

# Knowledge Mapping as Research

---

Sujata Gamage PhD MPA

December 04, 2010

Xian, China

[www.lirneasia.net](http://www.lirneasia.net)



# Knowledge Mapping

---

- Investigating who is doing
    - What?
    - How well?
    - With who?
    - With what impact?
    - etc.in a given field
  
  - Resulting in
    - Bibliographies
    - Network maps and other forms of visualization and characterization
-

# Why Map Knowledge?

---

- ICT has changed the nature of knowledge creation, dissemination and use
- Makes it possible to recognize/practice all four forms of scholarship
  - Discovery
  - Synthesis
  - Application
  - Disseminaiton

(Scholarship-Ernest Boyer, 1997)

---

# Knowledge mapping

large scale

- 
- ❑ NSF of US, State of Science and Engineering Capacity
  - ❑ World Bank, Knowledge Capacity Index

(Limited to traditional forms of knowledge)

---

# Knowledge mapping

small scale

- 
- Young Scholars of CPRsouth 2010
  - Solid waste sector in Sri Lanka
  - Telecom research in Asia (See CPRsouth, Dec 7)
  - A Literature search on any topic
-

# Knowledge mapping

small scale

- 
- ❑ Sold waste sector in Sri Lanka
  - ❑ Young Scholars of CPRsouth 2010
  - ❑ Telecom research in Asia (See CPRsouth, Dec 7)
  - ❑ A Literature search on any topic
-

# Knowledge Map of the CPRsouth Young Scholars, 2010

---

- ❑ Objective: Develop comprehensive bibliographies for at least 4 research areas
  - ❑ Working Hypothesis: There will be at least 4 distinct clusters
  - ❑ SURVEY POPULATION: : 28 young scholars from 13 countries attending CPRsouth 2010
  - ❑ QUESTION: From among your co-participants name a maximum of three that you may contact in the near future to seek information you needed for your research
  - ❑ RESPONSE: e.g.
    - Name:
      - Bhandari
    - May Contact:
      - Wenshu
      - Kamali
      - Lina
-

Topic	Name	Country
Bridging Digital Gap through Rural Telecenters in Nepal	Khadak Singh <b>Bhandari</b>	Nepal
how the communication effects the regional development	Wang <b>Wenshu</b>	China
Assess the impact that the telecommunications sector in Afghanistan has had on socio-economic development within the country since 2003.	Najibullah <b>Kamali</b>	Afghanistan
The influences of communication policy evolution to social welfare	Yue <b>Lina</b>	China
Expanding mobile banking to poor – Issues and challenges in India.	Ramrao <b>Mundhe</b>	India
Mobile Phones for Agricultural Development of Sri Lanka	R.A.N. Sameera <b>Wijerathna</b>	Sri Lanka
The Impact Evaluation of the Rural ICT Provision in Indonesia	Muhamad <b>Sowwam</b>	Indonesia
Measurement of ICT Impact on Industrial Enterprises	Jiang <b>Shu</b> ;	China
The Mobile Broadband and Fixed Broadband Battle in Swedish market:	Chalita <b>Srinuan</b>	Thailand
Emerging Regulatory Framework for Pay TV in Thailand :	Chanansara Oranop na <b>ayutthaya</b> ;	Thailand
Developing Policies on improved Quality of telecom Services	Muhammad Yousaf <b>Sheikh</b>	Pakistan
Evolution of Chinese Telecom Market Regulatory Policy	Han <b>Lei</b>	China
Mobile internet needs supporting regulatory policies now	Lu hong <b>Han</b>	China
the research on the MNP to strengthen China's telecommunications market competition effect	Mo <b>Lili</b>	China
The effect of policy converted to the series services taking your previous phone number	Haolin <b>Di</b>	China
Sustainable 'Broadband Operational Model' for Developing Countries.	<b>Shamsuzzoha</b>	Bangladesh



