



Taping indigenous herbal knowledge & Inclusive society from Bench to Bed: SWOT analyses from Pakistan



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Key National and International Challenges

2

- ▶ Mass Poverty and Inequality
 - ▶ Phenomenal Growth per capita in 300 years
 - ▶ Yet, every second 4 people die because of starvation or related diseases
 - ▶ 1% of world population has 50% of world wealth
 - ▶ Richest 26 persons of world has more wealth than the bottom 50% of world population
- ▶ Environment crises
- ▶ Economic Stability
- ▶ Widespread violence
- ▶ Dual Use of Science



Population growth



Illustrations inspired from Alain Lacroix & DieToonDie

Inequality: Live poor, die young

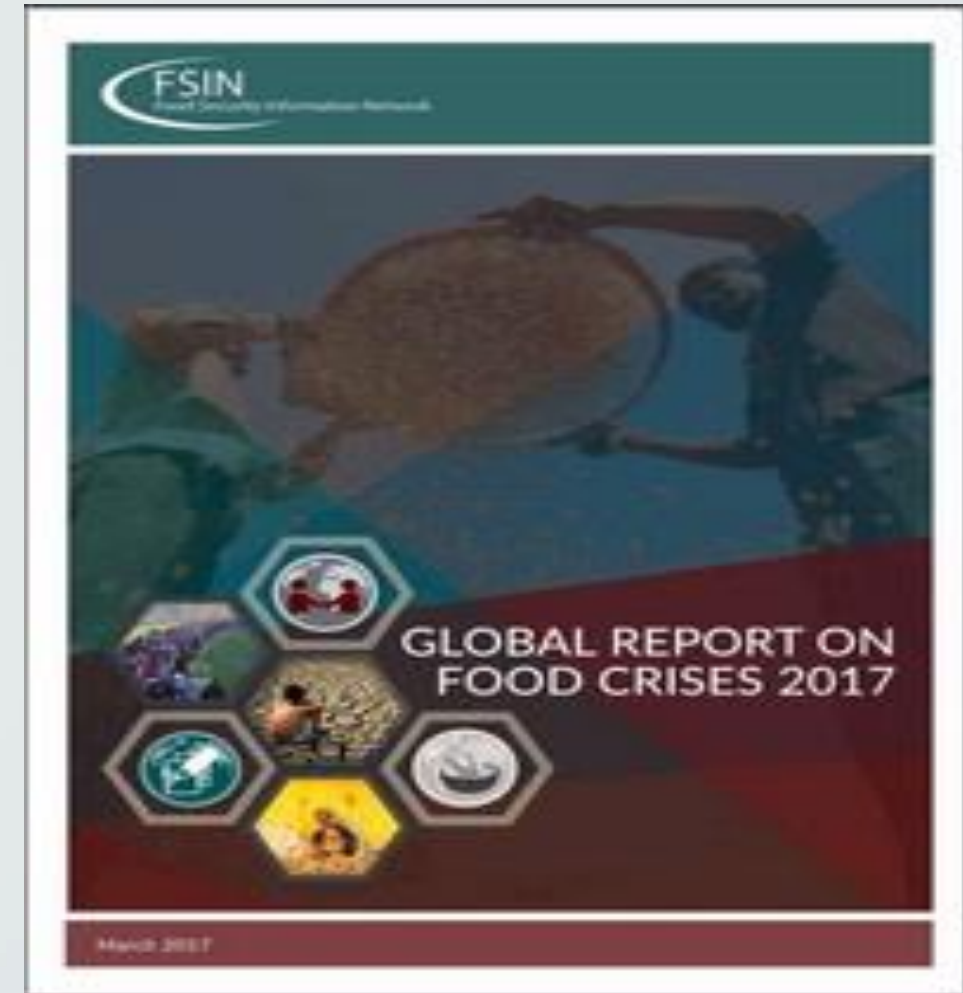
- ▶ *The Death Gap* presents a powerful case for social inequality as a cause of disease and disparities in health. The social epidemiologist, physician and public-hospital veteran invokes the concept of 'death gaps' to describe differences in life expectancy by race, ethnicity, class and geography.
- ▶ country's health system as another form of structural violence — harm resulting from unjust social systems, such as poor-quality housing and emergency infrastructures. This architecture, anchored by racism, classism and placeism (discrimination on the basis of neighborhood), fosters ill health in the most marginalized and vulnerable groups, such as poor black people in urban areas and rural working-class white people.
- ▶ **“There is a 35-year difference in life expectancy between the richest US neighborhoods and the most deprived.”**
- ▶ research that links stress to the length of telomeres — caps on chromosomes whose degeneration is associated with shortened lifespan and age-related illnesses.

Protestors hold a rally against the lack of an adult trauma centre at the University of Chicago Hospital.



108 MILLION PEOPLE FACE SEVERE ACUTE FOOD INSECURITY – REPORT

- Amidst massive and collective efforts of international organizations to address food challenges, around **108 million people in 48 food-crisis countries are at risk or were in severe acute food insecurity in 2016**, according to the Global Report on Food Crises 2017.
- This shows a dramatic increase compared with the **80 million in 2015**, the Global Report on Food Crises 2017, has said.
- The dramatic increase in food-crisis individuals reflects the trouble that they face in terms of accessing food due to conflict, record-high food prices in local markets, and extreme weather conditions such as drought and erratic rainfall caused by El Niño.
- **In 9 out of 10 worst humanitarian crises, civil conflict was found to be the driving force, indicating a strong link between peace and food security.**



Main Drivers of Food Insecurity (2016)

ARMED CONFLICT

The acute and wide-reaching effects of conflicts left significant numbers of people food insecure



Food insecure people IPC/CH Phase 3+



DISPLACEMENT

Conflict caused widespread displacement (internal/external)



Main Drivers of Food Insecurity (2016)

NATURAL DISASTERS

El Niño-driven drought conditions and other climatic shocks have damaged agricultural livelihoods undermining food security



**Category 4
Hurricane Matthew
hit drought-affected
Haiti in late 2016.**

FOOD SECURITY IPC/CH CRISIS PHASE 3 AND ABOVE ⁴



The acute and wide-reaching effects of conflicts left significant numbers of food insecure people in need of urgent assistance in

- Yemen (17 million),
- Syria (7 million),
- South Sudan (4.9 million),
- Somalia (2.9 million),
- Northeast Nigeria (4.7 million),
- Burundi (2.3 million), and
- Central African Republic (2 million)

Global Hunger Index of regional countries

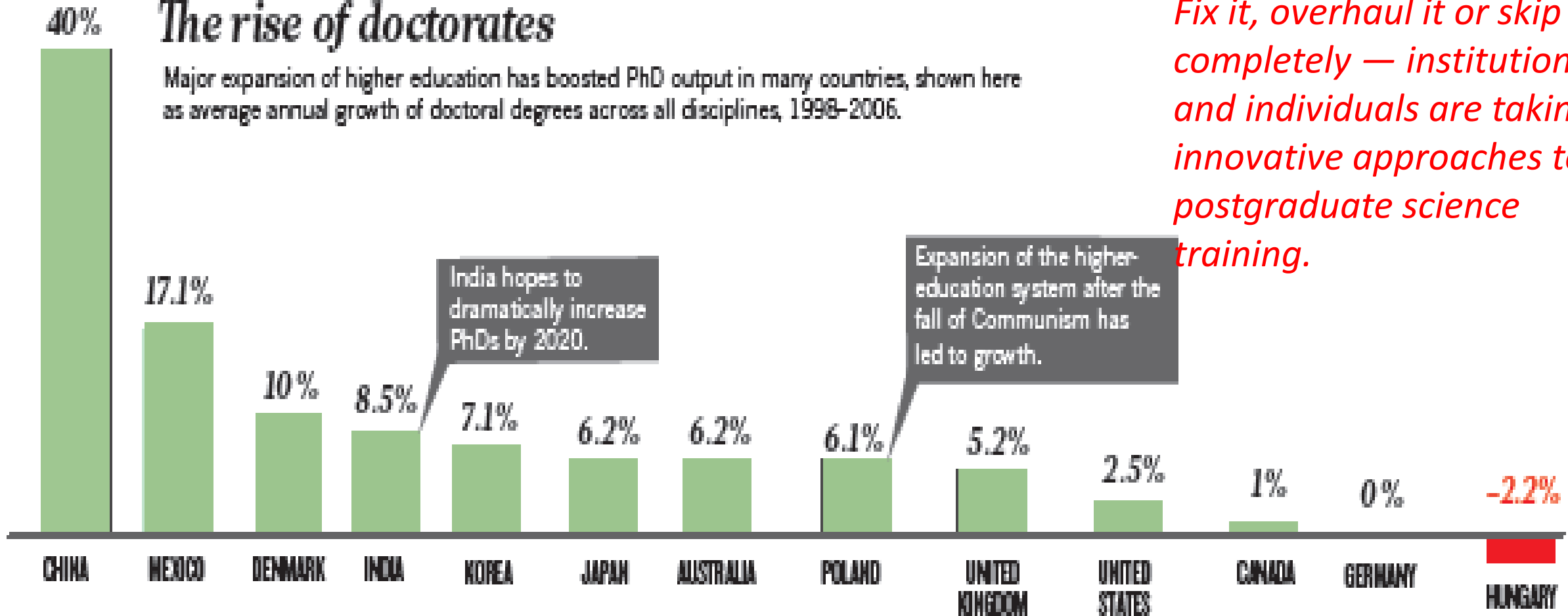
Country	1992	2000	2008	2016
Bangladesh	52.4	38.5	32.4	27.1
Pakistan	43.4	37.8	35.1	33.4
India	46.4	38.2	36.0	28.5
Nepal	43.1	36.8	29.2	21.9
Sri Lanka	31.8	27.0	24.4	25.5
Iran	17.5	13.7	8.8	6.7
China	26.4	15.9	11.5	7.7
Afghanistan	49.3	52.4	39.2	34.8



Concern of relevance

The rise of doctorates

Major expansion of higher education has boosted PhD output in many countries, shown here as average annual growth of doctoral degrees across all disciplines, 1998-2006.



