



**Innovative Research for
Green Development
- Researcher you are of highest value!**



Ajith de Alwis

Basic research



Applied research



**Innovation/Protection/
Exploitation Patents**



Wealth



The
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Prepared
the Asso
Pressma
Carol Mo



BIO-AUTM Report on Economic Impact

New report shows licensing of academic
patents has contributed up to \$1.3
Trillion to US economy and supported
up to 4.2 million jobs since 1996.

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Innovation Value Chain

- Thinking
- Ideation
- Idea Development
- Proof-of-concept
- Prototyping
- Production
- Commercialization



**Business
of
Business
Is NOT
Business !**

THE
ECOLOGY OF
COMMERCE

HOW BUSINESS CAN SAVE THE PLANET



BY THE AUTHOR OF THE 500,000-COPY BESTSELLER *GROWING A BUSINESS*

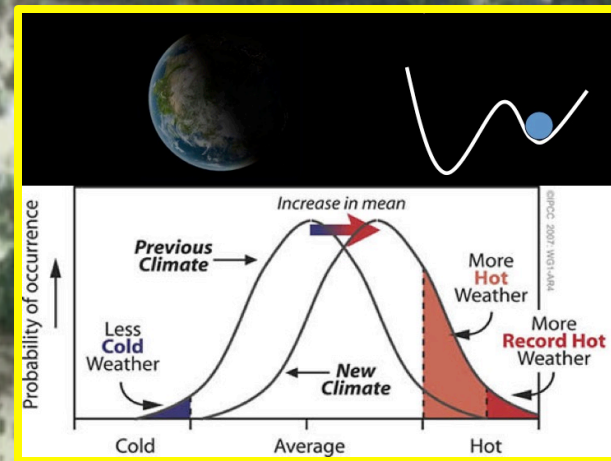
PAUL HAWKEN

“Socialism collapsed because it did
not allow prices to tell the
economic truth.

Capitalism may collapse because *it*
does not allow prices to tell the
ecological truth”



-Oystein Dahle
retired VP of Esso Norway



The projected timing of climate departure from recent variability

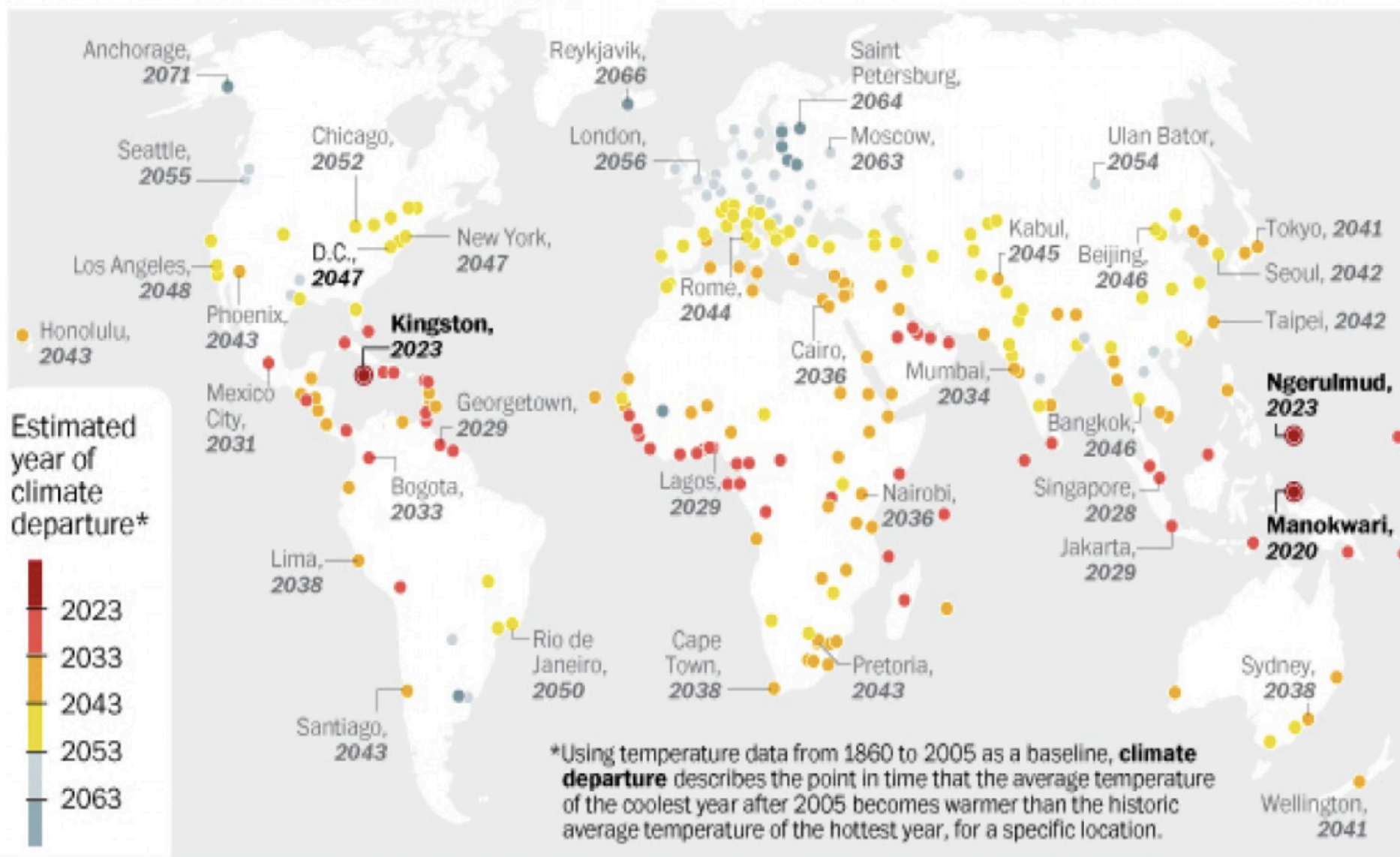
Camilo Mora¹, Abby G. Frazier¹, Ryan J. Longman¹, Rachel S. Dacks², Maya M. Walton^{2,3}, Eric J. Tong^{3,4}, Joseph J. Sanchez¹, Lauren R. Kaiser¹, Yuko O. Stender^{1,3}, James M. Anderson^{2,3}, Christine M. Ambrosino^{2,3}, Iria Fernandez-Silva^{3,5}, Louise M. Giuseffi¹ & Thomas W. Giambelluca¹

