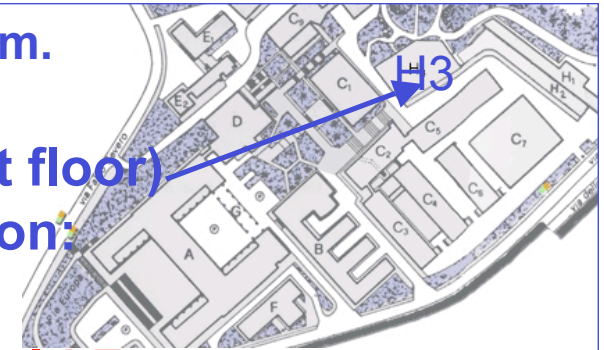




Monday 28 May 2007, 4.00- 6.00 p.m.  
University of Trieste  
Building H3, Lecture Room 1A (first floor)  
Special International Presentation:



**HIGHLIGHTS of the G8-UNESCO World Forum**  
**on 'Education, Research and Innovation: New Partnership for**  
**Sustainable Development', held in Trieste, May 2007**  
**(In English) All students, researchers, lecturers are cordially invited**

Program

- 16,00 Introduction: Education-Research-Innovation - **Gianrossano GIANNINI (TS/Italy) (10')**  
16,10 Why UNESCO? Why Africa? Why Trieste?- **Paolo ALESSI (TS/Italy+UNESCO) (10')**  
16,20 Education in the Knowledge-Based Society - **Gabriele GARBIN (TS/Italy+UNESCO)(10')**  
16,30 Environment: Global Challenges - **Gianrossano GIANNINI (TS/Italy) (10')**  
16,40 Innovation and Society - **Rachel OBED (Nigeria+ICTP) (10')**  
16,50 Sustainable Development and Health - **Omer A. Ali (Sudan+ICTP) (10')**  
17,00 Sustainable Development and Energy - **Gabriele GARBIN (TS/Italy+UNESCO) (10')**  
**& Anna Maria Novello (TS/Italy) (5')**  
17,15 Research and Innovation: Role of Governments-**Patrizia TIBERI VIPRAIO (UD/Italy) )(5')**  
**& Rachel OBED (Nigeria+ICTP) )(5')**  
17,25 Knowledge and Sustainable Development **Gianrossano GIANNINI (TS/Italy) (10')**  
17,35 Science/Technology/Innovation: Perspectives for Africa-**Elie SIMO (Cameroon+ICTP) (15')**  
17,50 Knowledge for Sustainable Development:The future **Patrizia TIBERI VIPRAIO(UD/Italy)(10')**  
18,00 End

**Saturday, 12 May**

## **Knowledge and Sustainable Development**

*How to place research and innovation on the national, as well on the international agenda for development?*

*How to enhance scientific capacity in developing countries in order to generate appropriate technologies and to base political decisions on the best available information?*

### **Chair**



**Professor Jacob PALIS**  
President  
TWAS  
Trieste

### **Keynote Speakers**



**Professor Hans VAN GINKEL**  
Rector, United Nations  
University  
TOKYO



Professor  
**ATTA-UR-RAHMAN, FRS**  
Adviser to the Prime Minister  
on Science & Technology  
PAKISTAN

### **Rapporteur**



**Professor Teboho MDJA**  
Department of Administration  
Leadership and Technology  
The Steinhardt School  
of Education U.S.A.



**Dr. Dimitri PISKOUNOV**  
Deputy Director-General  
Managing Director  
Programme Development and  
Technical Cooperation Division  
UNIDO Vienna Austria



**Professor Jacob PALIS**  
President  
TWAS  
Trieste

**Hope to change the map of the illuminated world**  
**Every person has the right to be happy**  
**Questions →**



**Professor Hans VAN GINKEL**  
Rector, United Nations  
University  
TOKYO

**Our Shared Future →**



Professor  
**ATTA-UR-RAHMAN, FRS**  
Adviser to the Prime Minister  
on Science & Technology  
PAKISTAN

**The working example of Pakistan →**



**Dr. Dimitri PISKOUNOV**  
Deputy Director-General  
Managing Director  
Programme Development and  
Technical Cooperation Division

**UNIDO, United Nations Industrial Development Organization**  
**(+I.C.S. International Center for Science & High Technology,**  
**@Trieste Area Science Park )**  
**-Investments not for assistance but for industrial growth,**  
**infrastructures**

UNIDO Vienna Austria



**Professor Teboho MDJA**  
Department of Administration  
Leadership and Technology  
The Steinhardt School  
of Education U.S.A.