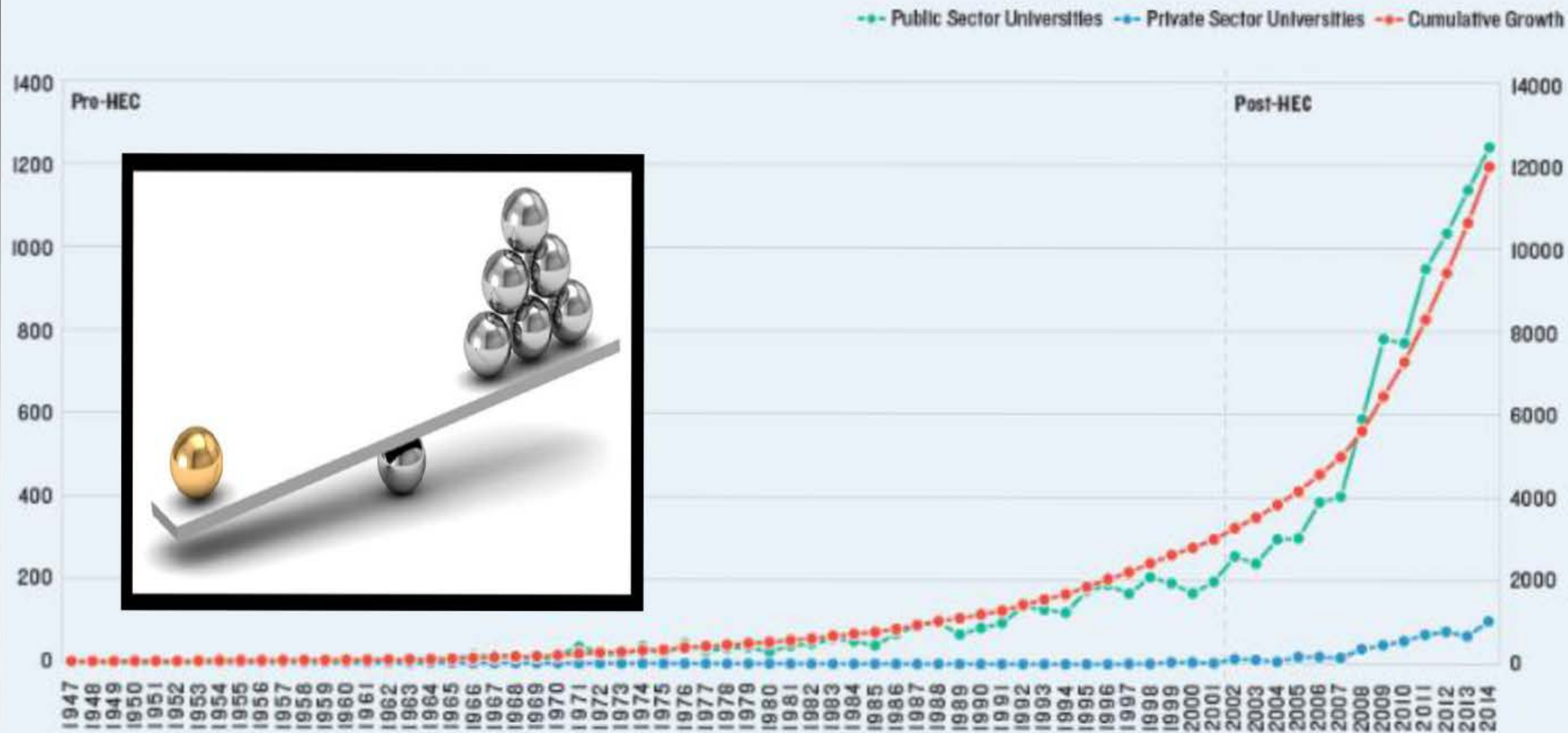
Fix it, overhaul it or skip it completely — institutions and individuals are taking innovative approaches to postgraduate science training.

SOURCE: OECD, UNESCO, ESEM, NEST, RYO, EDUCATION

THE PHD FACTORY

The world is producing more PhDs than ever before. Is it time to stop?

Number of PhDs in Pakistan



Source: Higher Education Commission

Universities challenged

The accelerating pace of change in today's world means that universities must modify how they fulfil their function of seeking and sharing knowledge.

"The very foundations of the centuries-old university concept are under attack as never before."

A university, to linguists, is a derivation of a Latin description of a community of teachers and scholars.

Universities have always changed with the times. But there is a growing sense that the pace of that change is accelerating. More fundamentally, universities are losing control of the process. Change is being forced on them.



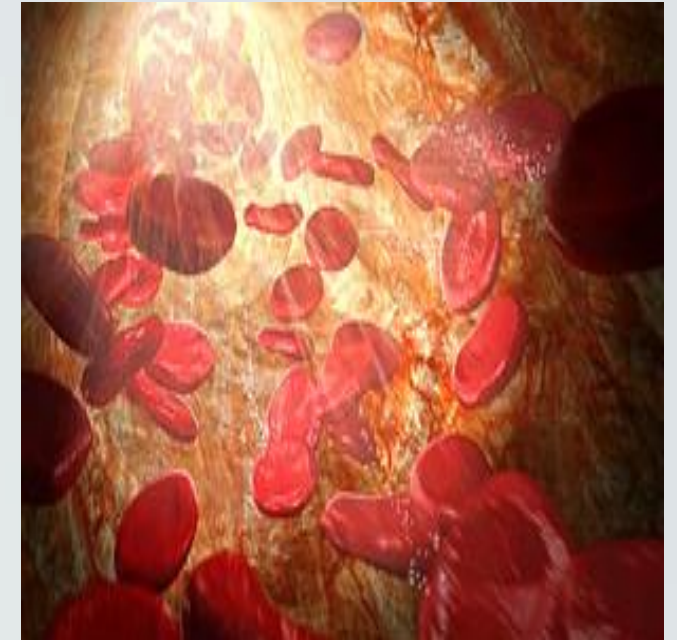
from **READING** *to* **WRITING**
A new approach of **GENOMICS**

The program of life—the system of DNA, genes, and genomes that governs every living thing—was written four billion years ago. It's time to rewrite the program.



Stem cells from Blood cells

Scientists from UK have reported that they created stem cells from Blood cells of a patient. In future this may help in repairing arteries and even tissues. It is safe or otherwise has still to be worked out (Aamir Rana).



Synthetic biology from 2050 onwards

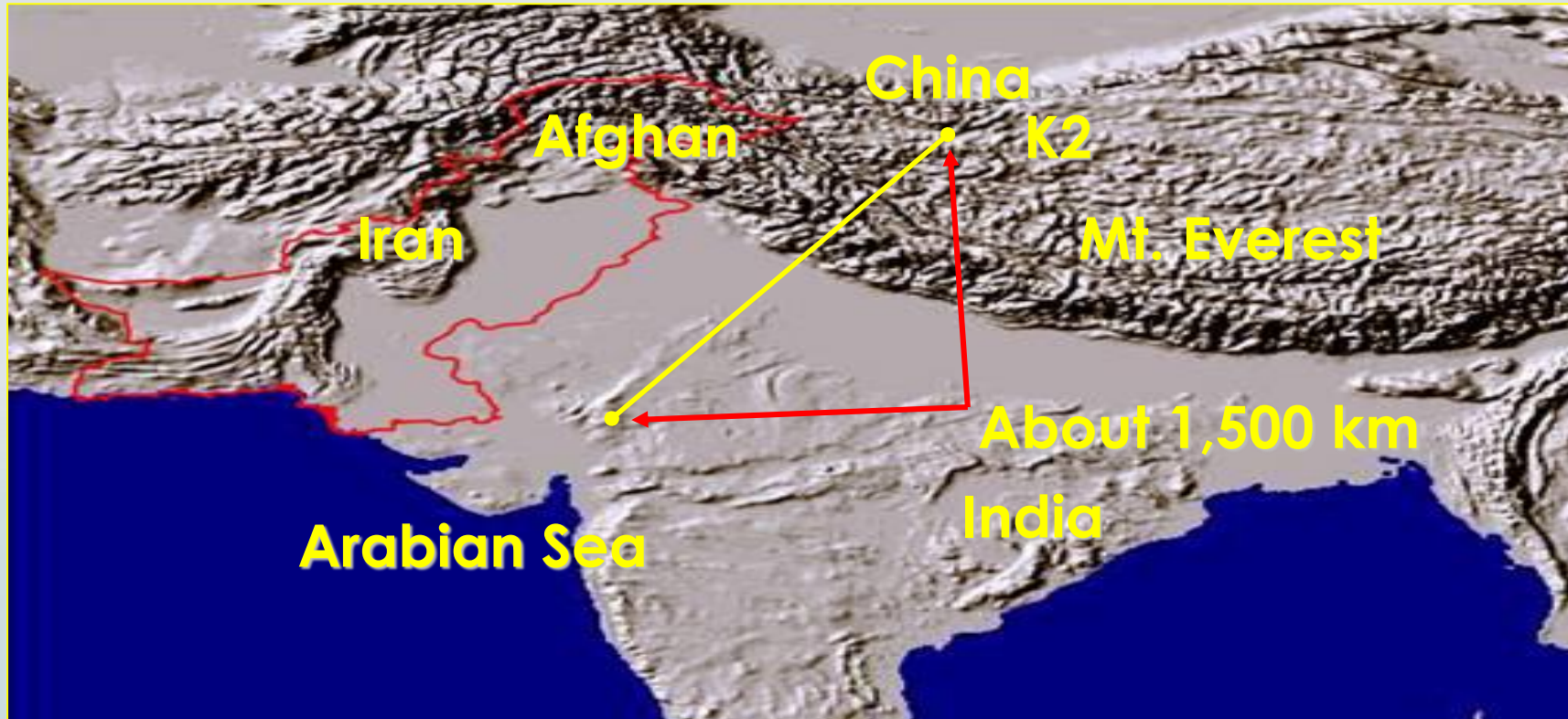


- ▶ Larger and more complex life forms created (multi-celled animals)
- ▶ By 2056, debates occurring over "synthetic people" entering the population. What rights and freedoms would they have? moral, ethical and legal arguments raised

Bridging Traditional knowledge & Frontier Technologies for Sustainable Development in Pakistan



THE ORIGIN OF PAKISTAN'S PHYSICAL DIVERSITY



Drug Side Effects: Staggering Statistics

- ▶ Aspirin, ibuprofen, and other non-steroidal drugs (NSAIDs) cause 7,000 deaths and over 120,000 hospitalizations in the U.S. annually.
- ▶ Acetaminophen overdose is the leading cause of acute liver failure and causes ten percent of all cases of kidney failure.
- ▶ Drugs like Paxil, Zoloft, and Prozac promote obesity, but weight gain is not listed as a common side effect.
- ▶ Approximately 70% of patients with chronic daily headaches suffer from drug-induced headaches.
- ▶ Sleeping pills interfere with normal sleep cycles, produce numerous side effects and are addictive.

Zoopharmacognasy

Examples: (Use PI to induce labor)

- Chimpanzees chew on the bitter pith of *Vernonia amygdalina*, which contains vernonioside B1 and vernoniol B1, both of which are known to kill intestinal parasites (Reported by Michael Huffman, Kyoto University of Japan in 1989)
- Chimpanzees eat whole *Aspilia* leaves, which contain thiarubrium-A, a red sulfur containing compound that kills pathogenic bacteria and parasites (Richard Wrangham, Harvard University in 1995)
- **Humans use this extract to treat cancer**

Grass eating cats grass acts as a natural *laxative*, counteracting any cases of *indigestion*



http://www.petmd.com/cat/wellness/evr_ct_eating_grass



Rhesus monkeys soil with their food, which contains Kaolin* (clay mineral) that detoxifies poisons

Kaolin is the active ingredient in Kaopectate, which is used to treat diarrhea!

Live fish medicine in India claims to cure breathing disorders

Since 175 years, thousands of people from all over the country have been visiting Bathini-Mrigasira Karthi Fish Prasadam, which takes place on the nights of 'Mrigasira Karti' which falls in June with the onset of the annual monsoon.