Ecological and societal disruptions by modern climate change are critically determined by the time frame over which climates shift beyond historical analogues. Here we present a new index of the year when the projected mean climate of a given location moves to a state continuously outside the bounds of historical variability under alternative greenhouse gas emissions scenarios. Using 1860 to 2005 as the historical period, this index has a global mean of 2069 (± 18 years s.d.) for near-surface air temperature under an emissions stabilization scenario and 2047 (± 14 years s.d.) under a 'business-as-usual' scenario. Unprecedented climates will occur earliest in the tropics and among low-income countries, highlighting the vulnerability of global biodiversity and the limited governmental capacity to respond to the impacts of climate change. Our findings shed light on the urgency of mitigating greenhouse gas emissions if climates potentially harmful to biodiversity and society are to be prevented.

Climate is a primary driver of biological processes, operating from individuals to ecosystems, and affects several aspects of human life. Therefore, climates without modern precedents could cause large and potentially serious impacts on ecological and social systems^{1–5}. For instance, species whose persistence is shaped by the climate can respond by shifting their geographical ranges^{4–7}, remaining in place and adapting^{5,8}, or becoming extinct^{8–11}. Shifts in species distributions and abundances can increase the risk of extinction¹², alter community

Models developed for the Coupled Model Intercomparison Project phase 5 (CMIP5). The bounds of climate variability were quantified as the minimum and maximum values yielded by the Earth System Models with the CMIP5 'historical' experiment, which for all models included the period from 1860 to 2005. This experiment included observed changes in atmospheric composition (reflecting both anthropogenic and natural sources) and was designed to model the climate's recent past and allow the validation of model outputs against available

Without carbon dioxide mitigation



Sri Lanka – Climate Departure!



Recycle Power!

- Need to Learn from China



T
A

THE BLUE ECONOMY

VERSION 2.0

200 PROJECTS IMPLEMENTED

US\$ 4 BILLION INVESTED

3 MILLION JOBS CREATED

GUNTER PAULI



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009



Prof. Dr. Gunter Pauli

Founder Director of the ZERI F
Member of the Club of Rome
Professor Systems Design at the

rs
ations
n jobs
nature



All buses in Visby now runs on locally produced biogas



Sustainability Architecture of the Green Economy

**Green
Energy**

**Green
Manufacturing**

**Green
Products**

**Green
Machines
&
Process
Units**

Natural Profits



**MAS INTIMATES
THURULIE**

Green Factory





Eco Innovation Business Case Study

**National Cleaner
Productive Sri Lanka**





Company Profile

- Sector : Coconut Products
- Year of establishment : 1963
- Number of Employees : 85
- Main business operation
 - Manufacturing and export of Desiccated coconut