**...If you want to be seen, you stand up; if you want to be heard, you speak up; if you want to be liked you are brief.**

**Knowledge → Electricity of Information Economy**  
**Higher Education → Power source (M.Castels)**



**Professor Hans VAN GINKEL**  
Rector, United Nations  
University  
TOKYO

# **Towards A Shared Future: On Knowledge and Sustainable Development** **(Hans van Ginkel, Rector of United Nations University, Tokyo Under-Secretary-General of United Nations)**

**UNITED NATIONS UNIVERSITY**

*Advancing Knowledge for Human Security, Peace and Development*





# Our Shared Future

## Shortening "Business Cost Distance" in Asia

UNITED NATIONS UNIVERSITY

Advancing Knowledge for Human Security, Peace and Development





# Land Degradation

- Affects 23% of the landscape under human use, including about 60% of the area of Africa and Asia
- Each year an additional 20 million hectares of agricultural land becomes too degraded for crop production or is lost to other uses
- Human-induced land degradation adversely affects the livelihoods of close to *one billion* of the poorest people and disrupts the structural and functional integrity of ecosystems; leading to loss of bio-diversity and carbon sinks of global value



# Dimensions of Sustainable Development

- Environmental / ecological
  - Economic
  - Social, incl. Cultural and political
- ∴ *Scientific knowledge* includes knowledge from social sciences and humanities
- ∴ *Innovation* includes technological and social innovations



Professor  
**ATTA-UR-RAHMAN, FRS**  
Adviser to the Prime Minister  
on Science & Technology  
PAKISTAN

# Requirements for Sustainable Development

Human capital with knowledge and skills  
Technology (Innovation/Entrepreneurship)

Correct government vision, strategy, action plan, policies

## Bi-Modal Approach

- **Bottom-Up**
  - **Basic Health, Primary Education, Water...**
- **Top-Down**
  - **Higher Education**
  - **Emphasis on Science & Technology**
  - **Industrial Linkages**

## STRATEGY

### 1) BASIC SCIENCES

Physics, Chemistry, Mathematics, Biology)

### 2) APPLIED SCIENCES

(Engineering, Agricultural sciences, Biotechnology, Information Technology, Pharmaceuticals, New Materials, Communications, Renewable Energy)

### 3) SOCIAL SCIENCES

### 4) ECONOMICS, FINANCE, MANAGEMENT

### 5) LINKAGES WITH INDUSTRY

## *Education & Sustainable Development*

Attracting the Brightest

Training the Brightest

Using Technology to Leap Frog

Curriculum (Problem Solving Approach)

Enhancing Access

Distance Learning



# Attracting the Brightest!

- **Change in Salary Structures**---under “Tenure Track” system salaries of Professors ***raised to 3 times of Federal Ministers in government!***
- **Research Productivity Allowance**----based on Cumulative Impact Factors during the preceding year
- **Reversing the Brain Drain**----under “Foreign Faculty Hiring Program” over 500 eminent expatriate/other scientists attracted to return to Pakistan
- **Research Funding** (up to US\$ 600,000 per international linkage program)
- **Guaranteed Jobs** to fresh Ph.D.s with higher salary structures under tenure track system
- 75% Reduction of **Income Tax** for all academics

# Training the Brightest!

- **Massive Foreign scholarship programs** initiated---500-1000 students being sent abroad annually to top universities in Europe, USA, China **with guaranteed high salary jobs and research grants of US \$ 100,000**
- **Indigenous Ph.D. programs**---expansion of the existing Ph.D. output to 1500 per year
- **Huge Local Scholarship Programs for Undergraduate level** studies initiated---Rs.1 Billion to be spent!
- Local Ph.D.s being offered opportunities for **postdoctoral training** (hundreds being sent)
- **Linkages** with top Western Institutions---**50 with British Universities alone**, many others
- **US\$ 150 million Fulbright program** for MS/Ph.D. level training in top universities with USA---**largest in world!**