The 3cm fish is first tucked inside a live murrel or sardine fish, then dipped into a yellow herbal paste and then pressed down the throat of the suffering patients by the Goud family.

They claim that the small living fish travels wiggling its way through the human throat, pushing the phlegm and making it easier for people to breathe.

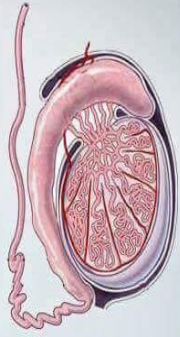
Also, the herbal dip used for the medicine remains a secret and is said to be transferred into the Goud Family by a Hindu saint in 1845.



June 13, 2015



Figs



Strotum



Citrus



Breast

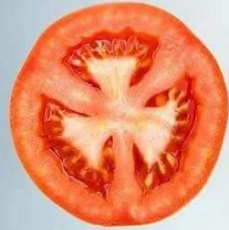
Doctrine of Signature

فليَنظُرِ الْإِنسَانَ إِلَىٰ طَعَامِهِ

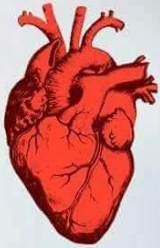
Then Let man look at his food.

Quran 80:24

Carrots get their orange color from a plant chemical called betacarotene, which reduces the risk of developing cataracts. The chemical also protects against macular degeneration an age-related sight problem that affects one in four over-65s. But popping a betacarotene pill doesn't have the same effect



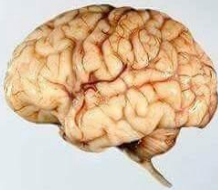
Tomatoe



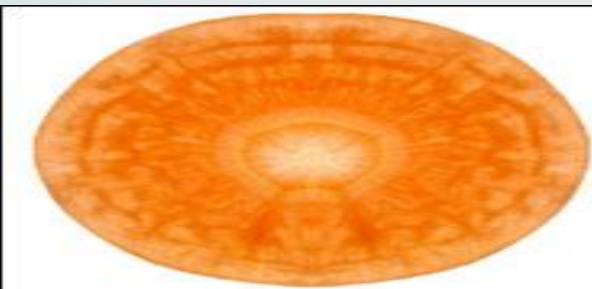
Heart



Walnut



Brain



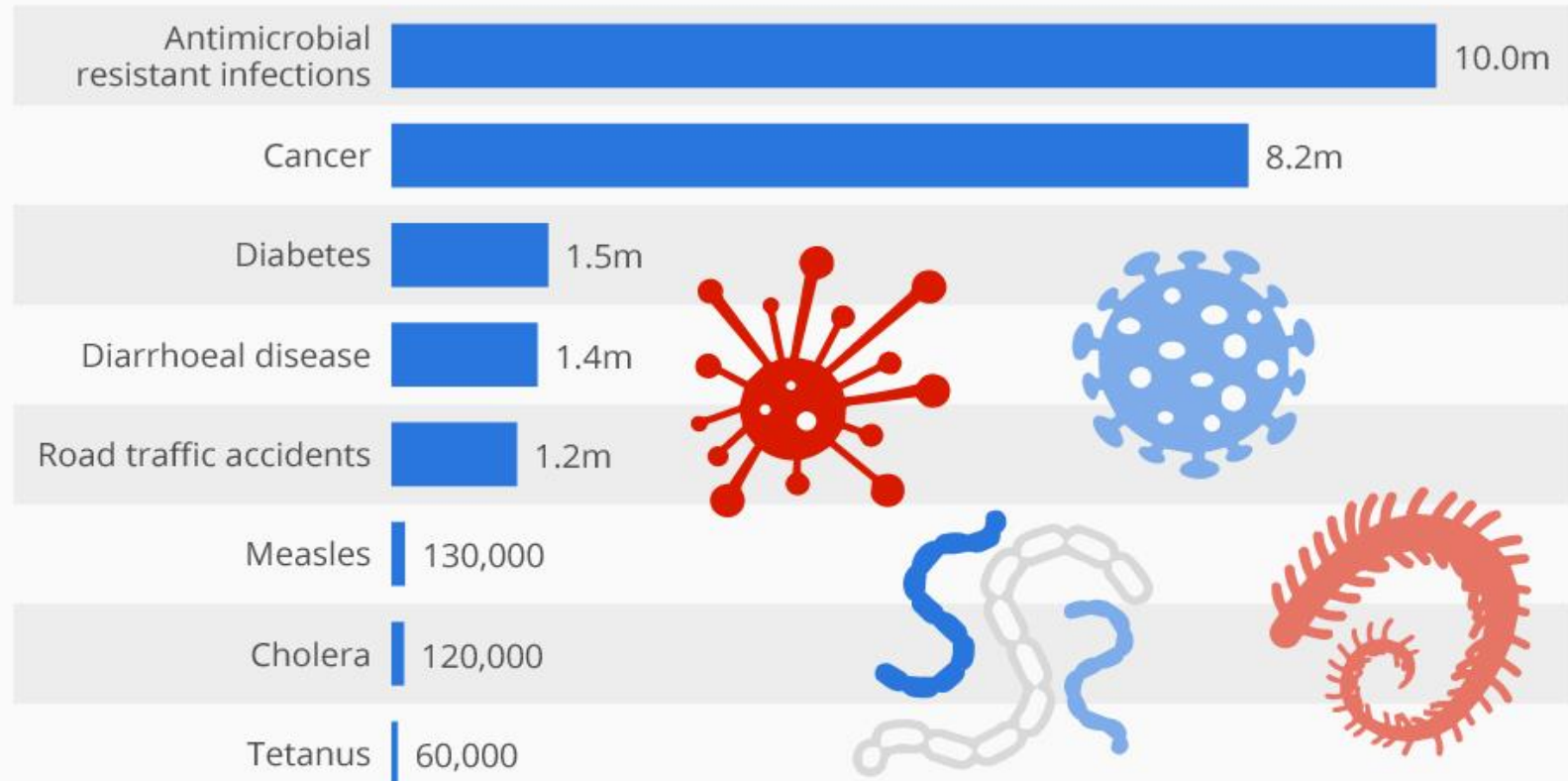
SLICE a carrot and it looks just like an eye

Superbugs will soon be a bigger problem than cancer

- ▶ Antibiotics are useful for treating susceptible bacterial infections and certainly provide human health benefits.
- ▶ However, with the emergence of multidrug-resistant pathogens that are predicted to kill 10 million people a year by 2050, there is a dark side to antibiotics.
- ▶ We need to cooperate and develop new and better therapeutic approaches for preventing diseases that are a consequence of antibiotic treatment.