Approaches for the convergence of the telecommunications and financial sector regulations	<b>Moyo</b>	SouthAfrica	Mpho Moyo;
What kind of regulation and law that most suitable to be implemented in Indonesia to face the convergence era?	<b>Lestari</b>	Indonesia	Nunic Lestari
<del>Development of Telecommunication Policy on the "Three Networks Convergence" in China</del>	<del><b>Gongchen</b></del>	<del>China</del>	<del>LIN Gongcheng</del>
Policy of Tri-networks Integration to Broadband Market	<b>XuHui</b>	China	Wang XuHui
National Information Development Index Optimization Research	<b>Jin</b>	China	xiaxia Jin
ICT readiness of the SME sector in Sri Lanka	<b>Azeez</b>	Sri Lanka	A.H. Azeez
Designing an ICT training program for principals	<b>Dulce</b>	Philippines	Christina Dulce
How to inspire employee's work engagement in order to better support the development the ICT	<b>Rong</b>	China	Wang Rong
The Reformation of Administrative Procedure of China:	<b>Yuan</b>	China	Zhou Zhi Yuan
A case study of the Aquino administration's communication group's use of new media for public information and interaction	<b>Tolibas</b>	Philippines	Peter Tom M. Tolibas;
Online Newspapers in China: Current State and Recent Trends	<b>Ying</b>	Hong Kong	Li Ying
Impact of Foreign Media Content in Bhutan	<b>Choden</b>	Bhutan	Tshewang Choden

---

# Knowledge mapping

small scale

- 
- ❑ Solid waste sector in Sri Lanka
  - ❑ Young Scholars of CPRsouth 2010
  - ❑ Telecom research in Asia (See CPRsouth, Dec 7)
  - ❑ A Literature search on any topic
-

# Knowledge Map of Solid Waste Managers, October 2009-January 2010

---

- ❑ HYPOTHESIS: Universities are marginal sources of knowledge
  - ❑ SURVEY POPULATION: : 217 local authorities in 6 provinces in Sri Lanka
  - ❑ QUESTION: Who did you contact in the last 12 months to seek information you needed to improve your practice
-

# Sum of Knowledge-Intensive Linkages

(concerning solid waste management among 2xx local authorities in six provinces.)

Province	Knowledge Source					Total
	Gov_National	Peer	Other	Gov_Prov	University	
ALL 217/227	39%	29%	18%	7%	6%	585

# Sum of Knowledge-Intensive Linkages

(concerning solid waste management among 2xx local authorities in six provinces.

Province	Knowledge Source					Total
	Gov_National	Peer	Other	Gov_Prov	University	
Central 39/41	46%	14%	14%	10%	15%	152
Sabaragamuwa 29/39	3%	69%	26%	0%	3%	35
Southern 44/50	52%	24%	18%	3%	3%	119
Uva 25/28	31%	26%	16%	19%	8%	77
Wayamba 32/32	32%	15%	24%	23%	6%	62
Western 48/48	27%	35%	14%	23%	1%	189
<b>ALL</b> 217/227	<b>39%</b>	<b>29%</b>	<b>18%</b>	<b>7%</b>	<b>6%</b>	<b>585</b>

# Distribution of Peer2Peer Links (need to update)

Num Links	Num Nodes	LGAs
31	1	Balangoda UC
8	1	Weligama UC
5	1	Negombo MC
4	1	Kaduwela PS
3	4	Banadaragama PS, Horana PS, Galle MC and Kelaniya PS
2	12	Misc
1	36	Misc
0	56	Misc
	109	

---

# Self-organizing systems, requirements

Prigogine in Contractor & Monge, 2002

---

- ❑ At least one of the components in the system must exhibit auto-catalysis
  - ❑ At least two of the components in the systems must be mutually causal
  - ❑ The system must be open to the environment with respect to the energy and matter [or knowledge and people]
  - ❑ The system must operate far from equilibrium conditions
-

# Networks as Self-organizing systems - properties

Contractor & Monge, 2002, p. 97

---

- Exponential distribution as opposed to random distribution of nodes v. linkages  
(Scale free, governed by Power laws, Characterized by hubs, Rich get richer)
- Growth?
- No matter how large and complex a network becomes, as long as there is:
  - Growth, and
  - Preferential attachment (as opposed to random attachment)

A network will maintain its hub dominated topology  
(Barabasi, 2002, Linked: The New Science of Networks)