## Partner Countries

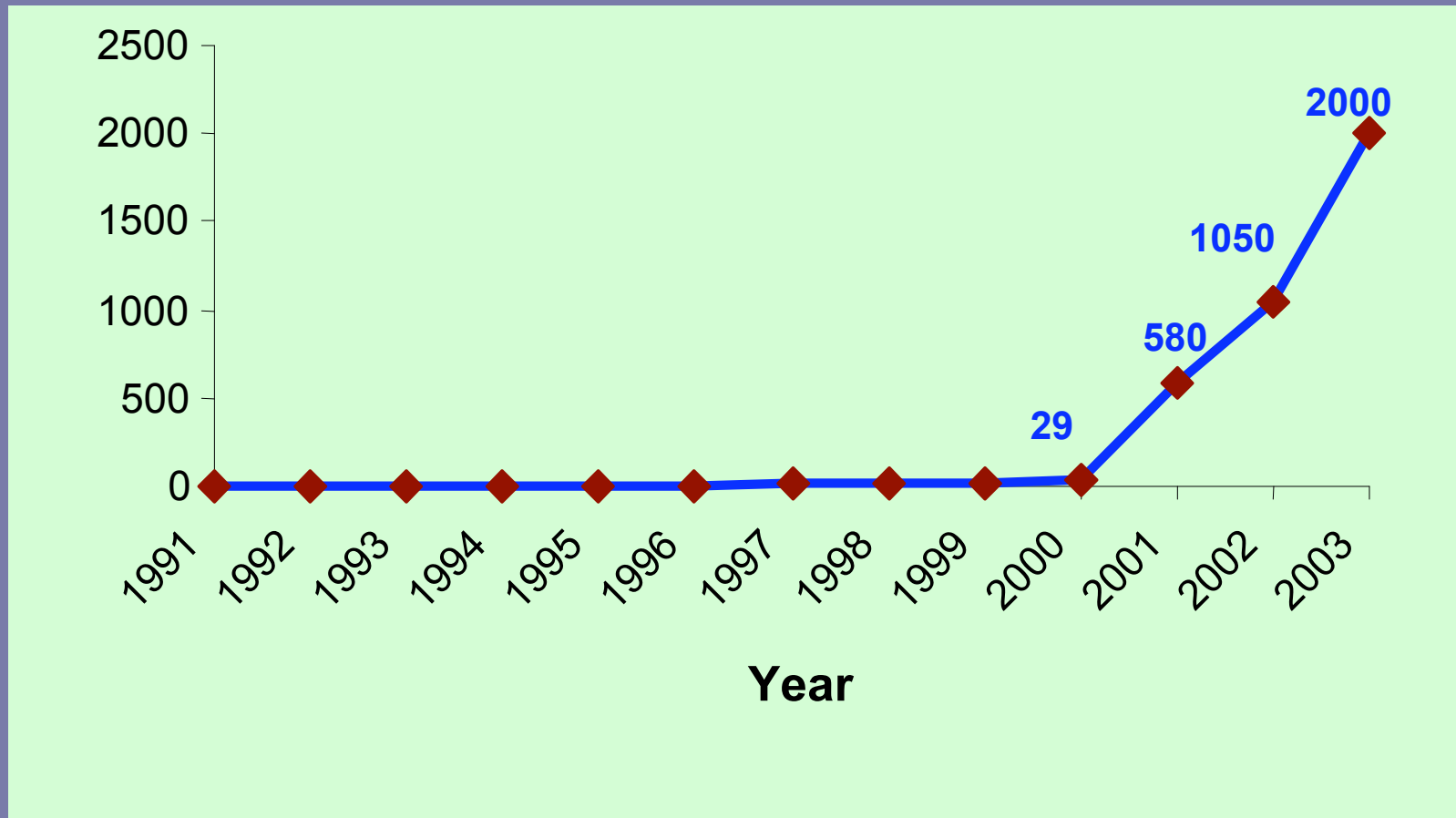
- France
- Sweden
- Germany x 2
- Austria
- Italy
- China
- South Korea
- Japan

## **New Science & Technology Universities (UESTP Concept)**

- Consortium of leading Universities with one as lead university---4,500 of our brightest students being sent for MS/PhD
- Rectors, Deans, Heads of Departments and 75%-25% faculty from partner country
- Examination /Quality assurance controlled by European universities
- Complete equivalence
- **Degrees from top European Universities in Pakistan !!!**
- **Classes commence in 2007/2008 !!**