Deaths From Drug-Resistant Infections Set To Skyrocket

Deaths from antimicrobial resistant infections and other causes in 2050

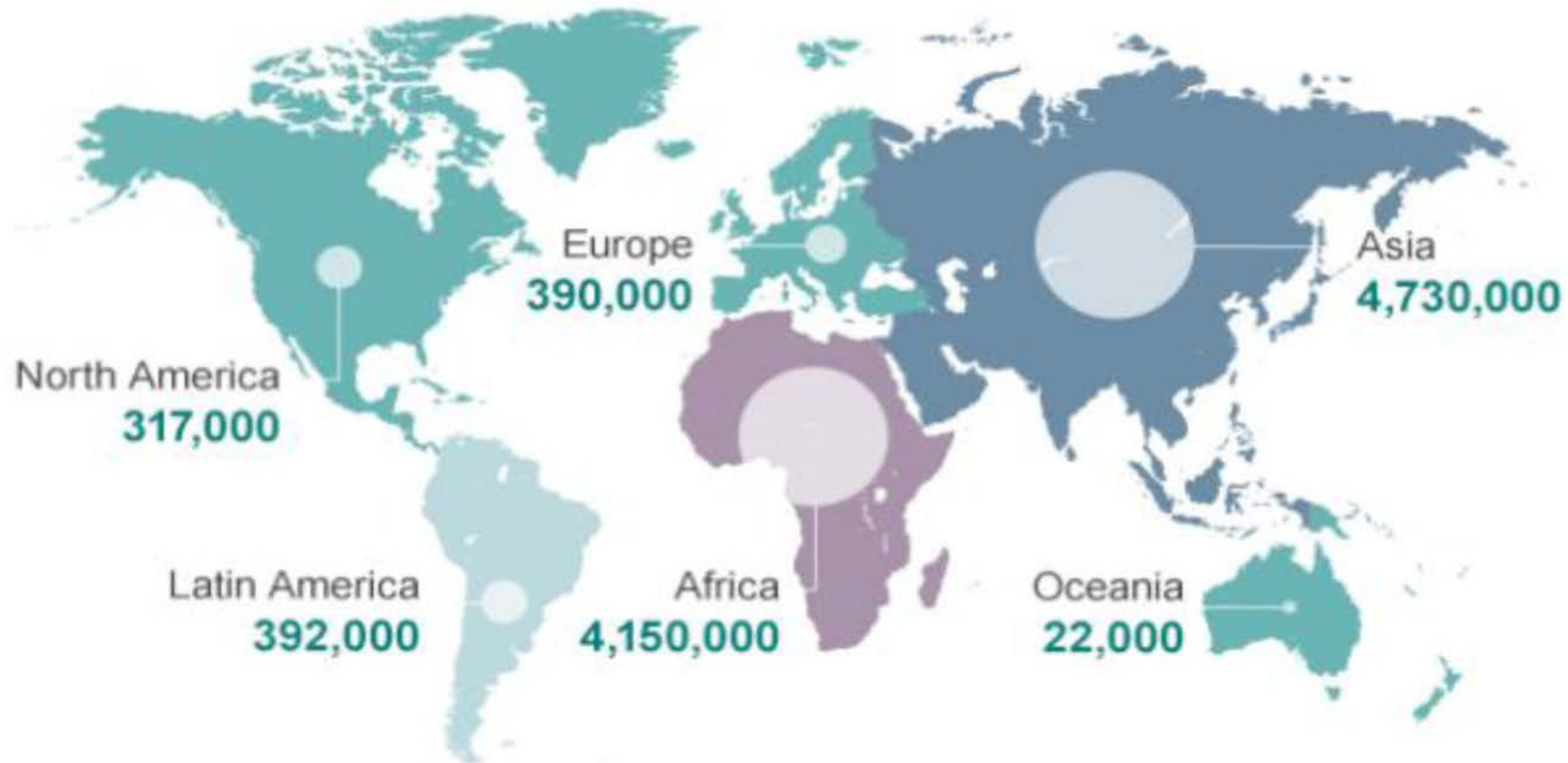


@StatistaCharts

Source: Review on Antimicrobial Resistance

statista

Deaths attributable to antimicrobial resistance every year by 2050



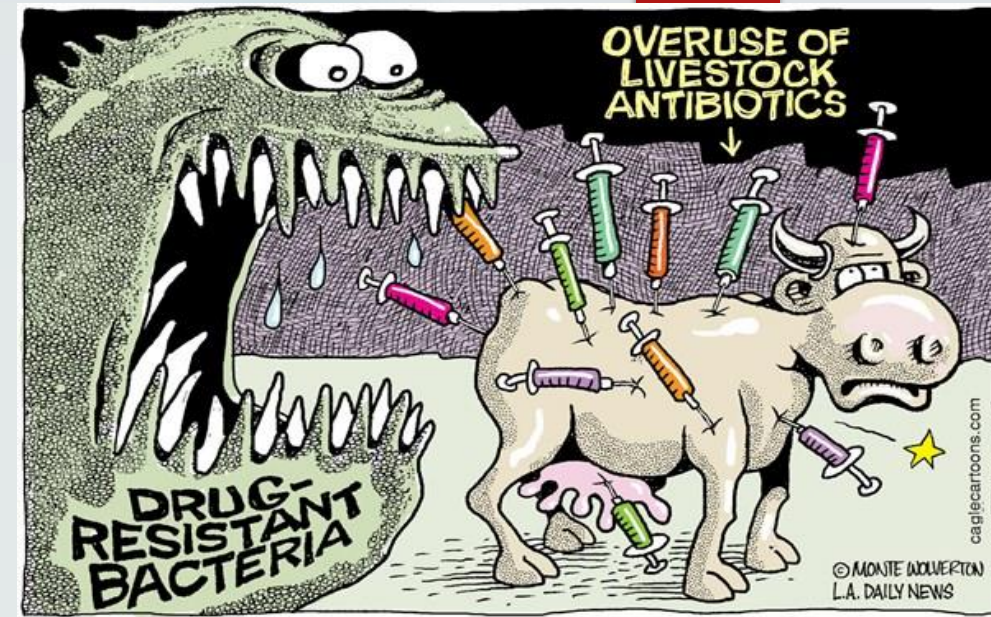
Source: Review on Antimicrobial Resistance 2014

Projections of deaths from drug-resistant infections by 2050

BBC News website, 19 November 2015

Fighting overuse

- ▶ Researchers are beginning to explore alternatives to the drugs, such as harnessing viruses that attack bacteria, and using antibacterial peptides found in the blood of hardy animals such as alligators.
- ▶ That requires cracking down on the overuse of antibiotics in farm animals and in hospitals. And a 2013 study found that about half of antibiotic prescriptions in the United States may be unnecessary



4000 YEARS of MEDICINE

2000 BC

Here, eat this root.



1000 AD

That root is heathen!
Here, say this prayer.



1865 AD

That prayer is superstition!
Here, drink this potion.



1935 AD

That potion is snake oil!
Here, swallow this pill.



1975 AD

That pill is ineffective!
Here, take this antibiotic.



2000 AD

That antibiotic is poison!
Here, eat this root.



atomicoasters.com

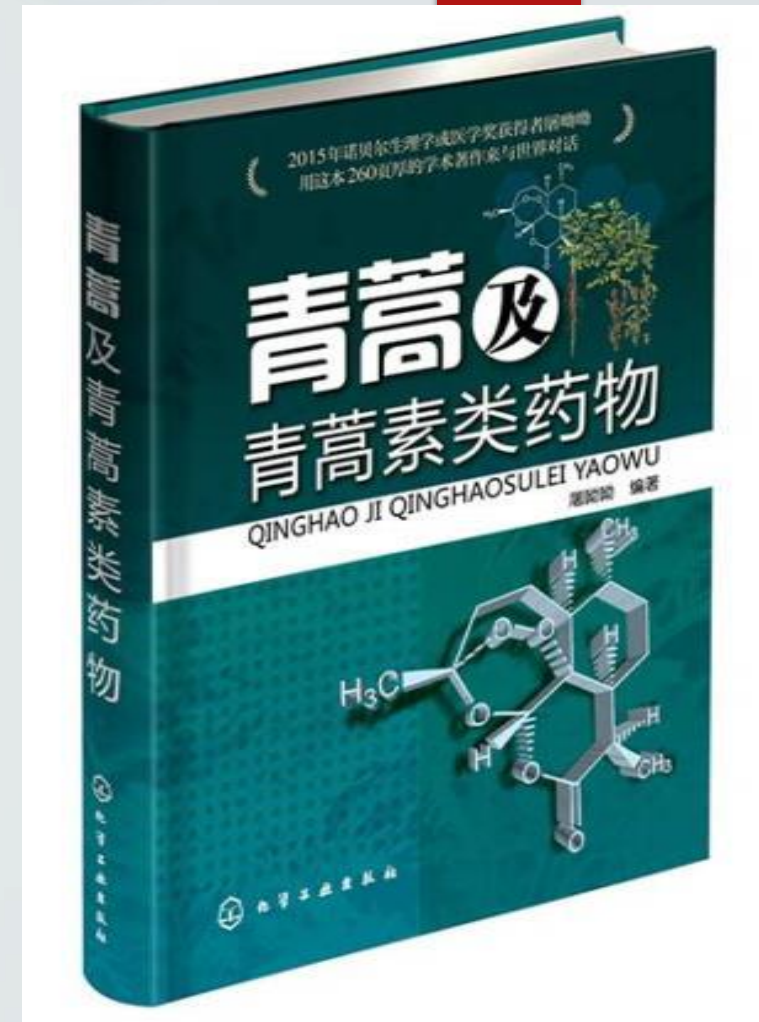


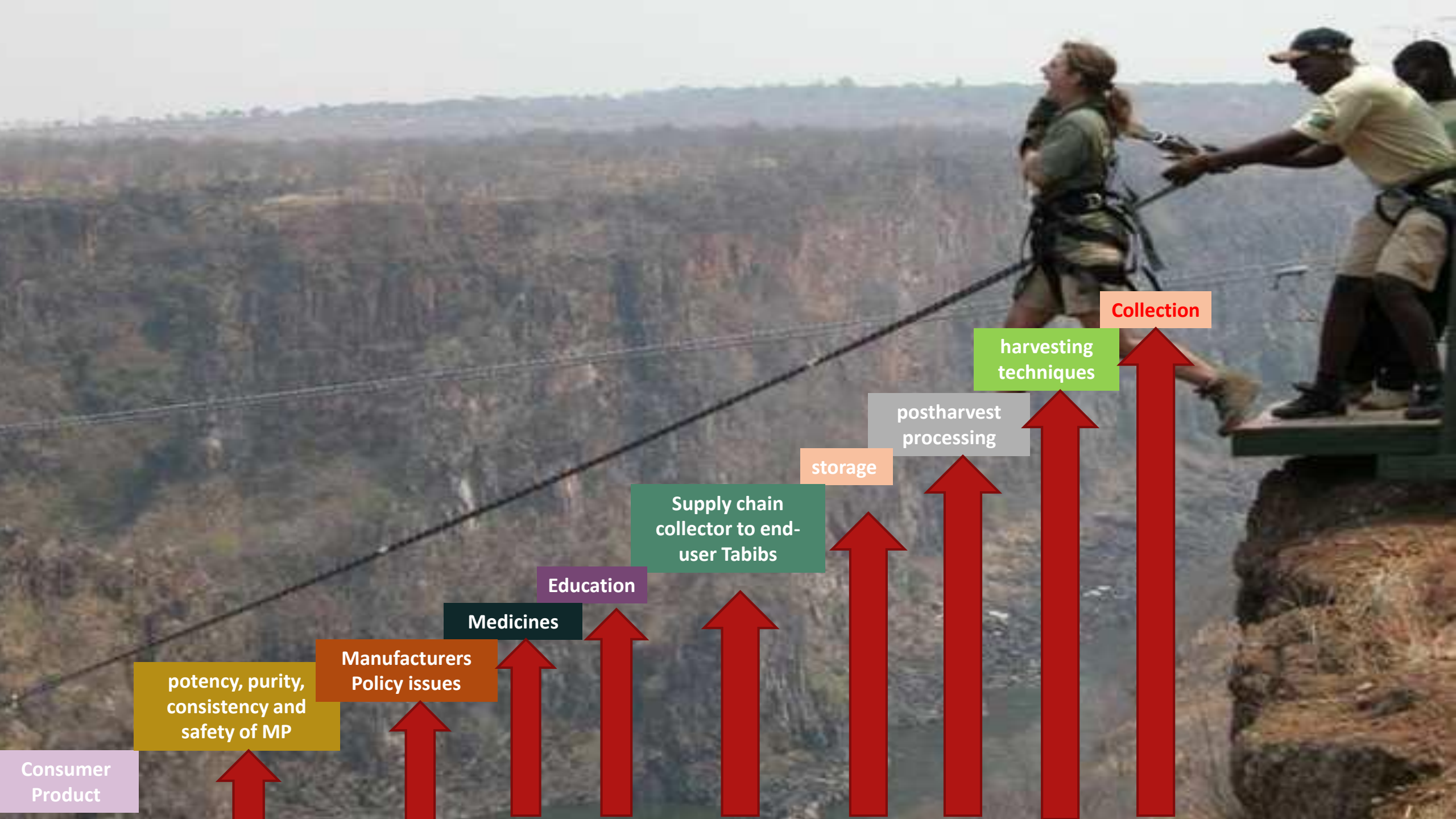
TRADITIONAL CHINESE MEDICINE



Chinese medicine books turn bestsellers after Tu wins Nobel Prize

- **Tu Youyou's winning the 2015 Nobel Prize in Physiology or Medicine** has triggered a hot rush for traditional Chinese medicine books, although her study on artemisinin is quite an area of expertise
- Tu enjoyed great fame in the medical field, but she has published few books and the only one known by the public is *Artemisinin and Artemisinins Drugs*, published by China's Chemical Industrial Press in 2009





Consumer Product

potency, purity, consistency and safety of MP

Manufacturers Policy issues

Medicines

Education

Supply chain collector to end-user Tabibs

storage

postharvest processing

harvesting techniques

Collection

History of Medicinal Plant Use

▶ Medicinal plants used since the beginning of civilization

Perhaps as early as Neanderthal man

Assyrian Herbal (7th Cent. BC)

Chinese Emperor (2800 BC)

Babylon (1770 BC)

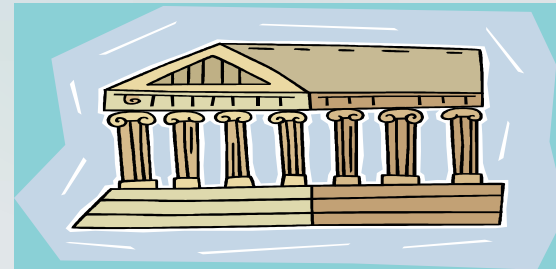
Ancient Egypt (1550 BC)

Ancient Greeks (75 BC, De Materia Medica used for 1,500yr)

Islamic & Indian physicians wrote works prior to 1100 AD

Seals from the Harappan site depict use of plants

Advanced research centre on toxicology & herbals in Taxila

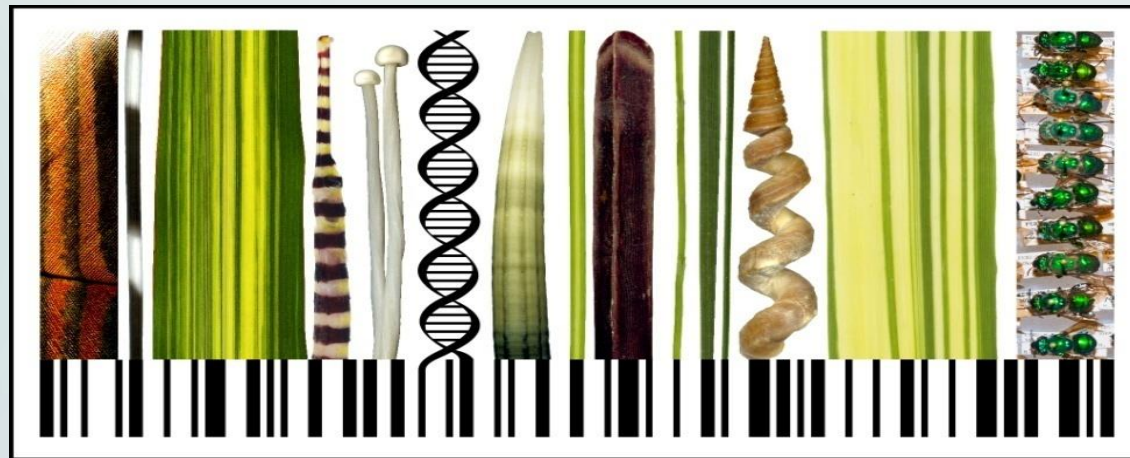


Patients Use Herbs but Doctors are Reluctant to Prescribe Them. Why?

