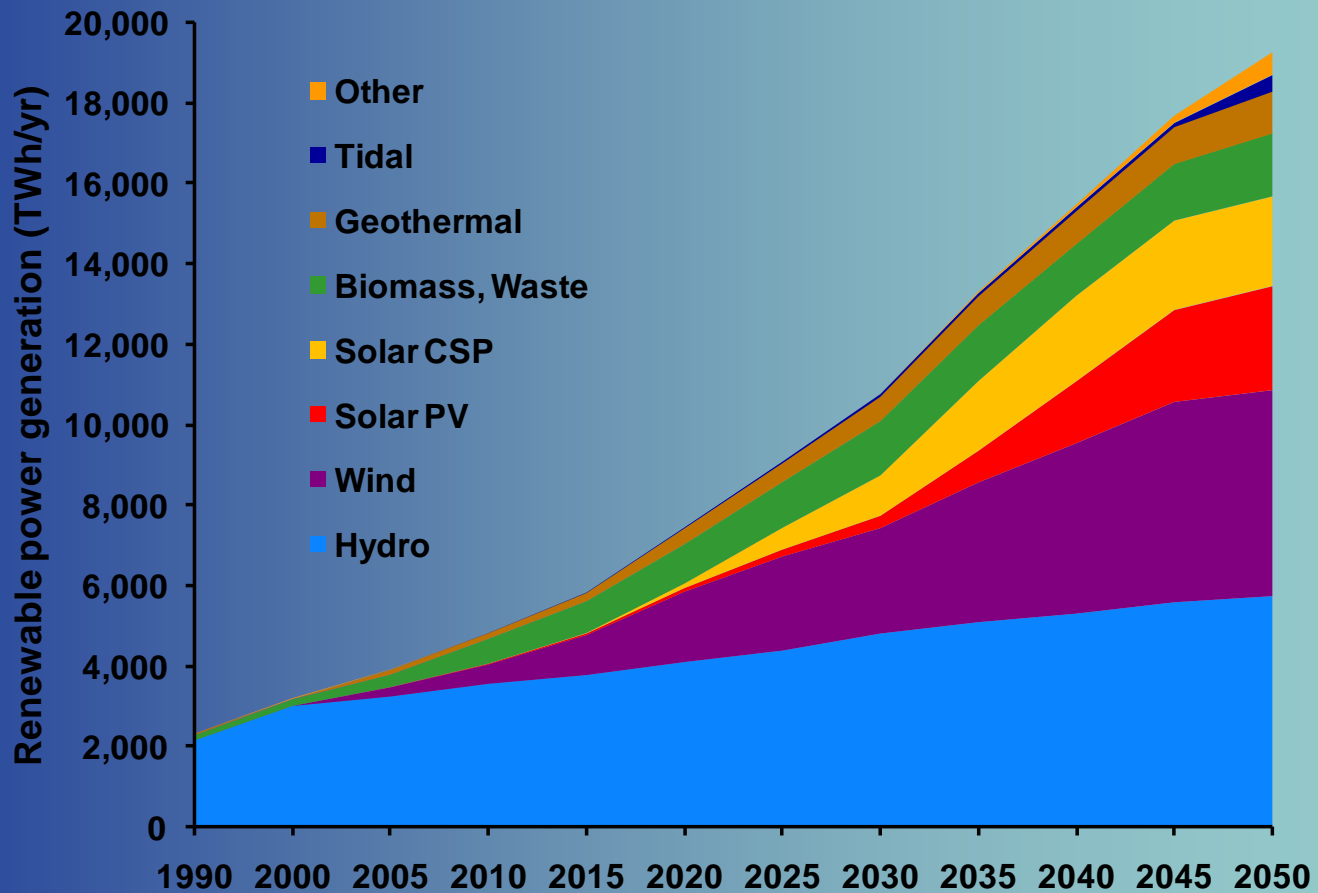
\* Micro Power Mills



# Primary Energy Share, 1850-1990 Forecast 2100



*Renewable energy contribution to electricity supply by 2050 to help meet the energy transition necessary to limit global mean temperature rise to below 2°C (IEA, 2008b).*