# Information Technology

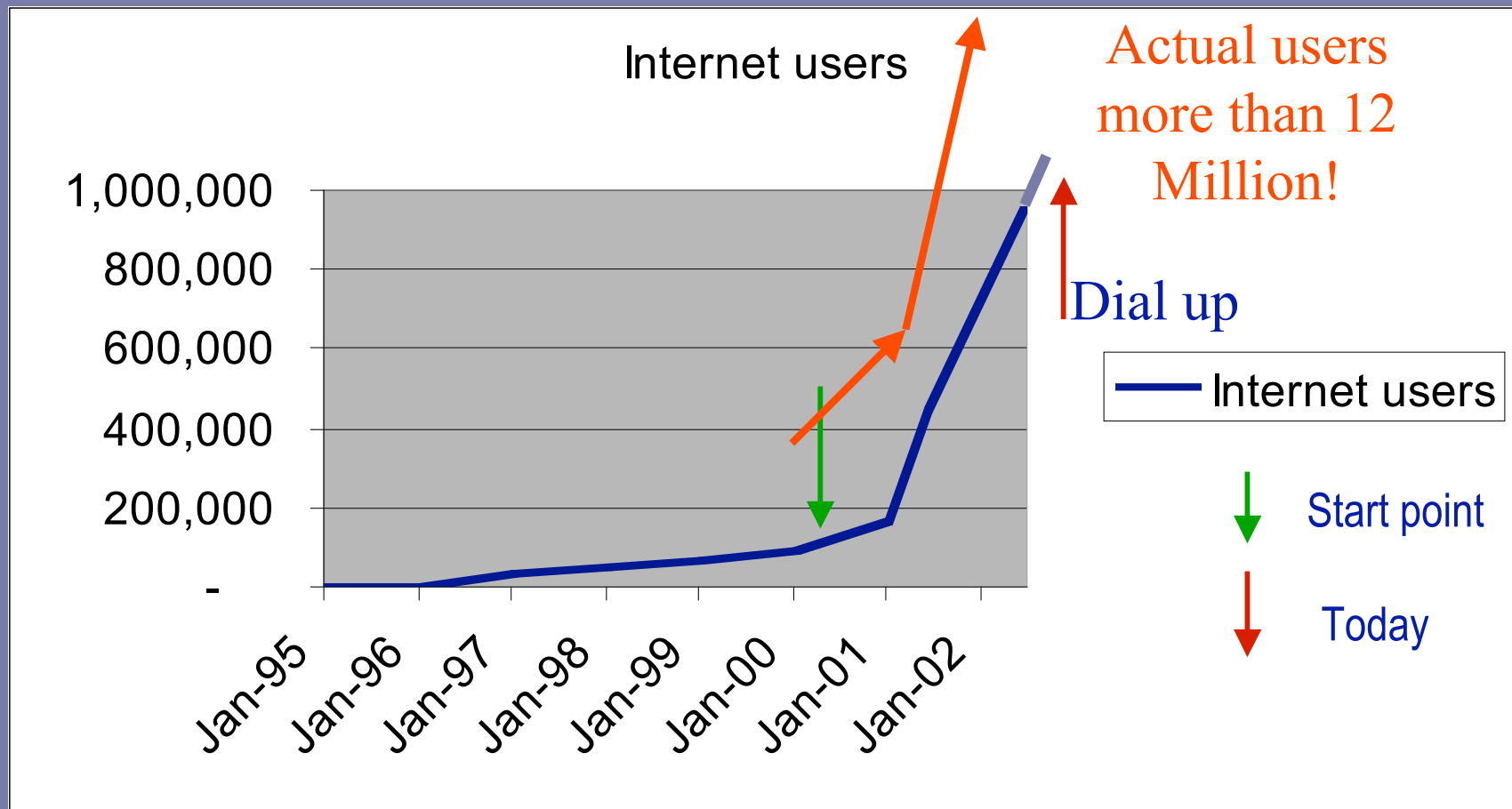
## Spread of Internet Services in Cities & Towns of Pakistan