- ▶ Knowledge deficit
- ▶ Tradition
- ▶ Real concerns about product safety, drug-herb interactions
- ▶ Unnecessarily high concerns about liability



Chemists need to be in Love affair with Taxonomy/DNA Barcoding



Why Taxonomy Matters?



Study: Many Herbal Supplements Aren't What the Label Says

ALBANY, N.Y. — Feb 3, 2015

- ▶ GNC-brand bottles of St. John's wort, touted as a cure for depression, held rice, garlic and a tropical houseplant, but not a trace of the herb.
- ▶ In fact, DNA testing on hundreds of bottles of store-brand herbal supplements sold as **treatments for everything from memory loss to prostate trouble found that four out of five contained none of the herbs on the label.**
- ▶ Instead, they were packed with cheap fillers such as wheat, rice, beans or houseplants.



Future

80% world population rely on natural remedies

- ▶ Westernization of societies
(‘traditional’ knowledge)
- ▶ Extermination of species
 - ▶ conservation, retain gene pools
- ▶ Natural resources exhausted
 - ▶ cultivation, artificial propagation

A cancer fighting herb

▶ *Fagonia cretica*
(Family Zygophyllaceae)



An Aqueous Extract of *Fagonia cretica* Induces DNA Damage, Cell Cycle Arrest and Apoptosis in Breast Cancer Cells via FOXO3a and p53 Expression

Matt Lam¹, Amtul R. Carmichael², Helen R. Griffiths^{1*}

¹ School of Life and Health Sciences, Aston University, Birmingham, United Kingdom, ² Russell Hall, Dudley Group Hospitals, Dudley, United Kingdom

Abstract

Background: Plants have proved to be an important source of anti-cancer drugs. Here we have investigated the cytotoxic action of an aqueous extract of *Fagonia cretica*, used widely as a herbal tea-based treatment for breast cancer.

Methodology/Principal Findings: Using flow cytometric analysis of cells labeled with cyclin A, annexin V and propidium iodide, we describe a time and dose-dependent arrest of the cell cycle in G0/G1 phase of the cell cycle and apoptosis following extract treatment in MCF-7 (WT-p53) and MDA-MB-231 (mutant-p53) human breast cancer cell lines with a markedly reduced effect on primary human mammary epithelial cells. Analysis of p53 protein expression and of its downstream transcription targets, p21 and BAX, revealed a p53 associated growth arrest within 5 hours of extract treatment and apoptosis within 24 hours. DNA double strand breaks measured as γ -H2AX were detected early in both MCF-7 and MDA-MB-231 cells. However, loss of cell viability was only partly due to a p53-driven response; as MDA-MB-231 and p53-knockdown MCF-7 cells both underwent cell cycle arrest and death following extract treatment. p53-independent growth arrest and cytotoxicity following DNA damage has been previously ascribed to FOXO3a expression. Here, in MCF-7 and MDA-MB-231 cells, FOXO3a expression was increased significantly within 3 hours of extract treatment and FOXO3 siRNA reduced the extract-induced loss of cell viability in both cell lines.

Conclusions/Significance: Our results demonstrate for the first time that an aqueous extract of *Fagonia cretica* can induce cell cycle arrest and apoptosis via p53-dependent and independent mechanisms, with activation of the DNA damage response. We also show that FOXO3a is required for activity in the absence of p53. Our findings indicate that *Fagonia cretica* aqueous extract contains potential anti-cancer agents acting either singly or in combination against breast cancer cell proliferation via DNA damage-induced FOXO3a and p53 expression.

Citation: Lam M, Carmichael AR, Griffiths HR (2012) An Aqueous Extract of *Fagonia cretica* Induces DNA Damage, Cell Cycle Arrest and Apoptosis in Breast Cancer Cells via FOXO3a and p53 Expression. PLoS ONE 7(6): e40152. doi:10.1371/journal.pone.0040152

Editor: Pranela Rameshwar, University of Medicine and Dentistry of New Jersey, United States of America

Received: April 6, 2012; **Accepted:** June 1, 2012; **Published:** June 27, 2012



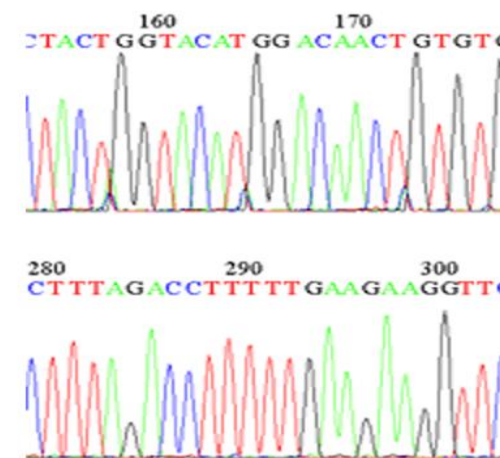
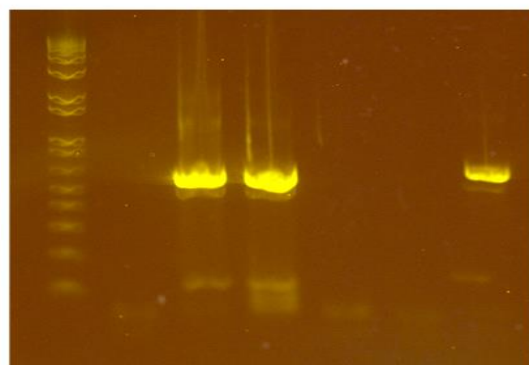
Organism is sampled



DNA is extracted



"Barcode" amplified



CONTAMINATIONS FOUND IN MARKET SAMPLES

S. #	SOLD AS	FAMILY	CONTAMINATED WITH	FAMILY
1	<i>Artemisia absinthium</i>	Asteraceae	<i>Nepeta</i>	Lamiaceae

• The matK barcode of ***Artemisia absinthium* market sample** was most similar to a species of *Nepeta* (Lamiaceae), which is in an entirely different family than *Artemisia*. A close visual examination of the market sample confirmed that several other species, including a member of Lamiaceae, are included in the sample.

***Artemisia absinthium* (Asteraceae)**

***Nepeta cataria* (Lamiaceae)**



S. #	SOLD AS	FAMILY	CONTAMINATED WITH	FAMILY
1	<i>Plumbago zeylanica</i> (Dried twigs)	Plumbaginaceae	<i>Periploca</i>	Apocynaceae

فقیری نسخہ آزمائش
 ڈاکٹروں اور حکیموں سے نجات پائیں۔
 انہیں جو افراد پٹیوں اور جوڑوں کے درد اور تکلیف سے پریشان ہیں کسی حادثے
 یا درد رہتا ہے یا کسی سہارے کی مدد سے چلتا ہے، ان کیلئے خوشخبری ہے کہ ہمارے
 تیل دستیاب ہے۔ سرسوں کا تیل، زیتون کا تیل، انجیر اور قدرت کی تمام جڑی بوٹی
 فولادی تیل یہ تیل جوڑوں کے درد کیلئے بہت مفید ہے
 محتاج کی زندگی سے نجات پاؤ۔ یہ فقیری نسخہ آزمائش



طریقہ استعمال: یہ فقیری فولادی تیل لگاؤ آٹھ سے دس دن
 رات کو سونے سے پہلے بوتل کو اچھی طرح ہلا کر آٹھ سے دس قطرے درد، دکن یا تکلیف والی
 جگہ پر لگائیں اور گرم کپڑے سے ڈھانپ لیں۔ رات کو لگاؤ صبح فرق پاؤ یہ تیل آٹھ سے دس
 دن لگاؤ اس کی قیمت صرف 20 روپے ہے اس کی کم قیمت پر نہ جائیں اسکو لے کر جائیں
 اس کا پتہ: 150 20

فقیری نسخہ آزمائش
 ڈاکٹروں اور حکیموں سے نجات پائیں۔
 انہیں جو افراد پٹیوں اور جوڑوں کے درد اور تکلیف سے پریشان ہیں کسی حادثے
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 فولادی تیل یہ تیل جوڑوں کے درد کیلئے بہت مفید ہے
 محتاج کی زندگی سے نجات پاؤ۔ یہ فقیری نسخہ آزمائش

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 اس کا پتہ: 150 20

150
20

حاجی محمد اقصیٰ
 لکھنؤ کے لڑکے اپنے جود خزانہ لکھنؤ کے لئے ماہانہ
 لپٹے خاص زبستوں کے تیل میں 20 روپے پر



Quetta Dec. 23rd, 2016

GOAL 1



END POVERTY IN ALL ITS FORMS EVERYWHERE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/1

GOAL 2



END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/2

GOAL 3



ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/3

GOAL 4



ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/4

GOAL 5



ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/5

GOAL 6



ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/6

GOAL 7



ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/7

GOAL 8



PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/8

GOAL 9



BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/9

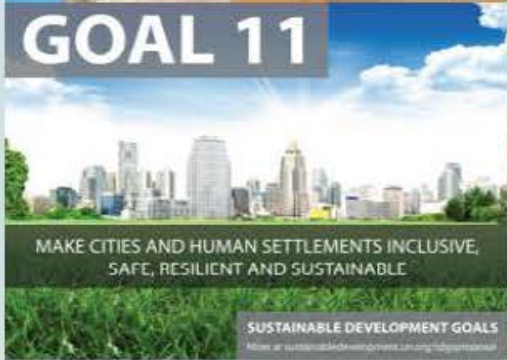
GOAL 10



REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/10

GOAL 11



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/11

GOAL 12



ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/12

GOAL 13



TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS*

*As agreed by the Paris Agreement under the United Nations Framework Convention on Climate Change, the aim is to limit the increase in the global average temperature to below 2°C above pre-industrial levels.