# ETHANOL

## BRAZILIAN POTENTIAL

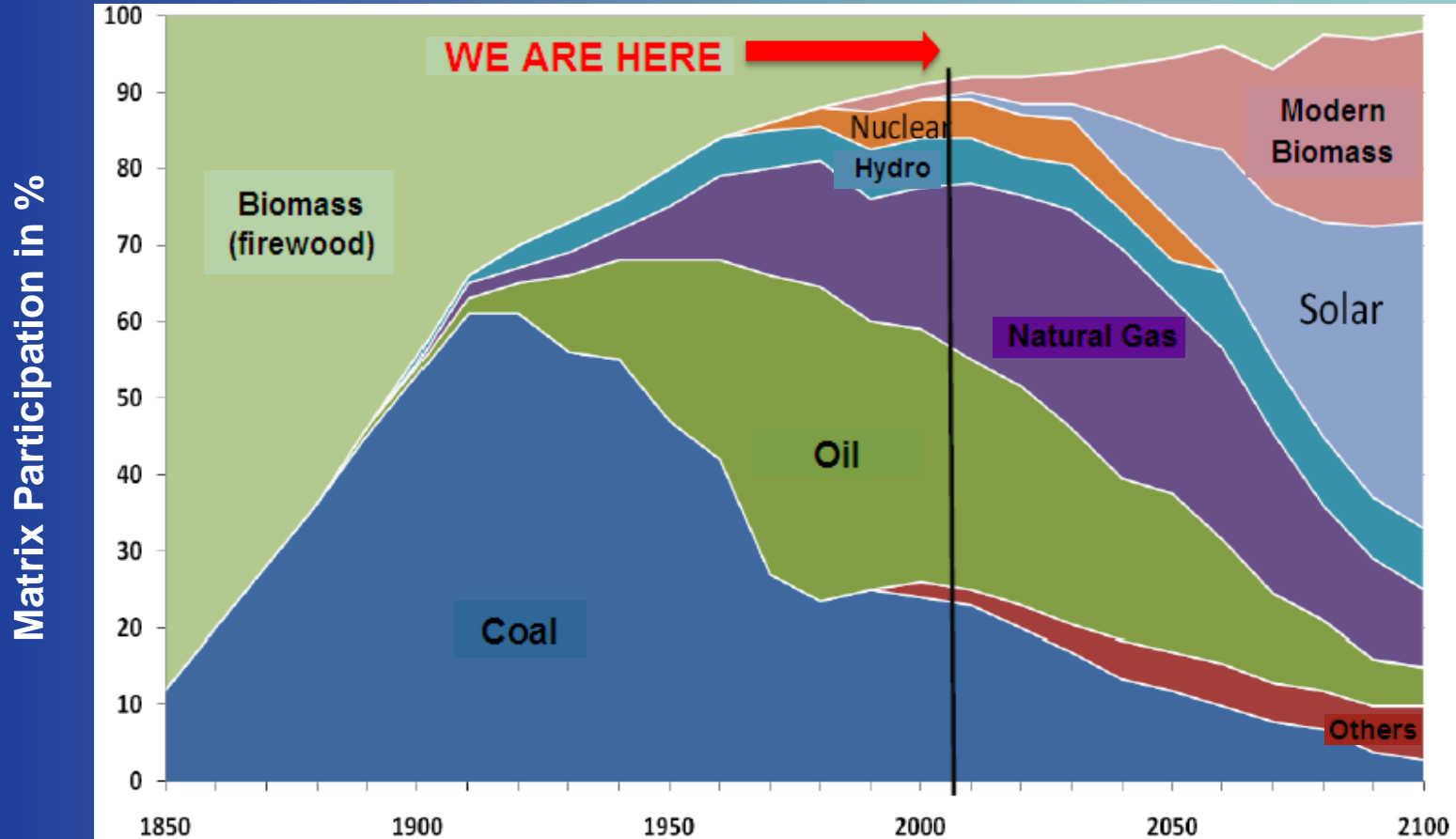