# Internet user growth

**JUNE 2000: 130,000**

**OCT 2006: >12 MILLION**

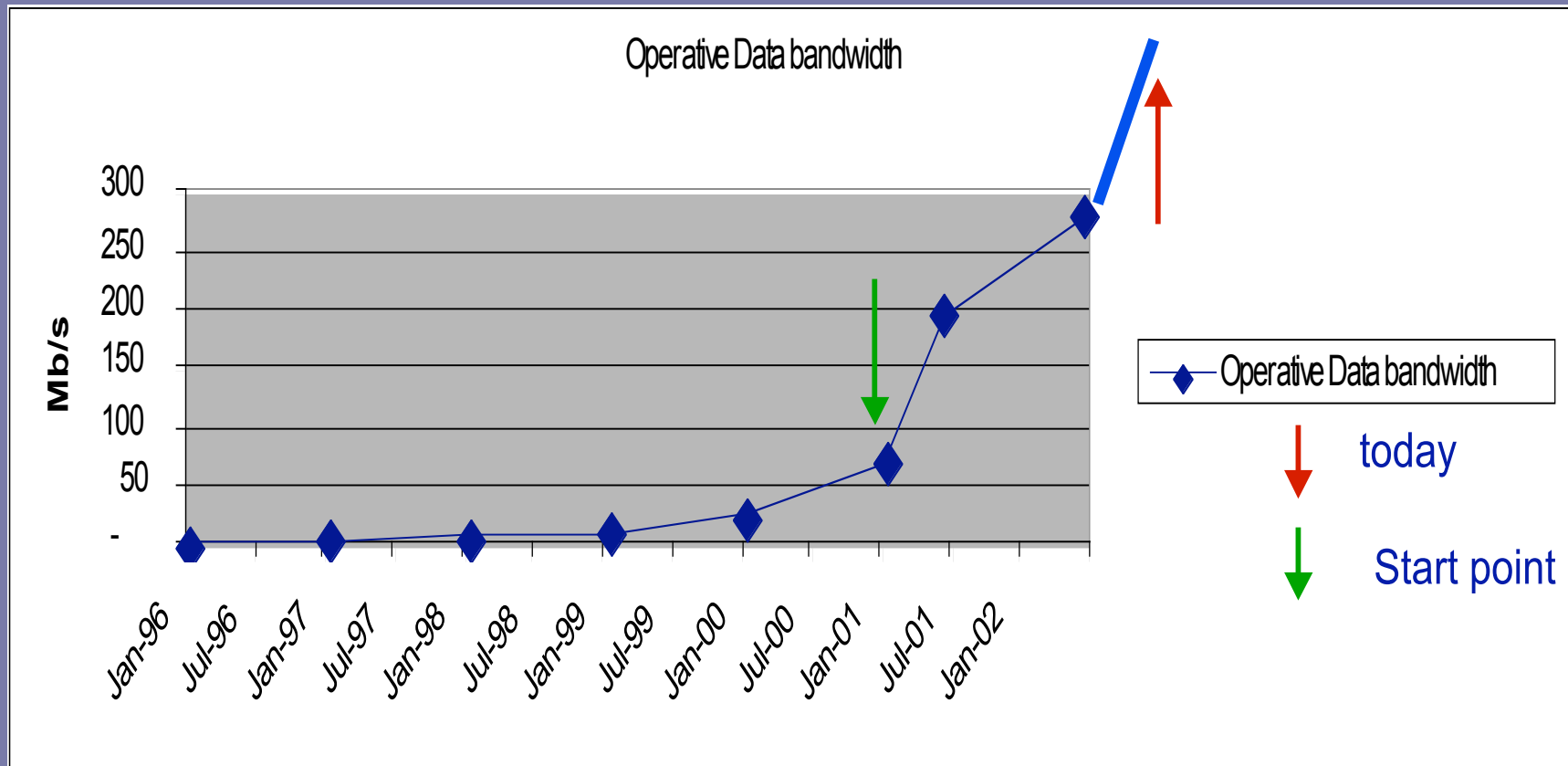


# Bandwidth Available

**AUGUST 2000: 32 MB/S**

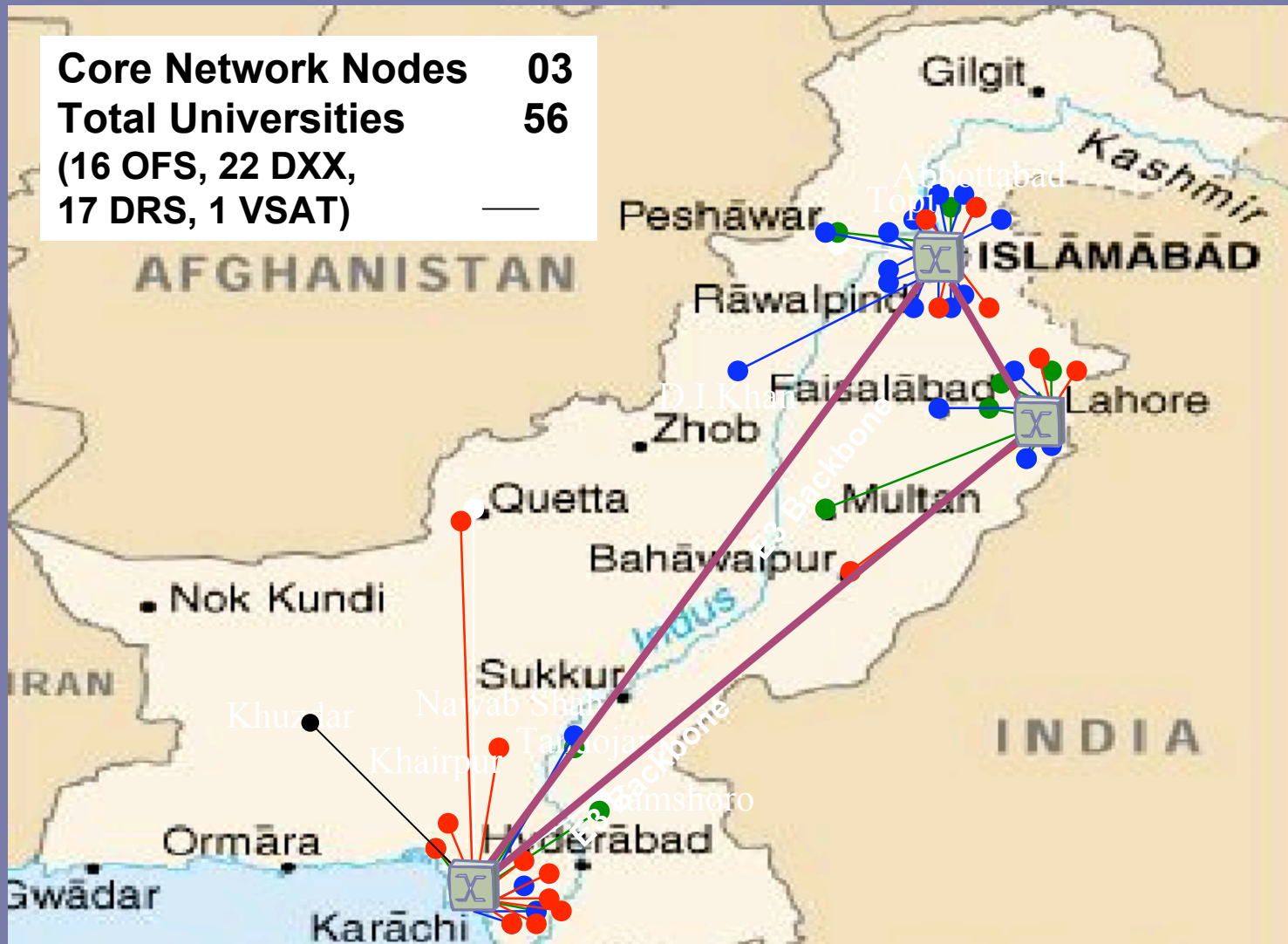
**MAR 2002: 265 MB/S**

**2006: 10 GB/S LOOPS**



# PERN

## Pakistan Education & Research Network



# Digital Library

- 22,000 full text journals—nation-wide, free-of-charge!!!
- Over 12 million articles downloaded in 2006 !!
- Almost 300,000 end users trained nationwide
- One Window Search Engine
- Web of Science, Scifinder Scholar, EMBASE, IEEE, Chem/Biol.Abstracts etc.