Traditional Business Model of the Company



Process DC

Sell to brokers for
exportation- **Reduces profit
margin**



Source raw
inorganic coconut
from suppliers

**Coconut water
getting wasted**





SAINSBURY'S Pineapple & Coconut

40%





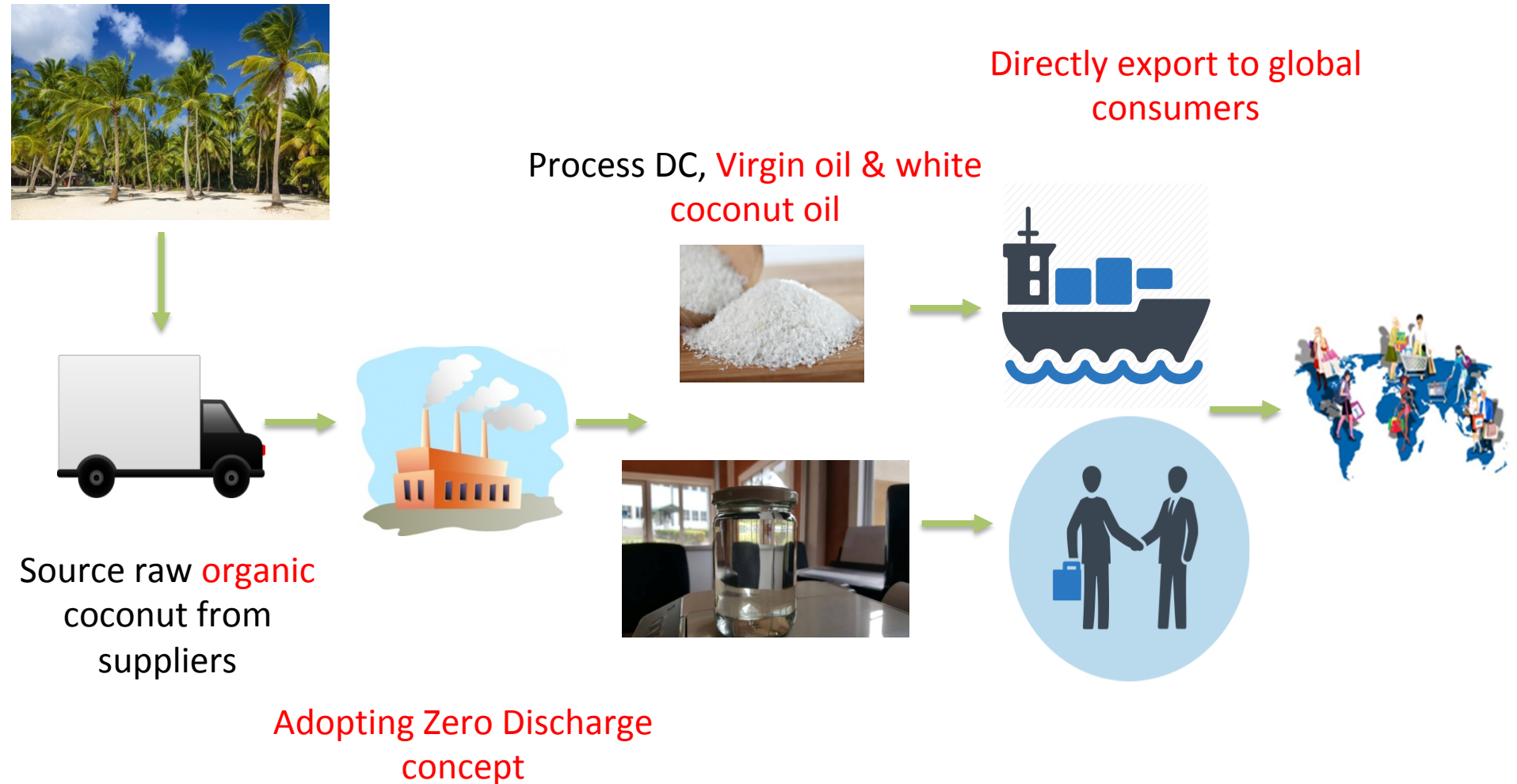
北野エース
SPECIALTY FOOD STORE

有機ココナッツを
低温圧縮方式で絞
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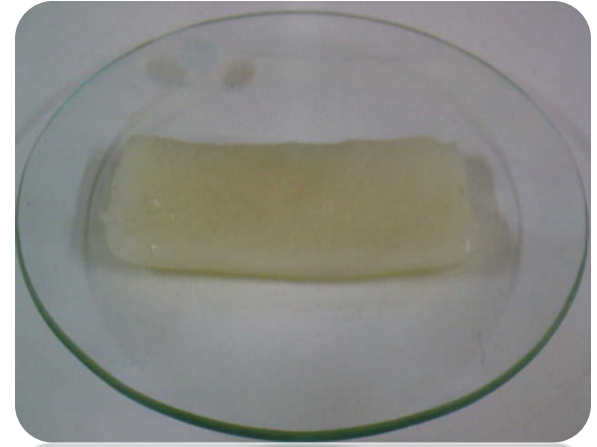
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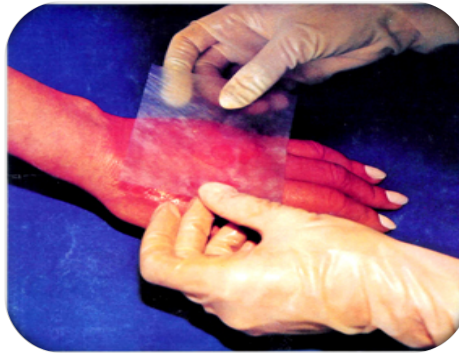
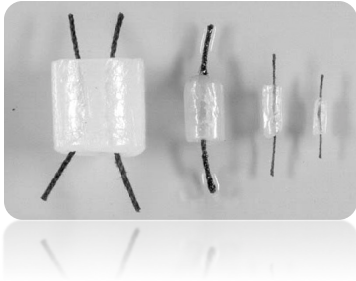
ロイヤ
有機ココナッツ

New Business Model of the Company



Synthesis of Bacterial Cellulose by fermentation of Coconut Water



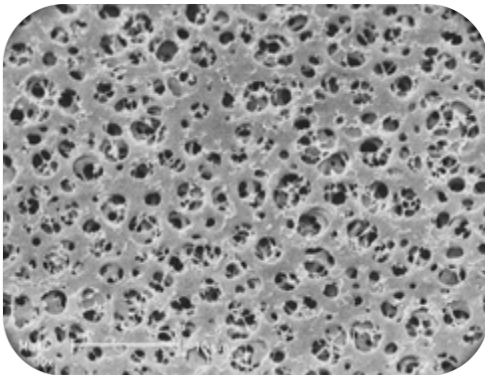


Artificial skin

**BIO MEDICAL
APPLICATIONS**



Wound dressing material



Ultra filtration membrane



Membrane for glucose bio sensor

Applications of BC

Nata de coco
as a food



Material for cosmetic
items

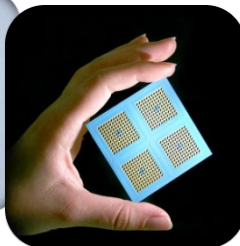


Textile material



Paper industry

INDUSTRIAL APPLICATIONS



Electro conductive
Carbon film



Membrane in
Fuel Cells



Material for Head
phones, speakers
and diaphragms





Why still our 'Hem' like behaviour?