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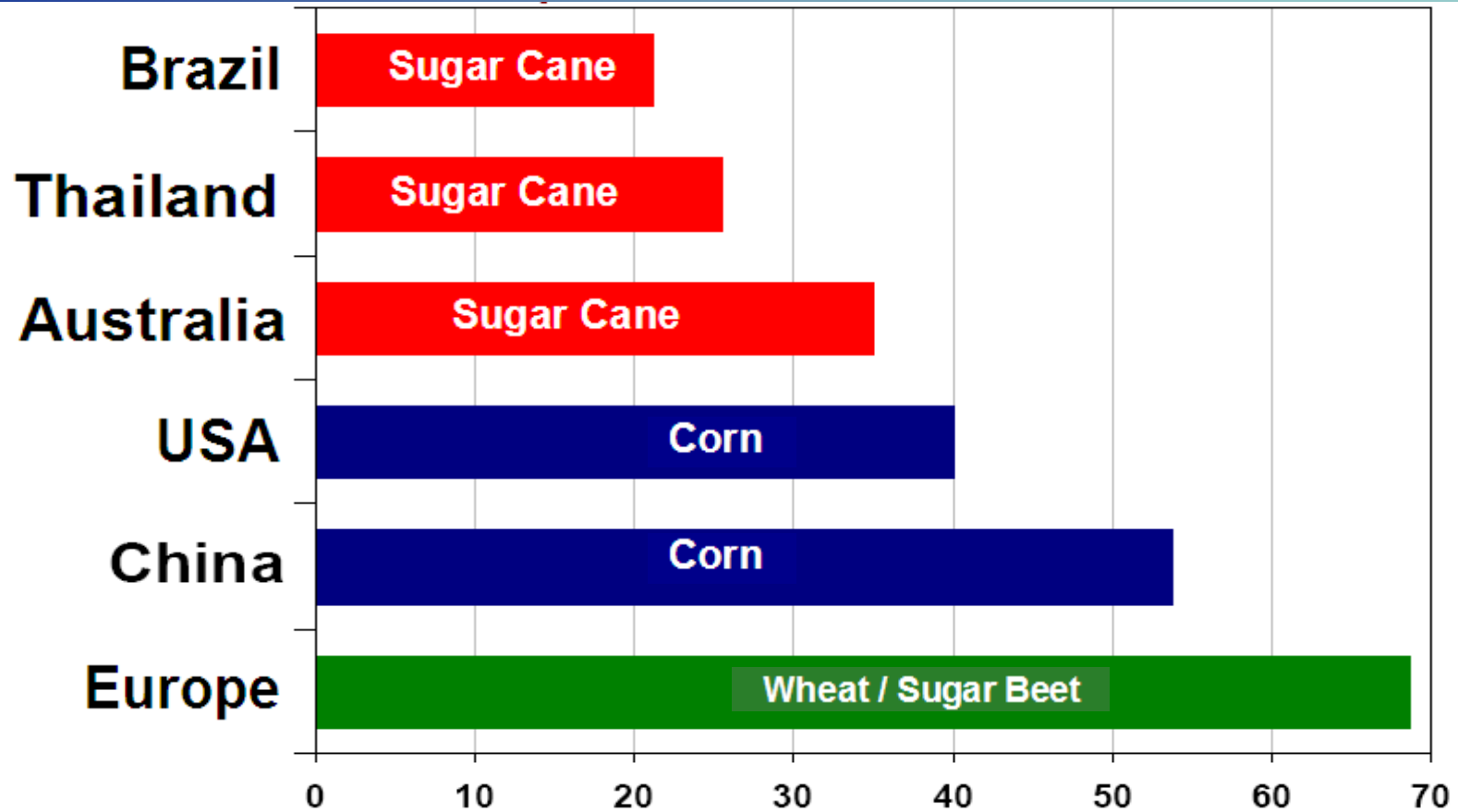
# ETHANOL PLANT