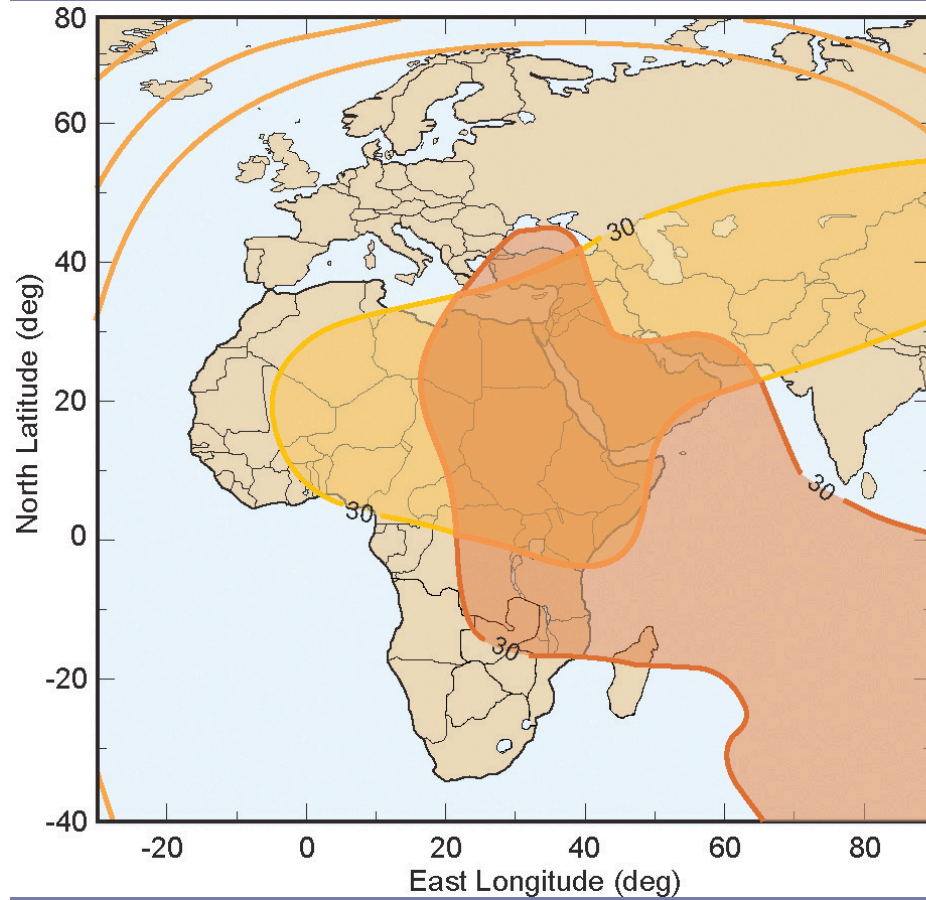


# Virtual University

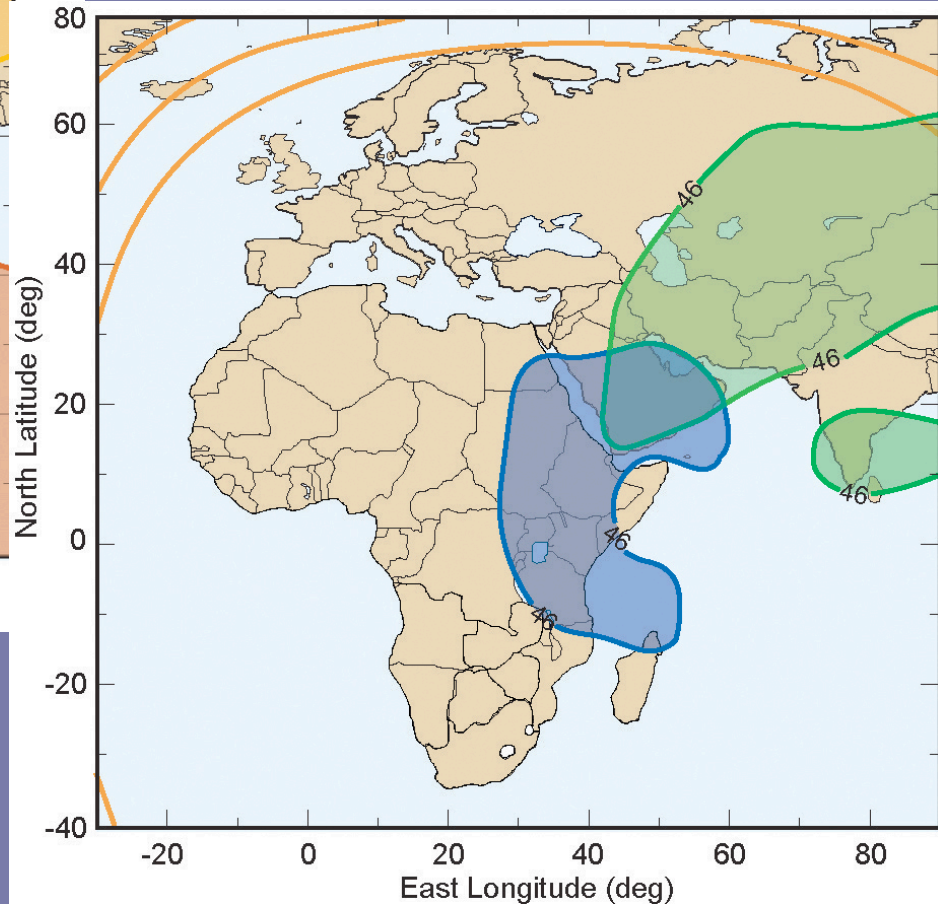
- 4 Digital Satellite (PAKSAT-1) TV Channels for content delivery (License for 2 granted)
- Satellite Earth Station
- 2 Recording Studios
- Potential for providing high quality training in remote areas of Pakistan