Universities

Mission One

Mission Two

Mission Three

2.7 : Number of R&D scientists in selected countries 2009-2012

Country	Year (data available)	Researchers per million population	Researchers (FTE) per million population
Belgium	2011	8,579	5,714
Brazil	2010	2,404	1,366
China	2012	3,353	2,358
Cuba	2012	1,294	2,407
France	2011	8,515	6,328
Germany	2011	10,053	6,933
Kuwait	2011	272	272
Iraq	2011	537	534
Japan	2011	8,997	6,832
New Zealand	2011	9,674	5,347
Pakistan	2011	740	400
Republic of Korea	2011	10,899	7,415
Singapore	2012	8,486	7,441
Sri Lanka	2013	278	111
ireland	2011	8,057	4,767

Sri Lanka – researchers

Per million population - 278

Source: Adopted from UNESCO Statistics 2012

*National R&D Surveys, Sri Lanka 2013 (NSF)

Researchers and Elephants ! Problem with Numbers !



Principle

- 3P + P Model

PAPERS
PATENTS
PRODUCTS
&
PEOPLE

No of S-T papers published

Competitiveness of patents

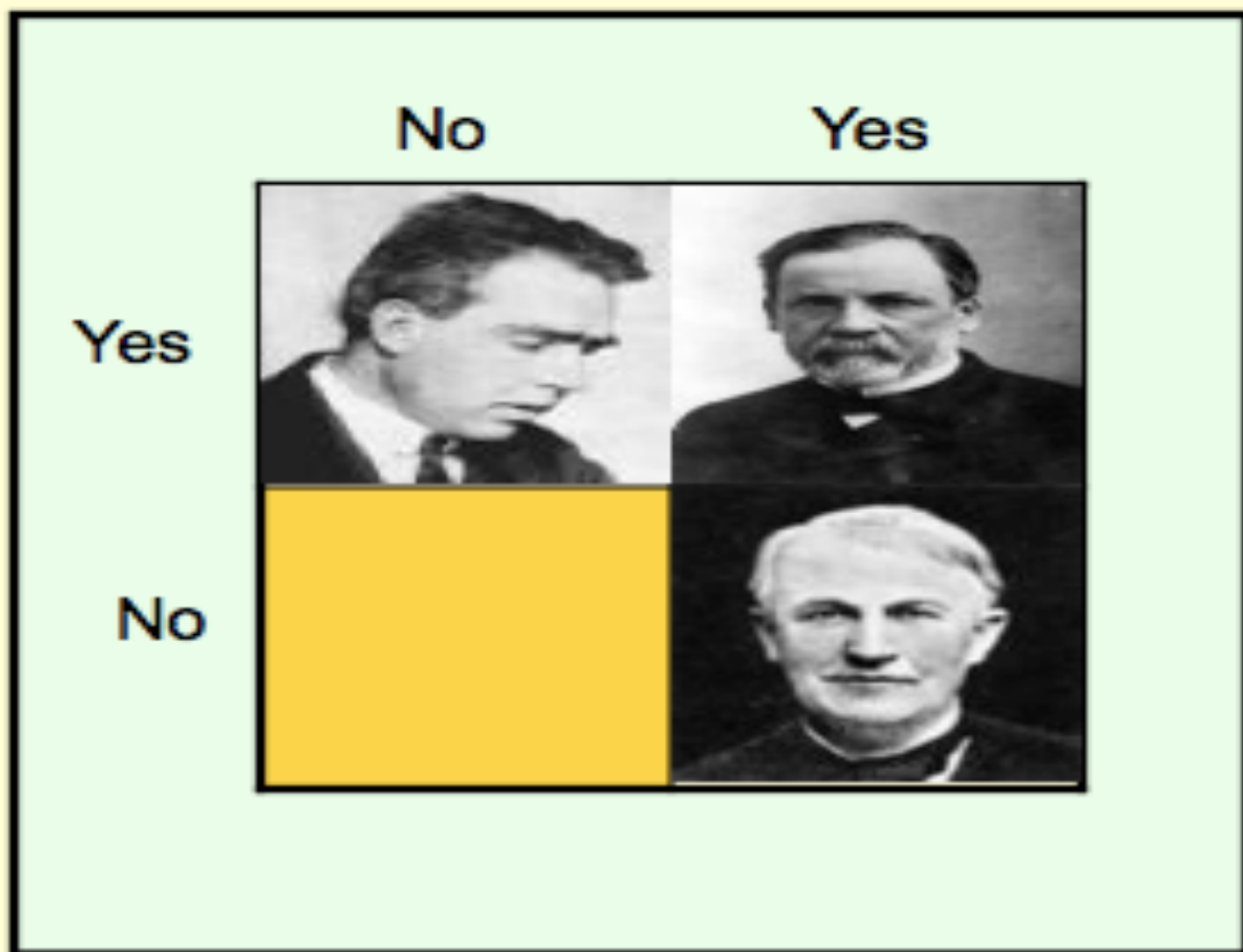
Market value of Products

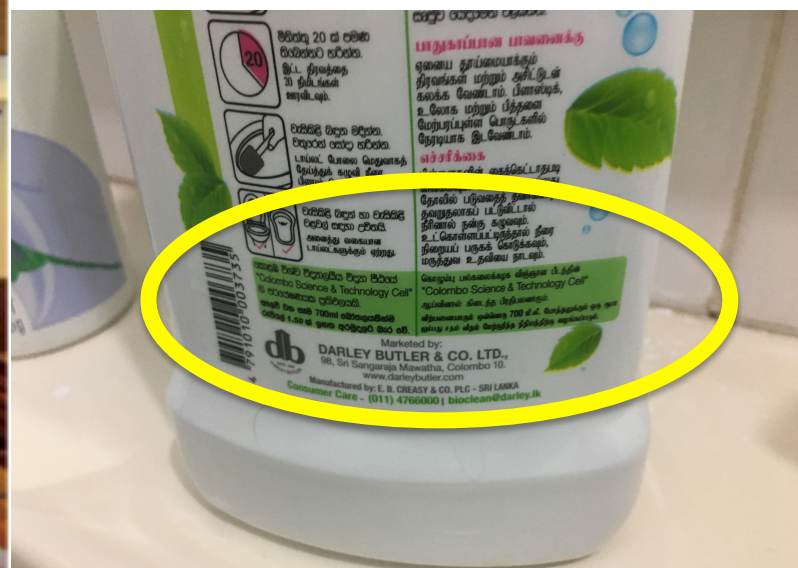
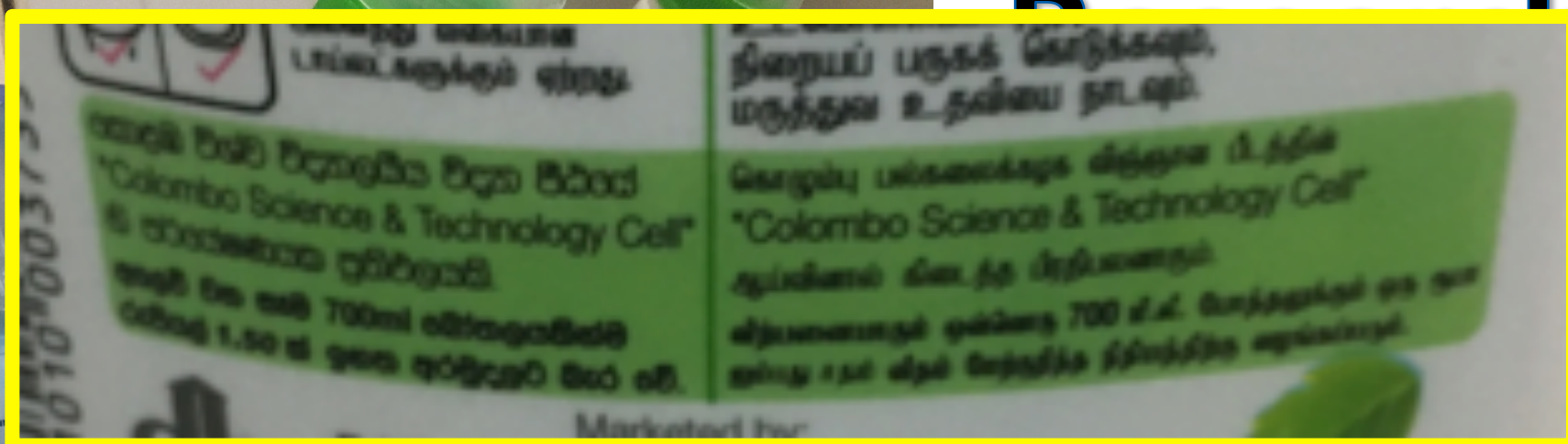
HRST Workforce