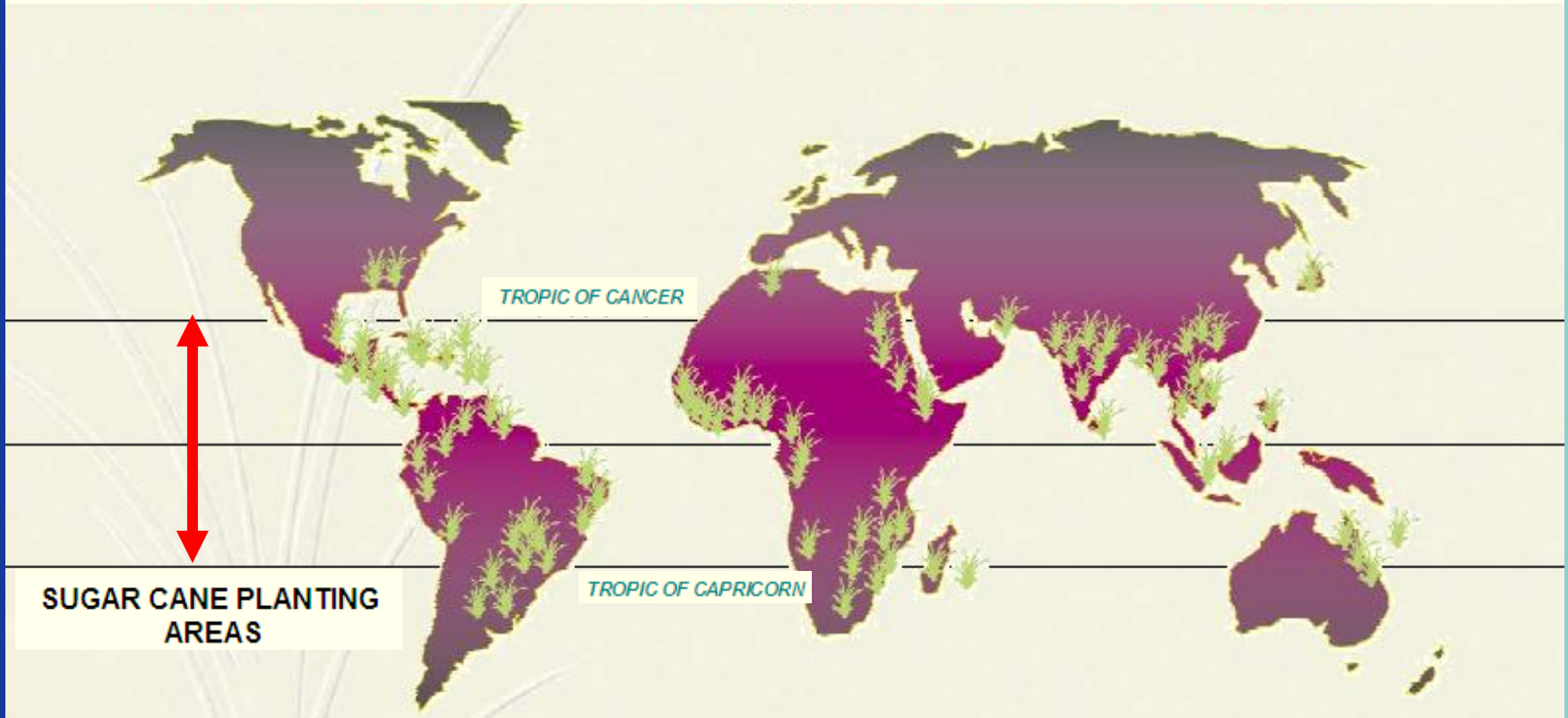
# BRAZILIAN ETHANOL PRODUCTION COST



Fonte: O. Henniges and J. Zeddis, "Economics of Bioethanol in the Asia-Pacific: Australia-Thailand-China", in F.O.Licht's. World Ethanol and Biofuels Report, vol. 3, n. 11, 2005. Elaboração: Icone e Unica.