# Paksat 1

**Ku Band**



**C-Band**



# Distance Learning

- MIT Open Courseware
- University of California Television
- E-Books Program
- Virtual University

# Supporting Private Sector Education

- Matching grants for new institutions
- Major funds for development
- Land on long term lease
- Sharing faculty salaries
- Access to Digital Library
- Access to Research Funding

# Approach: *Focus, Focus, Focus*

- Prepare a **prioritized list** of “Doable” projects of National importance in each sector
- Clearly **identify**
  - What is to be done?
  - Who will do it?
  - Implementation timeframe ?
  - Human Resource Requirements ?
  - Cost of Project ?
  - Where possible, “Impact on National Economy” ?

# Areas

- **Agriculture**
- **Biotechnology**
- **New Materials**
- **Chemicals and Pharmaceuticals**
- **Engineering Goods**
- **Electronics**
- **Energy / Power**
- **Telecommunications**
- **Information Technology**
- **Transportation**
- **Strategic Industries / Technologies**

# Results

- 330% in ISI abstracted publications over last 4 years----rate of increase highest in Islamic world
- Young men and women have started opting to adopt careers in S&T subjects as first choice
- Landscape of Universities has begun to change

# Independent Review of HEC (World Bank)

- “A Silent Revolution”
- “The successful track record of HEC is a good omen for the future”
- “Since its inception it has been startlingly active and has shaken up the world of universities”



# Real Wealth--

- **Our Children----**with a population of 156 million, about a 100 million below the age of 25, Pakistan is blessed with a huge pool of creativity
- **Challenge** is to empower them with quality education and skills----and provide them opportunities to contribute to the process of socio-economic development

# Message to Developing World

- ***Stop looking to others to help you !  
You must rise and develop yourself !***
- Every country acts in its own self-interest!
- Political Will in Leadership !
- Courage to dream great dreams---and work—to make them come true

# Question Time

## Kenia:

- we need infrastructure,
- many have no electricity, no computers
- Education OK, but children go to school and by 11 they are hungry.
- Night Light World Map. Look at dark african areas. Only sleep at night



Paolo Budinich : 40 years of the Trieste System.

Now → COSTIS



Congratulation to Pakistan from India, USA,  
Nigeria (was it difficult to convince your government?)  
and Saudi Arabia (difficult to change the pyramid base).  
What's wrong with 40W for 1TV+4lamps? No entertainment?

**Saturday, 12 May**

**“Science, Technology and Innovation: Perspectives for Africa”**

*The continued interest of G8 countries and UNESCO in the economic development of Africa is well known. The scientific and technological development represents an important part of the economic development. This session focuses on opportunities of scientific cooperation, at both the North-South and the South-South levels.*

## Chair



**Professor  
Mohammed HASSAN**  
Executive Director  
The Academy of Sciences for  
the Developing World (TWAS)

President, African Academy of Sciences  
TRIESTE

## Rapporteur



**Hon. Min. Patrizia SENTINELLI**  
Deputy Minister  
Ministry of Foreign Affairs  
ITALY

## Keynote Speakers



**Professor Nagia ESSAYED**  
Commissioner for Human  
Resources, Science  
& Technology  
AFRICAN UNION ADDIS ABABA



**Hon. Dr. Noah M. WEKESA**  
Minister of Science  
and Technology  
KENYA



**Hon. Min. Mr.  
Hany Mahfouz HELAL**  
Minister of Higher Education  
and Scientific Research  
Egypt



**Hon. Prof. Romain MURENZI**  
Minister of Science, Technology  
and Scientific Research  
RWANDA



**Hon. Min. Professor Yaye Kene  
GASSAME DIA**  
Minister of Scientific Research  
SENEGAL