Quadrant Model of Scientific Research

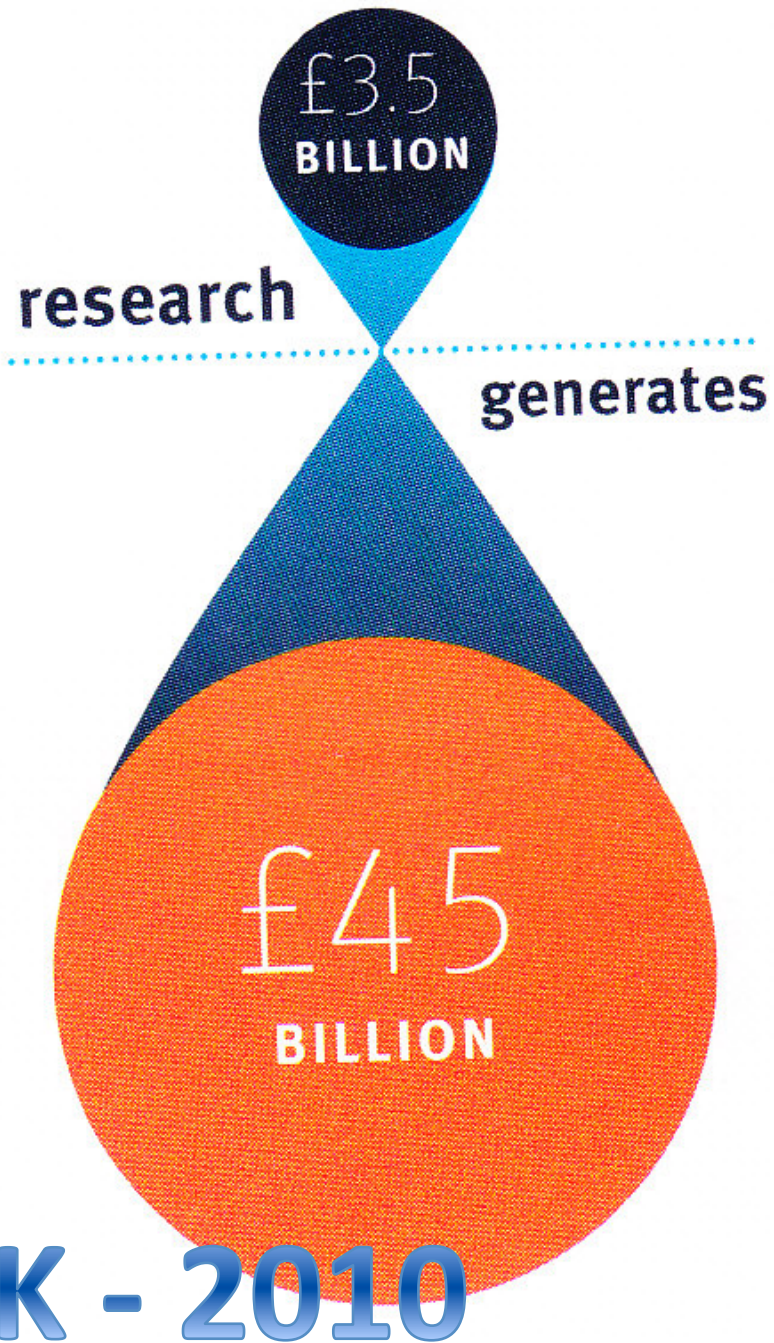
Considerations of Use?

Quest for Fundamental
Understanding ?



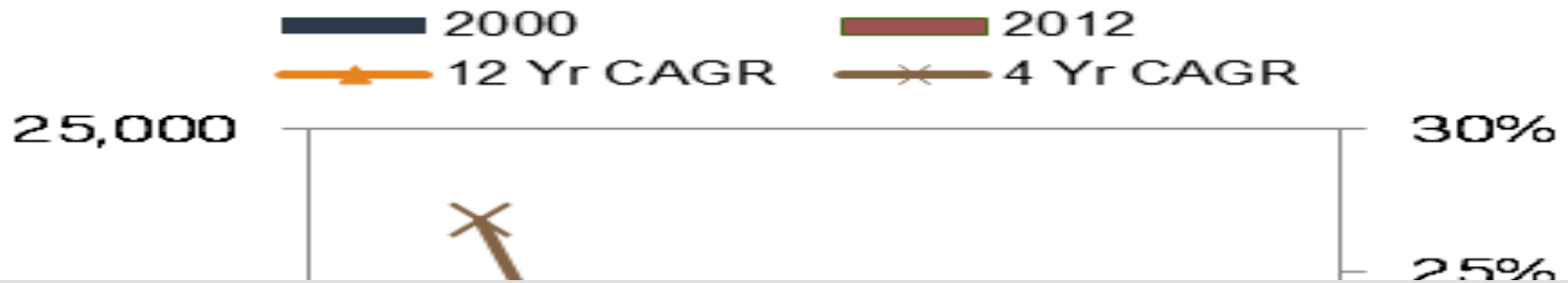


Understanding the Relationship!