## Sugar Cane Production Worldwide

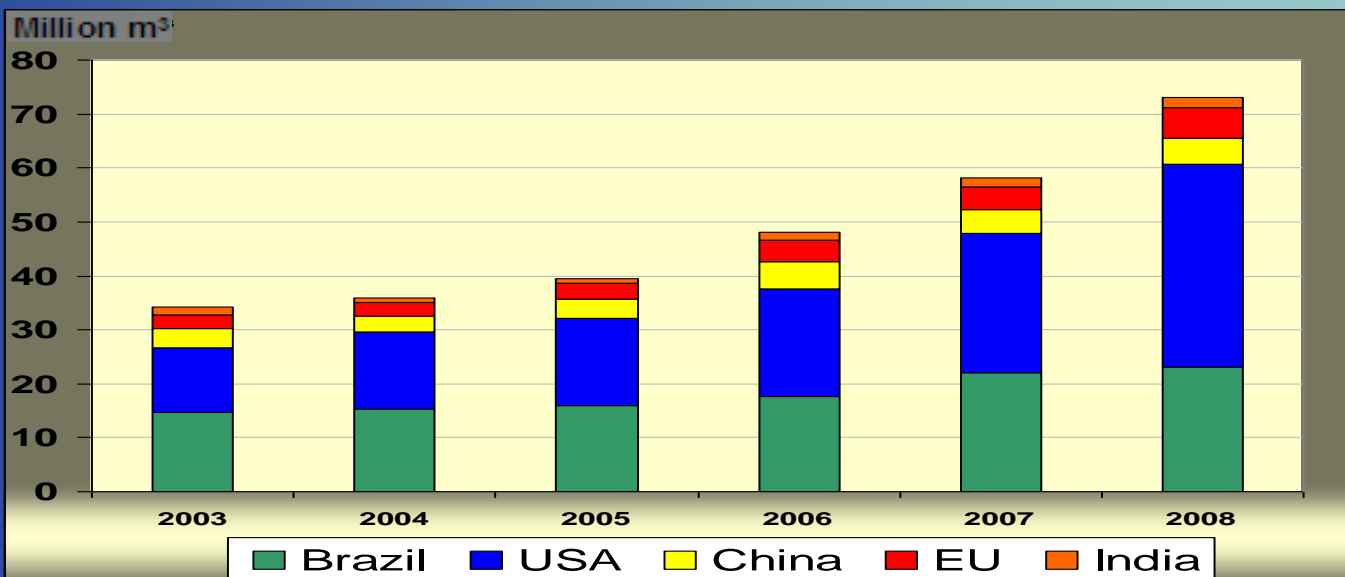


**More than 100 countries could produce biofuel for 200 nations.  
Today, only 20 oil producers supply fossil fuel to the rest of the world.**