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/13

GOAL 14



CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/14

GOAL 15



PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/15

GOAL 16



PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/16

GOAL 17

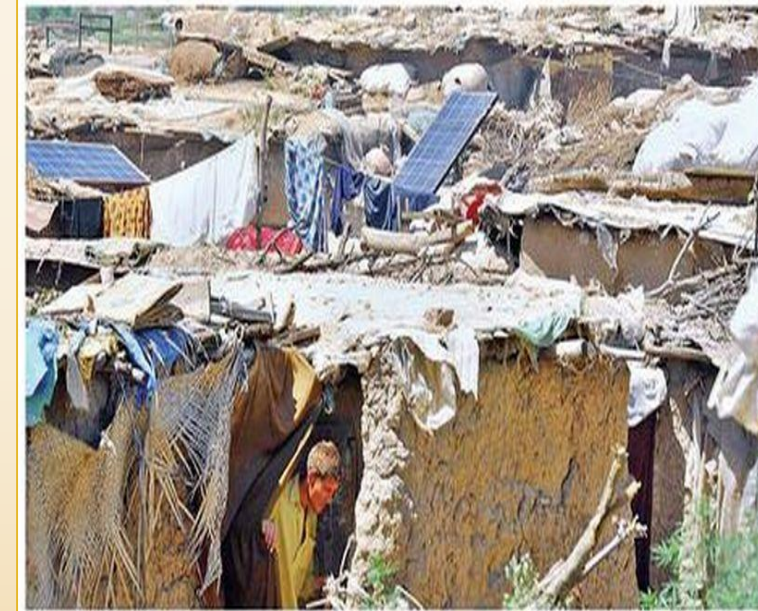


STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

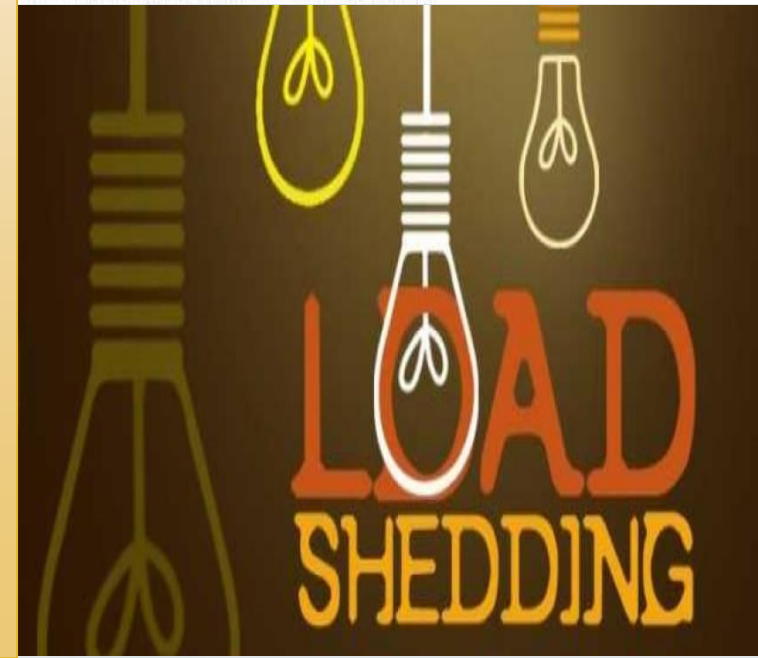
SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgs/17

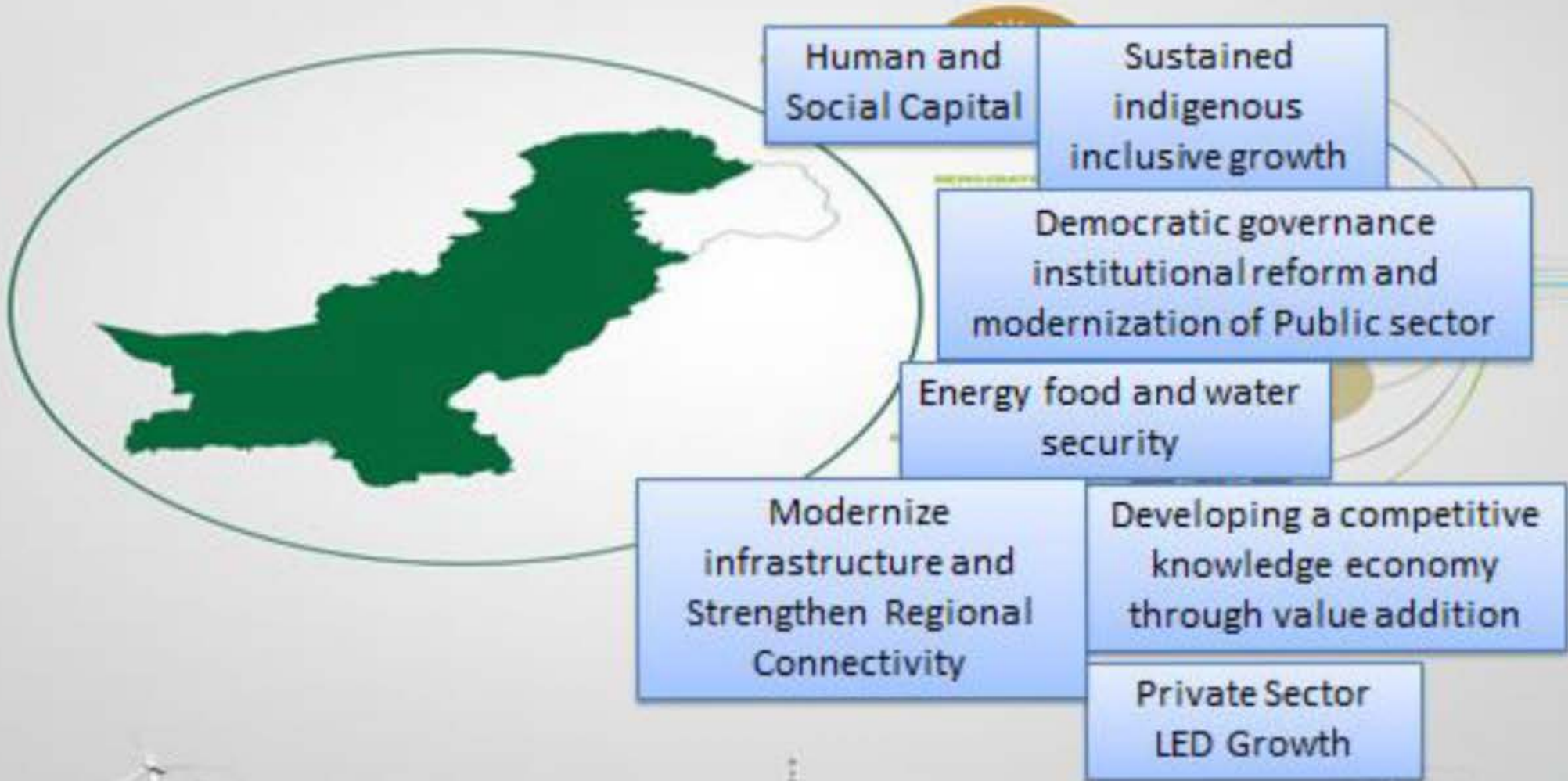
The Official Agenda for **Sustainable Development** adopted on 25 September 2015 has 92 paragraphs, with the main paragraph (51) outlining the **17 Sustainable Development Goals** and its associated 169 targets. This included the following goals:

- **No Poverty** - [End poverty in all its forms everywhere](#) [Targets](#).
- **Zero Hunger** - [End hunger](#), achieve [food security](#) and improved nutrition and promote [sustainable agriculture](#) [Targets](#).
- **Good Health and Well-being** - Ensure healthy lives and promote [well-being](#) for all at all ages [Targets](#).
- **Quality Education** - Ensure [inclusive](#) and [equitable](#) quality education and promote [lifelong learning](#) opportunities for all [Targets](#).
- **Gender Equality** - Achieve [gender equality](#) and [empower](#) all women and girls [Targets](#).
- **Clean Water and Sanitation** - Ensure [availability](#) and sustainable management of water and [sanitation](#) for all [Targets](#).
- **Affordable and Clean Energy** - Ensure access to affordable, reliable, sustainable and [clean energy](#) for all [Targets](#).
- **Decent Work and Economic Growth** - Promote sustained, inclusive and [sustainable economic growth](#), full and productive employment and [decent work](#) for all [Targets](#).
- **Industry, Innovation and Infrastructure** - Build [resilient infrastructure](#), promote inclusive and [sustainable industrialization](#) and foster [innovation](#) [Targets](#).



SOME residents of the katchis abadi in F-11 have installed solar panels meet their electricity needs. — APP