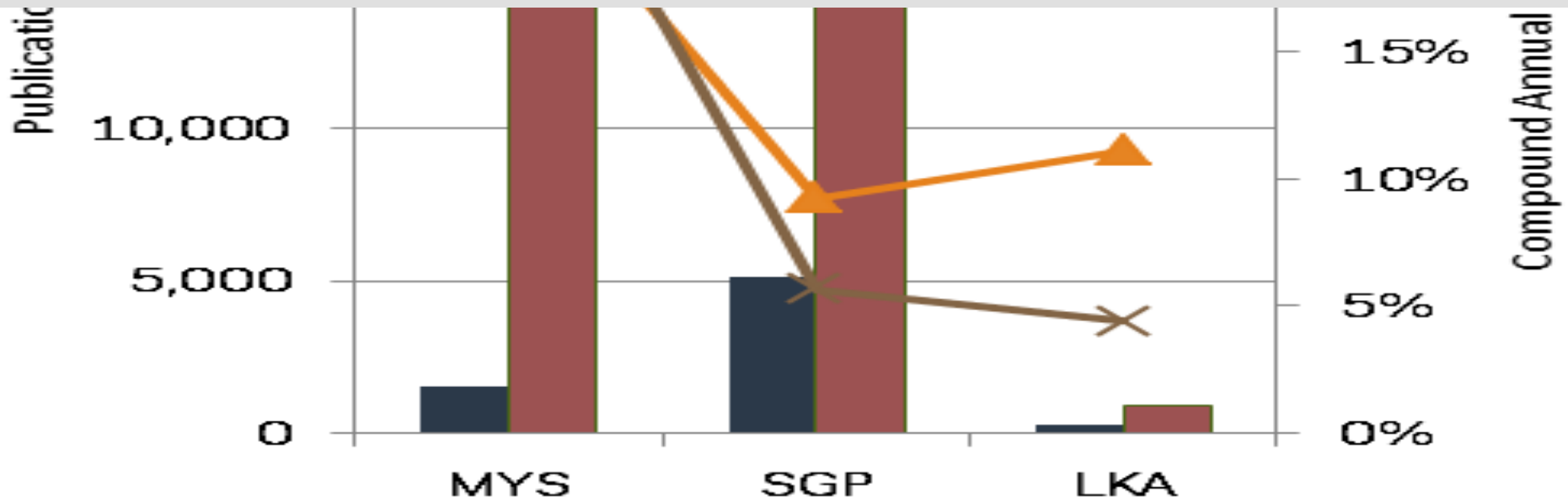


2014 – Rs 10.661 bn

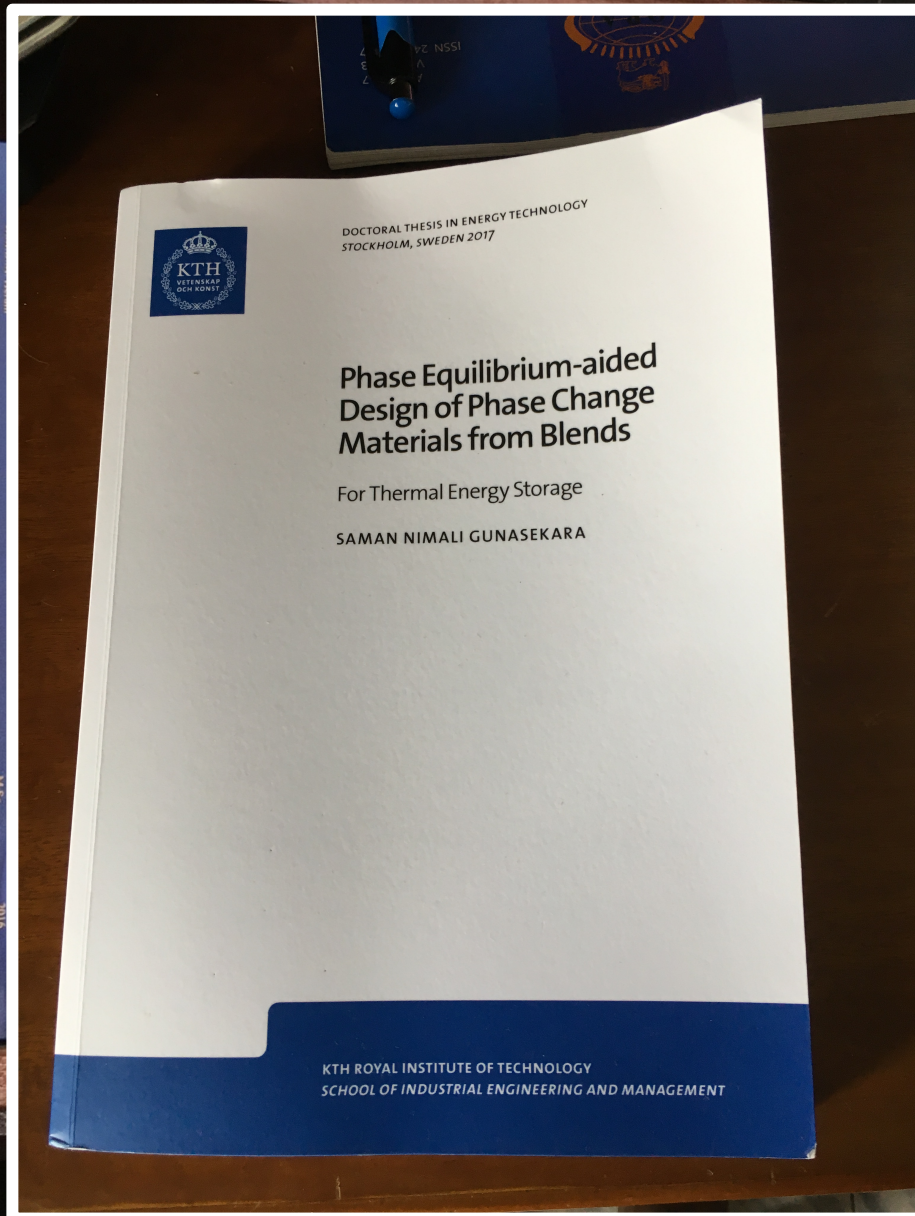
Research



Outputs and Outcomes



Research!