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# ETHANOL PRODUCTION WW



1.000 m<sup>3</sup>

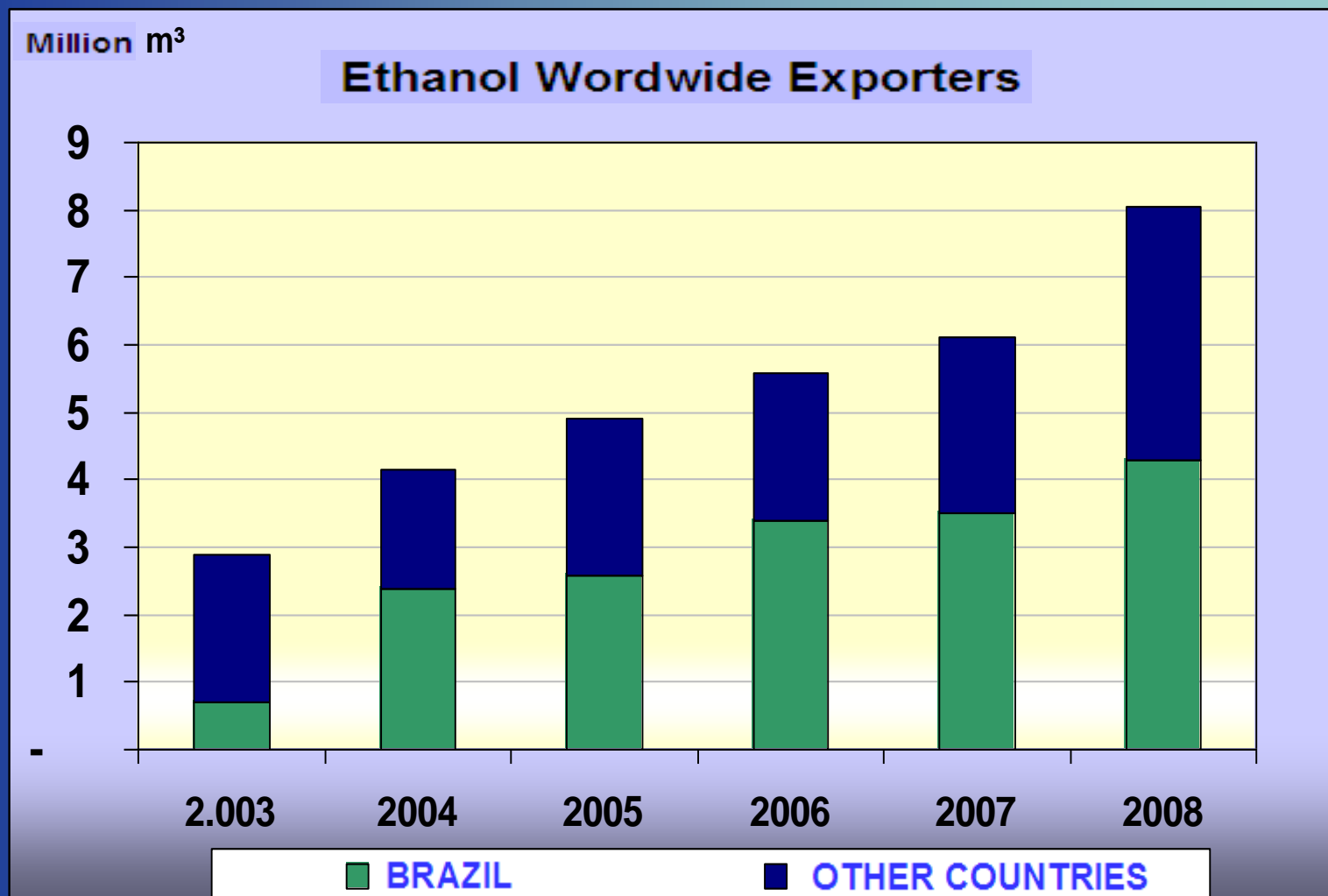
	2003	2004	2005	2006	2007	2008
Brazil	14.674	15.302	15.982	17.704	21.973	23.095
USA	12.045	14.281	16.237	19.832	25.853	37.652
China	3.522	2.870	3.436	5.105	4.490	4.671
EU	2.571	2.675	2.956	3.892	4.224	5.660
India	1.349	698	807	1.567	1.647	2.090
<b>Total</b>	<b>36.164</b>	<b>37.830</b>	<b>41.423</b>	<b>50.106</b>	<b>60.194</b>	<b>75.176</b>