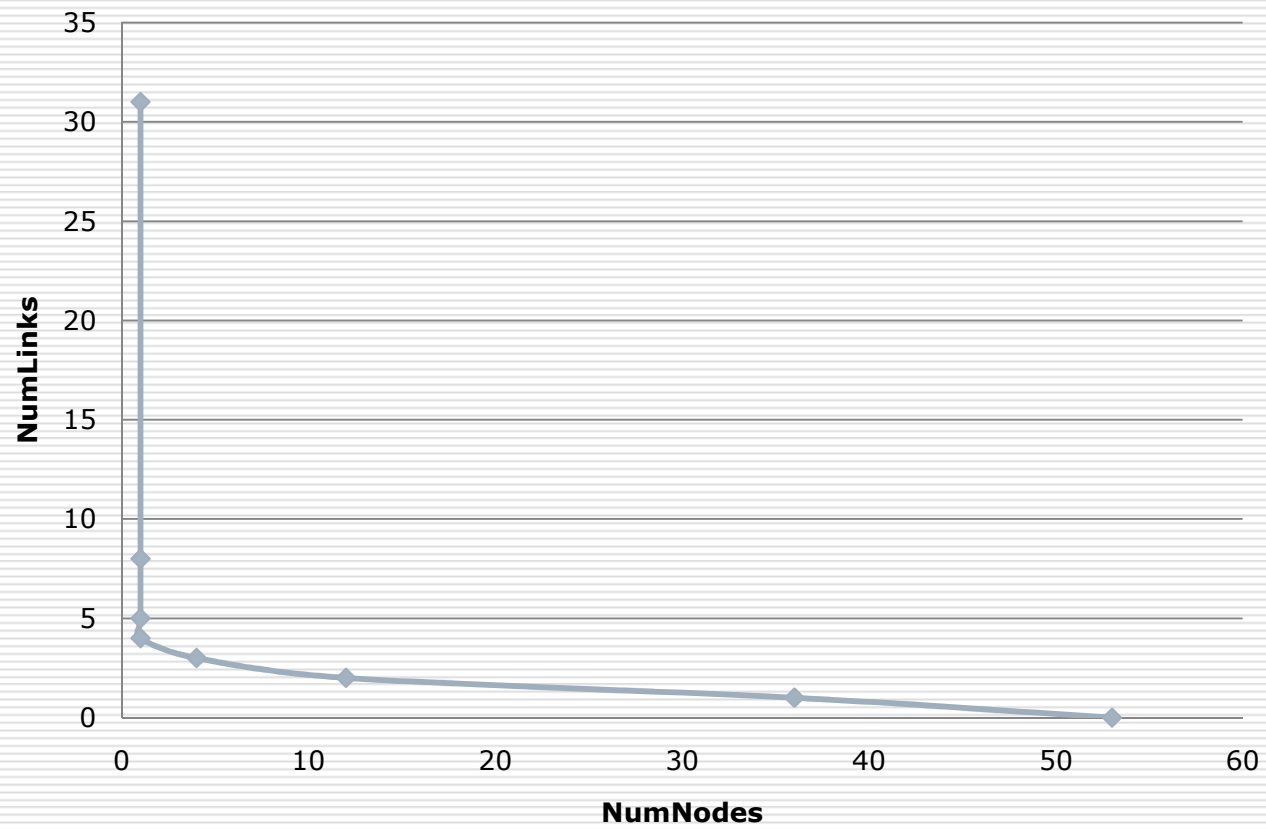
---



---

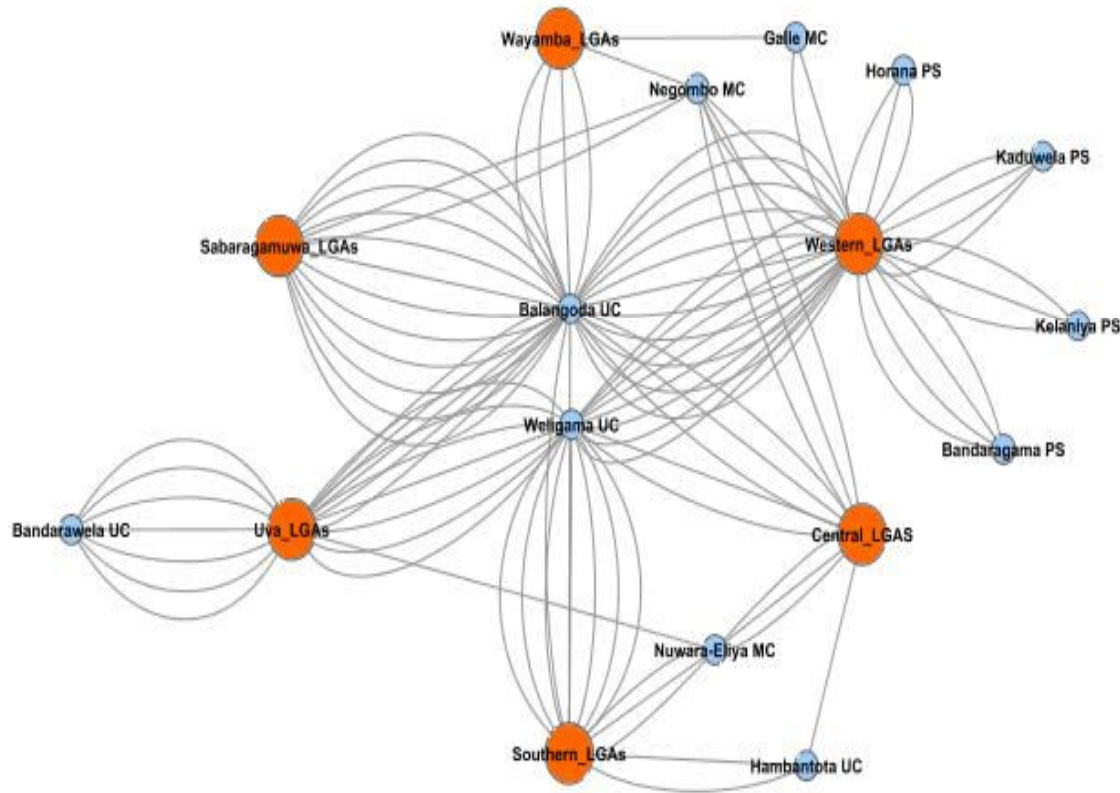
### Solid Waste Practitioner Network

for Sabaragamuwa, Wayamba and Western Provinces, Sri Lanka , 2009

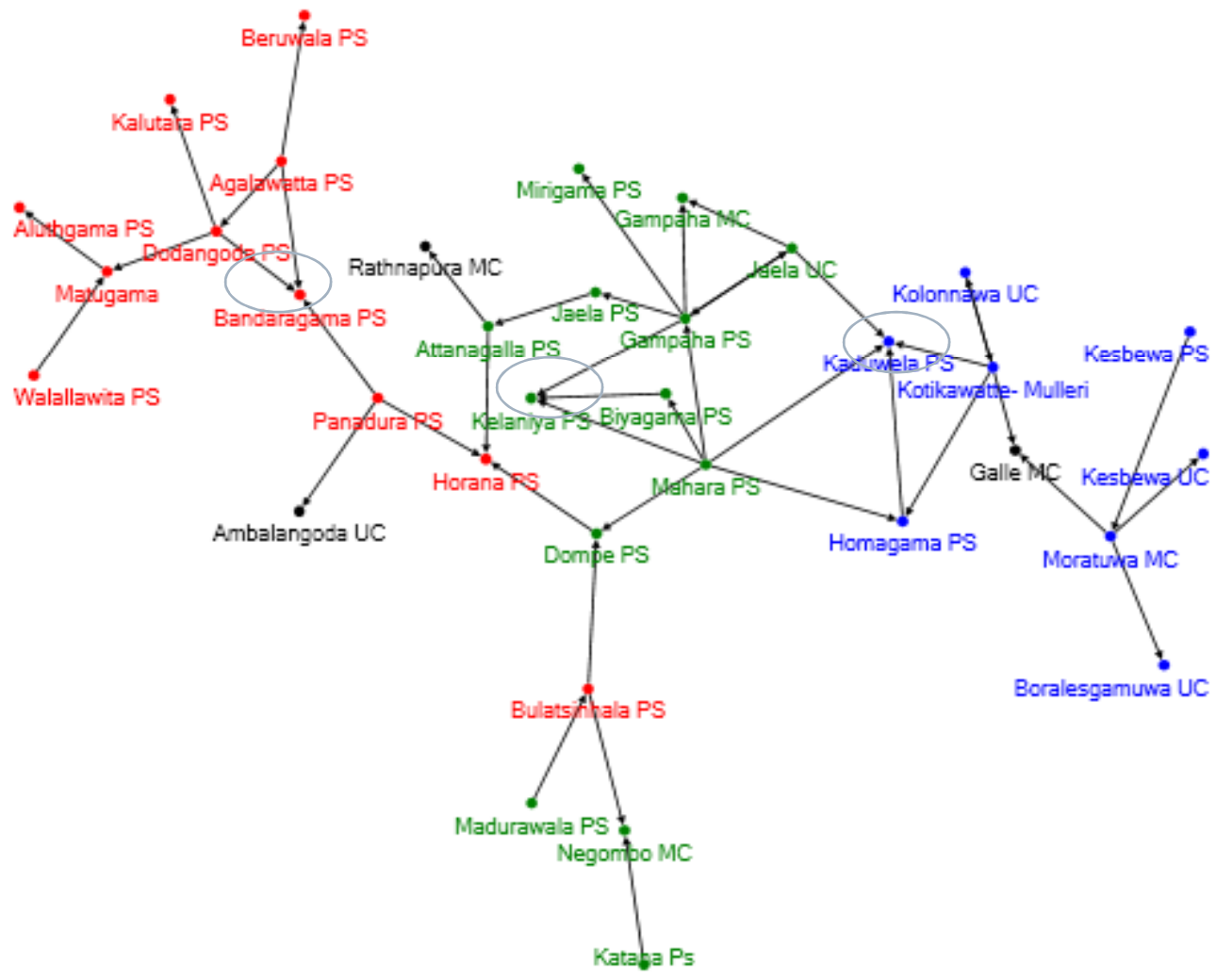


# Knowledge-based interactions

between knowledge-giver