Reuse of nitrate contaminated groundwater in Kalpitiya region, for its agriculture

Jayasingha, P., Pitawala, A. and Dharmagunawardhana. 2013. Fate of urea fertilizers in sandy aquifers of Kalpitiya; a laboratory simulation. Journal of National Science Foundation, Sri Lanka. 41 (2); 121-129

Project Outcomes

*the impacts and influences of
your research outside the
academic world*



University Innovation Cycle

1. Research and Development
2. Invention
3. IP Protection
4. Univ IP Management
5. Licensing
6. Private Commercial Tech Dev
7. Royalty / Revenue Mgt

Multidisciplinary Research Centers

Advanced Mechatronics Systems

Research in Data Science

Establish few Multi-disciplinary
Research Centers

BioMedical Innovations

Urban Lab

Int



IntSym 2018

8th International Symposium

tems

<https://dashboard.costi.gov.lk/>



Sri Lanka Innovation Dashboard for Science, Technology and Innovation



- General**
Dashboard
- Academic**
Dashboard
- Administrative**
Dashboard
- Business**



The Sri Lanka Innovation Dashboard provides information about the current status of the country, with regard to Science, Technology and Innovation. The main purpose of the dashboard is twofold: to ensure the delivery of stable, reliable, and accessible collections of institutional and people data in electronic form for shared access by the community; to support the National ST&I strategy by providing national ST&I information that can be an integral part of decision-making, competitive positioning, and focus on value-adding areas.

If we all know what we all know !

- For anyone who is and should be part of Innovation Eco-System.
- For, Researches, Innovators, Students, Funders, Industry, Policy makers
- Please visit and register
<http://dashboard.costi.gov.lk/home/>
- Video : <https://youtu.be/hAlekBhT5g8>
 access video through <https://www.youtube.com/costisl>



Coordinating Secretariat for Science, Technology and Innovation



Sri Lanka Innovation Dashboard





NATIONAL INTELLECTUAL PROPERTY
OFFICE (OIPI)



JAPAN PATENT OFFICE



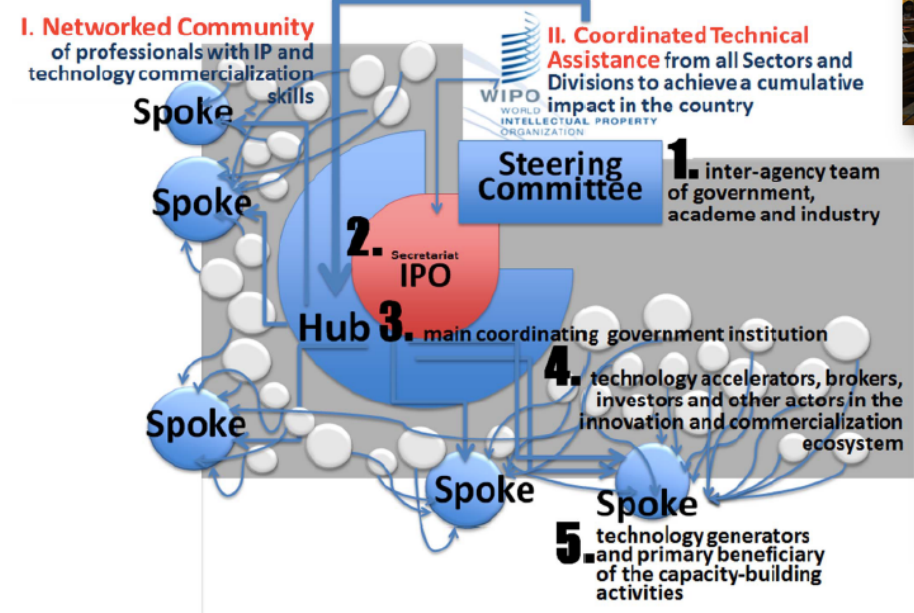
WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

An Enabling IP Environment

to increase the capacity of
countries for technology
development, management and
commercialization



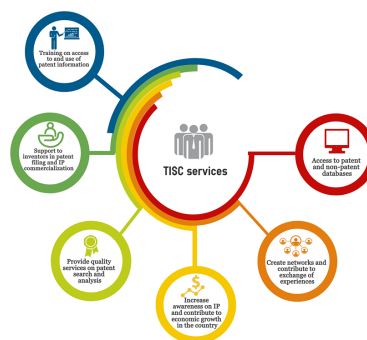
Project Structure





Establish a TISC

- Technology Innovation Support Center



Expectation ...



IP Policies

IP Management Strategy

Tech Transfer Office

IP trained team

IP savy Uni / Res Institutes

An Economy that Values IP!

University and business collaboration agreements: Lambert Toolkit

Useful resources

Further examples of other agreements:

- [sample patent and know-how licence](#) (MS Word Document, 78.5KB)
- [sample patent assignment](#) (MS Word Document, 47KB)
- [sample non-disclosure agreement](#) (MS Word Document, 66.5KB)
- [sample materials transfer agreement](#) (MS Word Document, 75.5KB)
- [sample consultancy agreement](#) (MS Word Document, 76KB)
- [sample confidentiality notice](#) (MS Word Document, 31KB)
- [sample equipment loan agreement](#) (MS Word Document, 60KB)
- [Russell Group Studentship agreement](#) (MS Word Document, 90.5KB)
- [non-disclosure agreements](#)
- [licensing guidance](#)

Your Innovation Ecosystem !



Sri Lanka Innovation Dashboard for Science, Technology and Innovation



- Dreamers

- Doers

- Enablers

Innovation

Ecosystem