Source: LMC - Ethanol Quartely - First Quarter 2.008 - March 2.008



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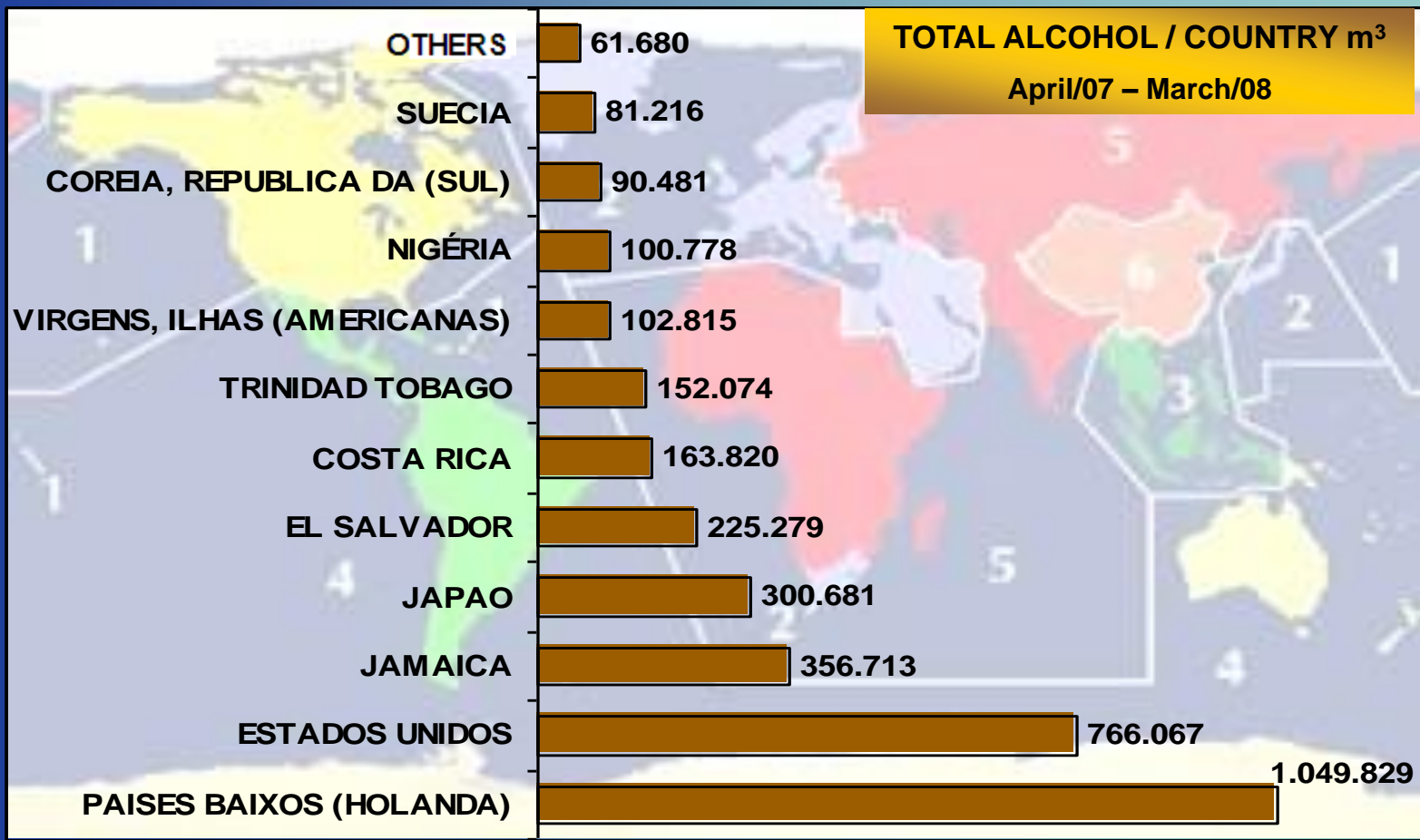
## ETHANOL WW EXPORTERS





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# BRAZILIAN ETHANOL MAIN IMPORTERS



- 1 – SWEDEN
- 2 – SOUTH KOREA
- 3 – NIGERIA
- 4 – U.S. VIRGIN ISLANDS
- 5 – TRINIDAD & TOBAGO
- 6 – COSTA RICA

- 7 – EL SALVADOR
- 8 – JAPAN
- 9 – JAMAICA
- 10 – U.S.A.
- 11 – NETHERLANDS (HOLLAND)

Fonte: Bioagencia



## SUSTAINABLE ENERGY US – BRAZIL COLLABORATION



**The US and Brazil, the largest ethanol producers worldwide, are currently organizing a list of research subjects in relation to second-generation biofuel.**



## SUSTAINABLE ENERGY US – BRAZIL COLLABORATION



**Further information on US-Brazil  
collaboration programs provided by the  
Woodrow Wilson International Center**



<http://www.wilsoncenter.org>



## **SUSTAINABLE ENERGY US – BRAZIL ACADEMIC COLLABORATION**

**The need for sustainable energy calls for a solid joint collaboration between Brazilian and US education institutions in relation to study programs and research.**





# FAAP Agreements

FAAP is one of the most internationalized higher education institutions in Brazil.

Some of our U.S. partners are:



# CONCLUSION



**Energy – its cost, availability, and sustainability will define the economic, political, and environmental future of the world.**

**We need to address the challenge of**

- **obtaining energy security through conservation;**
- **achieving the development and deployment of new energy technologies;**
- **creating alternative energy strategies.**

# CONCLUSION

**Without the proper education, we are doomed to decline in competitiveness and global economic growth.**

**We need to act now in order to prepare ourselves for a sustainable future for all.**

**"Internationalizing Higher Education: Essential to our Future"**





# Q & A

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International  
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# Thank You

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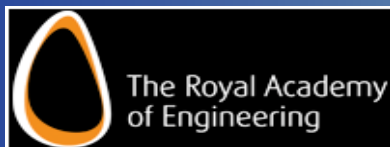
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Sources:





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