local authorities (blue) and all other local authorities (orange)



# Western Province, clusters with smaller hubs have emerged



# Conclusions

---

- LESSONS FOR KNOWLEDGE MANAGEMENT:  
Look for emergent patterns before attempting to engineer
  
  - FUTURE WORK:  
Predict emergence in one year?
  
  - LIMITATIONS:
-

# Distribution of Peer2Peer Links (need to update)

---

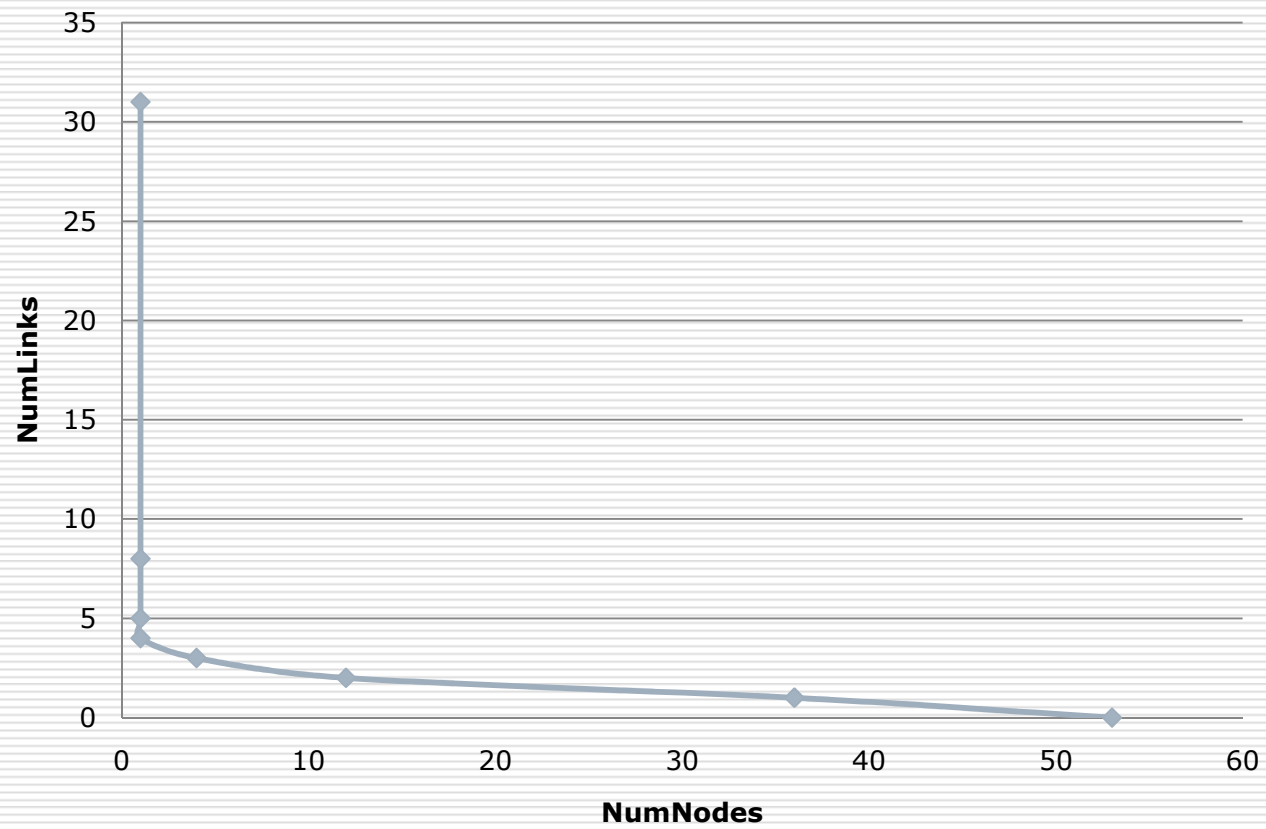
Num Links	Num Nodes	LGAs
31	1	Balangoda UC
8	1	Weligama UC
5	1	Negombo MC
4	1	Kaduwela PS
3	4	Banadaragama PS, Horana PS, Galle MC and Kelaniya PS
2	12	Misc
1	36	Misc
0	56	Misc
	109	