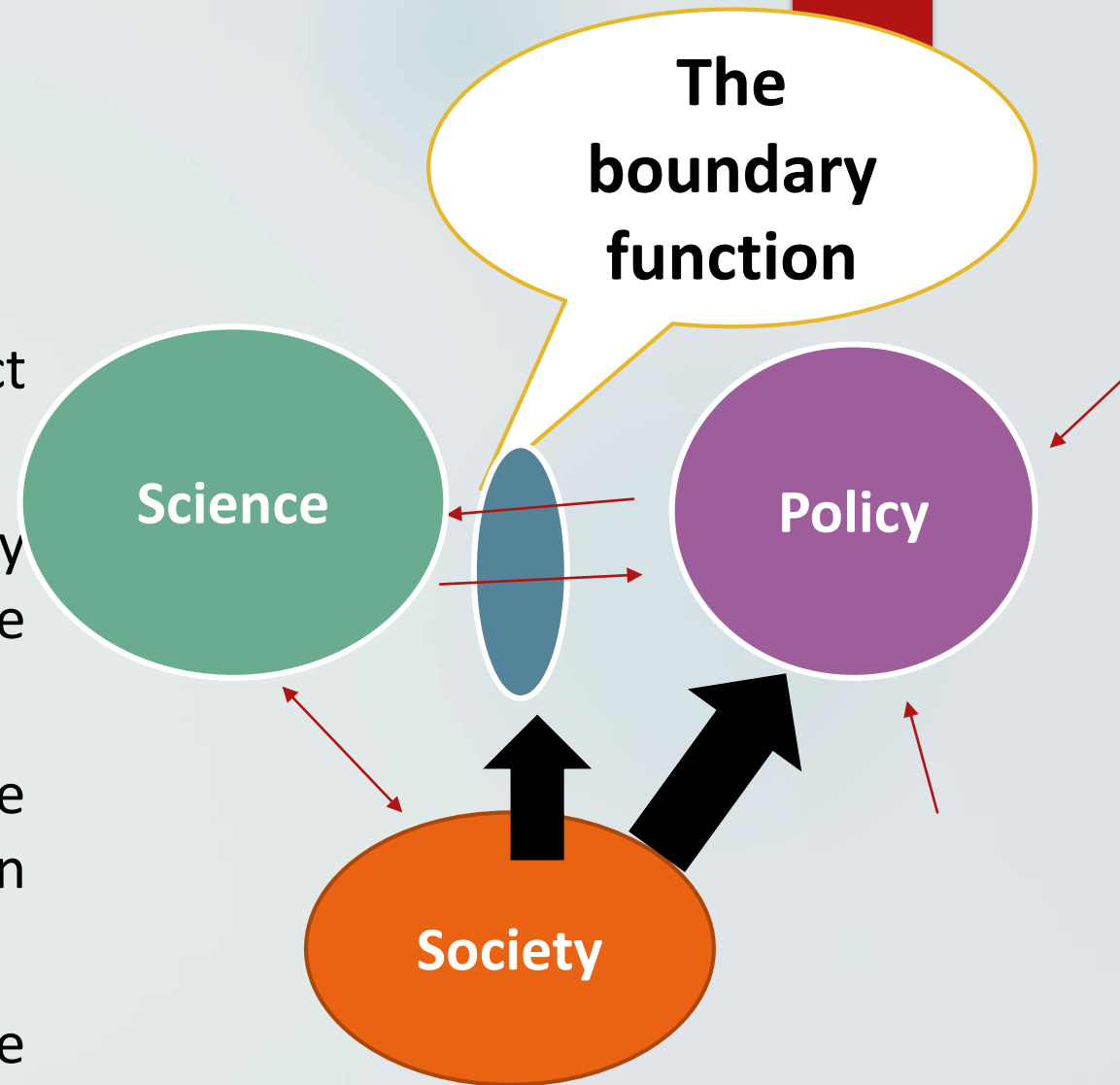
A ROAD MAP

- ▶ “What is it that we want to measure?”
 - ▶ Assessment agenda for our program or initiative
 - ▶ Step back and reflect three questions, to help create an assessment
- (1) Where are we going? (mission/goals);
 - (2) How will we get there? (objectives/outcomes);
 - (3) How will we know when we have arrived? (Evidence)



Science and policy making

- ▶ Science and policy making are two very distinct cultures.
- ▶ The nature of interaction is influenced by context, culture and history and by the relationship between science and society
- ▶ There is increasing recognition of the importance of boundary roles and structures in linking these cultures.
- ▶ The nature of these boundary entities is variable and still evolving there will not be a one-size fits all model





**Qarshi Research International
(Pvt.) Ltd. Pakistan**



Wealth Generation Through Research Qarshi Approach





Business

1968

Qarshi Dawakhana

1988

Qarshi Industries
(Pvt.) Ltd.

2002

First National Company
ISO-9001, 14001 & HACCP



QIL

Research

1971

R & D Dept.

2003

Qarshi Research Intl
(Pvt.) Ltd.

DEC-2003

First Lab in Pakistan
Audited for ISO-17025



QRI

Welfare

1973

Public Service Dept.

1994

Qarshi Foundation
(Trust)

2003

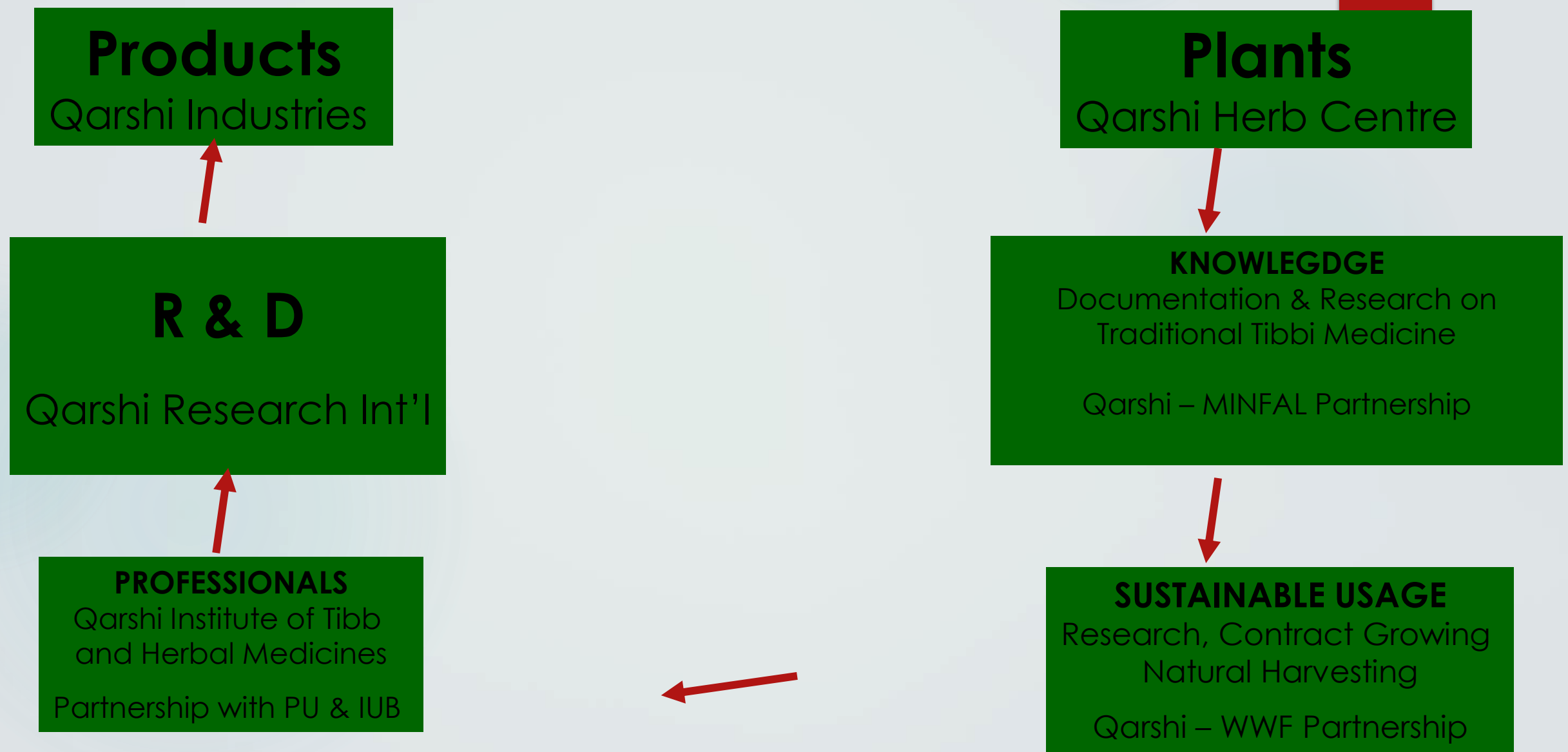
Qarshi Model Complex Muridkay



QF

Marketable Research

OVERALL FRAMEWORK FOR RESEARCH ON PLANTS BASED NATURAL PRODUCTS



Marketable Research - Requirements

Clarity of Thought Process - Vision

Physical Infrastructure - Labs

Skill & Knowledge - H.R.

Financial Resources - ?

Idea to Market Shelf - Development Cycle





Certified Raw Materials

Contract Cultivation & Sustainable Harvesting



Certified Plant Source

Tissue Culture



Controlled Growth



Pilot Cultivation



Test Plantation





Value Added Product

Certified R.M.



QIL



QIL



Contract Farming & Harvesting



QRI



QIL

Johar Joshanda – The Superior Choice

- Synergized Action
- Full Spectrum Assured
- Batch to Batch Consistency
- Extraction in Pure Water
- Carrier Free Processing
- Quality Assurance
- Sustainable use of Medicinal Plants
- Community Participation



QRI



QRI + QIL



Clinical Trials Dept.

Tests Carried Out For Q.J.J.

S. No.	Category	No of Tests at			Total Tests	Remarks
		QRI	R&D	Production		
1	Raw Material:					
	Herbs & Solid Material – 6 x 2	12	-	6	18	Colour, Smell, Taste, LOD%, pH, Bagasse%, RI, Sp.Gr, Iodine Test.
	•Sugar –1 x 4	4	-	2	6	
	•QJJ Concentrate –3 x 1	3	12	1	16	
	•Preservative – 1 x 3	3	3	-	6	
2	Packing Material:					
	Strip Paper.	3	-	1	4	Size, Printing, Grammage , Adhesiveness.
	•Display Box.	3	-	1	4	
	•Master Carton.	3	-	1	4	
	•Tape	3	-	1	4	
3	In-Process & Finished Product:					
	QJJ Extract.	3	4	2	9	Brix, pH, Organoleptic, Mesh Size, LOD%, Spectrophotometry.
	•Un-Flavoured Granules.	3	4	2	9	
	•Flavoured Granules.	3	4	2	9	
	•Finished Product in Sachet.	4	6	2	12	
4	Quality Assurance:					
	Shelf Life & Stability.	5	-	-	5	Organoleptic, LOD%, Mesh Size, Brix, pH, Spectrophotometry, TPC, Yeast & Mould, Salmonella, e-coli, Four toxic Heavy Metals (Pb, Cd, Cr & Ni)
	•Microbiology Testing	4	-	-	4	
	•Heavy Metal Analysis	4	-	-	4	
		Total no of Tests on QJJ			114	

Feed Back

May 05, 2008 171(17):32

SUBSCRIBER COPY NOT FOR RESALE MAY 5, 2008

What Clinton's Win Means for the Democrats' Race  China Falls Out of Love With France  Iron Man: The Comeback of Robert Downey Jr.

TIME



The Best Of Asia

Our Annual Guide to the Finest

- ★ Place to escape the office
- ★ Flower market
- ★ Eco-friendly cremation
- ★ Slopes for skiing after dark
- ★ Example of group discipline
- ★ Cup of tea
- ★ Fish tank

And other delights for the Mind, Body and Soul



9 771064 030005

www.time.com

Best for the Body

★ BEST TONIC

Johar Joshanda. Pakistan

MY CAREER AS AN INTERNATIONAL DRUG CARRIER got its start with a bad case of the flu. I had just arrived in Pakistan, and not knowing any doctors, turned to my driver for help. He produced a small foil packet of dubious-looking brown granules and instructed me to dissolve them in hot water, and drink the brew three times a day. The effect was instant: my scratchy throat was soothed, my cough subsided and my sniffles slowed. And it tasted good: a sweet licorice concoction redolent of mint, fennel and eucalyptus.

I had just been introduced to the national common denominator. Every Pakistani I've ever met, from drivers to generals to diplomats, depends on *johar joshanda*, as the herbal remedy is known, to combat colds and flu. Conversations with home-sick Pakistanis abroad invariably turn to it. Call it chicken soup for the Pakistani soul.



Ⓢ KNOW BEST

Counting calories?

Johar joshanda also comes in a sugar-free version



Translated, *johar joshanda* means "essence of boiled stuff." It comes from an ancient medicinal recipe of the Unani tradition—akin to a Muslim Ayurveda. Historically, the chief ingredients—licorice, Malabar nut, hyssop, tea, peppermint, fennel and eucalyptus—had to be boiled for hours, but manufacturers Qarshi Industries have modernized the method, reducing the brew to a concentrate, freeze-drying it like instant coffee, then packaging it in single-serve portions selling for eight cents a pop.

These packets are now permanent components of my traveling first-aid kit. Not only does *johar joshanda* help when you're struck down with a virus, but it's great for combating the effects of long-haul air travel or pollution. Offering it to other afflicted travelers inevitably depletes the entire stock in a trice, and leads to endless demands for more. Bulk orders, for the record, can be placed by e-mailing imd@qarshi.com, but these days my stash is jealously guarded. —BY ARYN BAKER

Lessons Learned
for & from
Marketable Research

Company Level

Threats

Natural Products – No Propriety Rights

Outcome

Counterfeit Products

“Me too” Products

Results

1. Non-productive Legal Battles
2. Low Margins
3. Low Financial Resources for R&D

Industry Level

Threats

Natural Products – Absence of Regulatory Framework

Results

Unhealthy Competition Low Quality →

Prohibitive Government Policies:

- * GST imposition - Prices Sales ↑
- * Ginseng – Declared as Drug by M.O.H
- * Ephedra – Detection of Ephedrine HCl by D.T.L's ↓

Lessons Learned

National Level

WTO – Post 2005 Scenario

Threats

- Cheap Imported Goods
- Powerful Multinationals – Huge Financial and Influential Resources
- Weaker 3rd World Governments

Opportunities

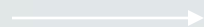
1. Access to Bigger Markets
2. High Quality – R. M. Availability
3. Open Competition

Requirements

Edge in Quality, Innovation & Price

Best Bet

Plant Source Products!



Requirements

- a) Highly Qualified & Trained Human Resource*
- b) Heavy Financial Resources*
- c) Government Support*
- d) Protection of IPR*
- e) Legislation to Support Research Based Products*

Status of National Council for Tibb



National Council for Tibb is a Body Corporate, established under section 3 of UAH Act 1965, to promote and popularize the Unani and Ayurvedic System of Medicine, to regulate education and research in and to provide for the registration of practitioners of those systems of medicine, presently working under the administrative control of Ministry of National Health Services, Regulations & Coordination Islamabad.

Number of Registered Tabibs

▶ CAT – A _____ 29520

▶ CAT – B _____ 26000

▶ VAID _____ 200

▶ BEMS _____ 245

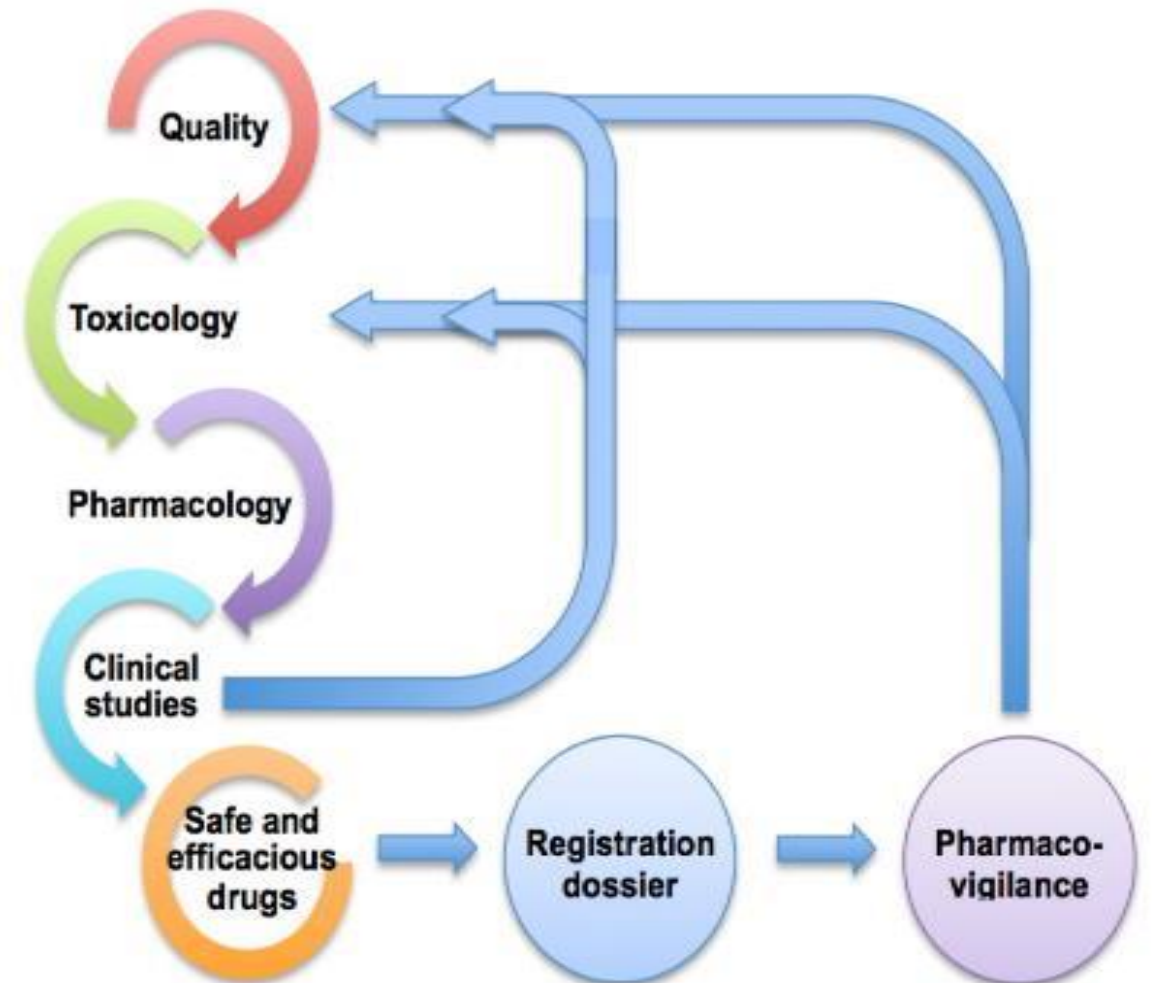
▶ Approximately 2000 students are enrolled every year.

Key requirements for regulation

- ▶ Safety?
- ▶ Efficacy? (science based evidence)
- ▶ Quality?
- ▶ History of use?
- ▶ Claims?
- ▶ Trials?

Required Legislation:

Full marketing authorization (efficacy, clinical trials) to NCT Fraudulent Acts for Unlicensed manufactured tibb medicines
Statuary assurance



Strategic Plan for NCT

- ▶ **Translating vision in reality: Mantra of action; in a love affair with change.**
- ▶ **NCT should address five major components: i.e.**
 - ▶ **Revisiting "Context (Vision, Mission, Strategies & plans etc.)".**
 - ▶ **An overall plan must be developed as to what sort of human resource is needed by the NCT and accordingly resources be allocated. NCT has no overall map or vision of how to survive within the global ecosystem.**
 - ▶ **Input (of Faculty, student, administration, Facilities, finances, environment etc.). Monitoring Implementation/ Continuous External Assessment should be done.**
 - ▶ **Processes (Admin., Teaching & learning, QA, Finance & budgeting, academic services process to society).**
 - ▶ **Be specific and demanding about quality**
 - ▶ **Processes used should not stifle diversity & innovation**
 - ▶ **Accountability of Public & Private resources**
 - ▶ **Teaching “Process” to Result “Learning”**

Output (Quality Students, faculty, services to society).

Impact on Society

Vision

To recognize itself as world's most trusted, ethical, compassionate respected and admired health system of the world,



To produce knowledgeable, skilled and caring hakeems committed to improvement of human life.

Provider of superior services to its patients through clinical innovations and ethical values at an affordable cost.

Mission



Serve humanity with colour blind commitment, leadership and excellence by providing quality healthcare at affordable cost ensuring healthy society worldwide through research.



Our Values

- ▶ In the pursuit of this Vision & mission, the actions of leadership, staff and hakeems will be guided by the following values:
- ▶ Integrity
- ▶ Trust
- ▶ Excellence
- ▶ Teamwork and Collaboration
- ▶ Mutual Respect
- ▶ Compassion
- ▶ Innovation
- ▶ Stewardship
- ▶ Inclusiveness and Diversity
- ▶ Accountability

Specific for hakeems:
EVIDENCE-BASED CARE:
PATIENT-CENTERED CARE:
INFORMED CHOICES:
People Matter
Honesty and Transparency



Future challenges

- ▶ **Bridge the skills gap, civil engagement.**
- ▶ **Share of leading research, and home to leading thinkers in a full range of disciplines.**
- ▶ **Maximising the benefits of links to business and public services – both educating the workforce and exploiting the fruits of research and innovation.**
- ▶ **Developing national & international collaboration.**
 - ▶ **Teaching to high standards and reaching all of those who can benefit.**
 - ▶ **Making the fullest possible contribution to local and regional development, and to cultural life.**



Future vision and role of NCT

- Interaction with Policy & Law Makers
- Hire effective managers
- Take down the boundaries and let others in
- Let hakeems share fruits of their research
- Our Tibbia colleges must be committed to producing future leaders and change managers.
- Developing sound hakeems like researchers & scientists
- Ensure Academic Freedom
- Keep track of the rules

Rules of Business

No confrontation

No compromise

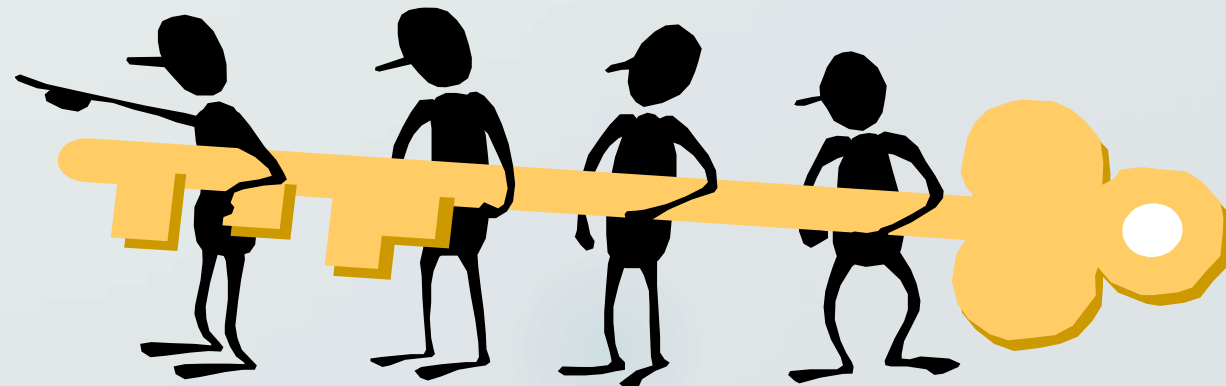
Cooperation

Collaboration



A **Key** to Success ---

- ▶ Integrate
- ▶ Collaborate
- ▶ Cooperate





Thanks Leadership of
AASSA & Philippine

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