---

---

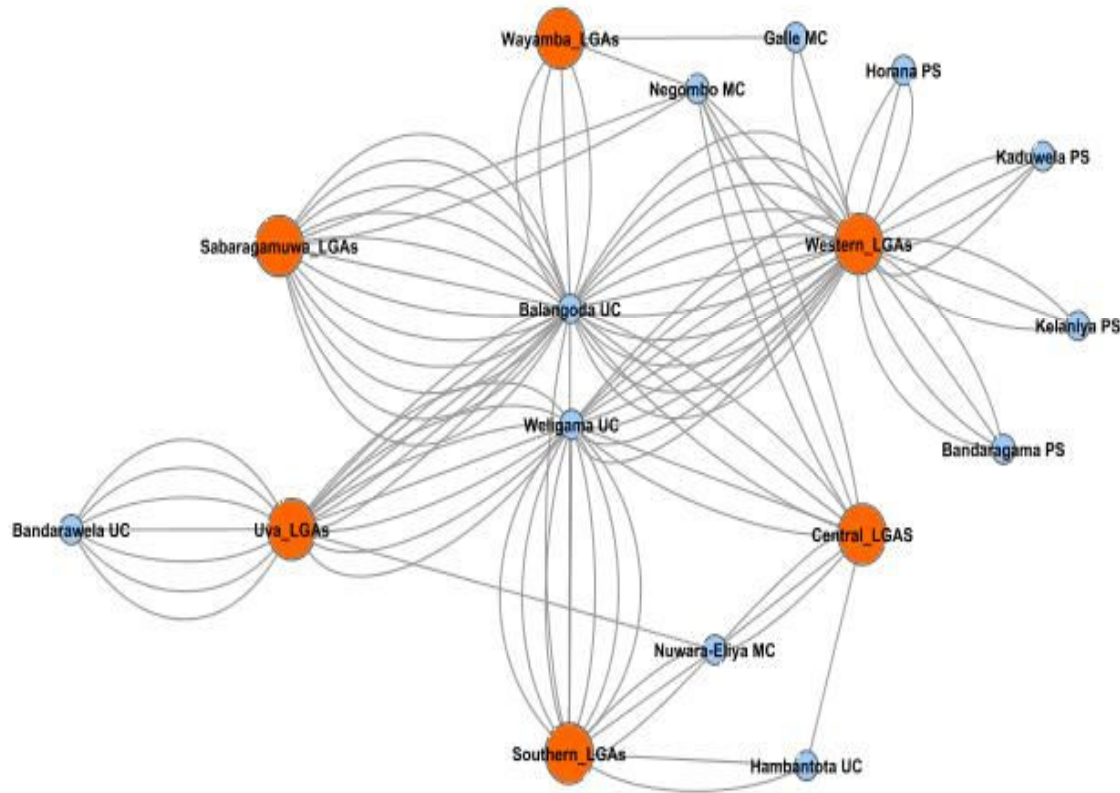
### Solid Waste Practitioner Network

for Sabaragamuwa, Wayamba and Western Provinces, Sri Lanka , 2009



# Knowledge-based interactions

between knowledge-giver local authorities (blue) and all other local authorities (orange)



# Knowledge mapping

small scale

- 
- Telecom research in Asia
  - Solid waste sector in Sri Lanka
  - CPRsouth young scholars
  - A literature search on any topic
-



# Literature Surveys

---

---

# Lessons

---

- ❑ Do a thorough literature search before any research
  - ❑ Do not try to reinvent the wheel. See if you can do add to the knowledge base by doing a synthesis using the literature
  - ❑ Look for emergent patterns, identify gaps
-

---

Thank you

---