

# Spectrum regulation: Developing country addendum

---

Rohan Samarajiva



**LIRNEasia**

Learning Initiatives on Reforms for Network Economies

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

# Additional elements to consider

---

- Inadequacy of skills in managing and monitoring frequencies
  - May be addressed by automation (AFMMS), but then what about skills to fully utilize the AFMMS?
- Inadequacy of skills in designing and running auctions and managing markets
  - Can mobilize consultants for one-time events such as auctions
- Perception (if not reality) of pervasive corruption among politicians and officials



# Key principles

---

- Transparency, uber alles
- Simplicity
- Pragmatism
  - Simple and transparent better than theoretically optimal



# Basics: spectrum-use information must be public

---

- Necessary to make master register public
  - See GATS Regulatory Reference Paper requirement
- Examples
  - [http://web.acma.gov.au/pls/radcom/register\\_search.main\\_page](http://web.acma.gov.au/pls/radcom/register_search.main_page)
  - <http://www.trc.gov.lk/spectrum.htm>
- “Sunlight is said to be the best disinfectant . . .” –Justice Brandeis



# A legal commitment that is too often flouted

---

- “Any procedures for the allocation and use of scarce resources, including frequencies, numbers and rights of way, will be carried out in an objective, timely, transparent and non-discriminatory manner. **The current state of allocated frequency bands will be made publicly available,** but detailed identification of frequencies allocated for specific government uses is not required.”



# Refarming: key issue that illustrates the pragmatic approach

---

- Think land: reallocating from low-value use (slums) to high-value use (commercial developments) as a result of external environment changing (new traffic patterns in city)
- Need to reform frequencies when external environment (standards and market developments) makes hitherto low-value frequency bands greatly desirable



# Standard approach

---

- Make the beneficiaries of the change (commercial developers/users of new services) pay the previous occupants to go away
  - In the case of land, friction because of disagreement re amount of compensation and emotional attachments (externalities that are difficult to assign value to)
  - In the case of frequencies, emotional attachments are less important than quantum of compensation



# Example of refarming

---

- In 2002, Sri Lanka was using 1800 MHz Band for low-value services such as point-to-point links for Electricity Board and telcos
  - Three mobile operators were squeezed in the GSM 900 MHz Band, with the largest operator supporting close to a million customers on 7.5 MHz, quality problems in Colombo because of topographical features and concentration of customers
  - Fourth operator wanted to shift from DAMPS (had frequencies in CDMA 800 MHz but no room in 900 MHz band)





# Step One

---

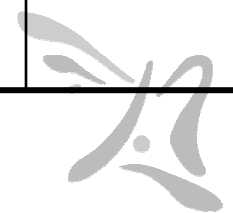
- Existing-operators-only auction for 1800 MHz slots → app. 2 million USD raised → used to clear 2 slots for former DAMPS operator and largest operator
- Problem with Treasury and Auditor General who asked why replacement value, not depreciated value paid to vacating users



# Step Two

- Endless discussions with all operators re how to get from present assignments to desired end-state of minimum admin assignments + auctions
- Those with more than 7.5 MHz had to vacate
- Additional frequencies to be purchased through auction from GSM 1800 and CDMA 1900 bands which would be cleared gradually

	F1	F2	F3	M1	M2	M3	M4
GSM 900				7.5	7.5	7.5	7.5
CDMA 800	2.5	2.5	2.5				



# Why not straight auctions?

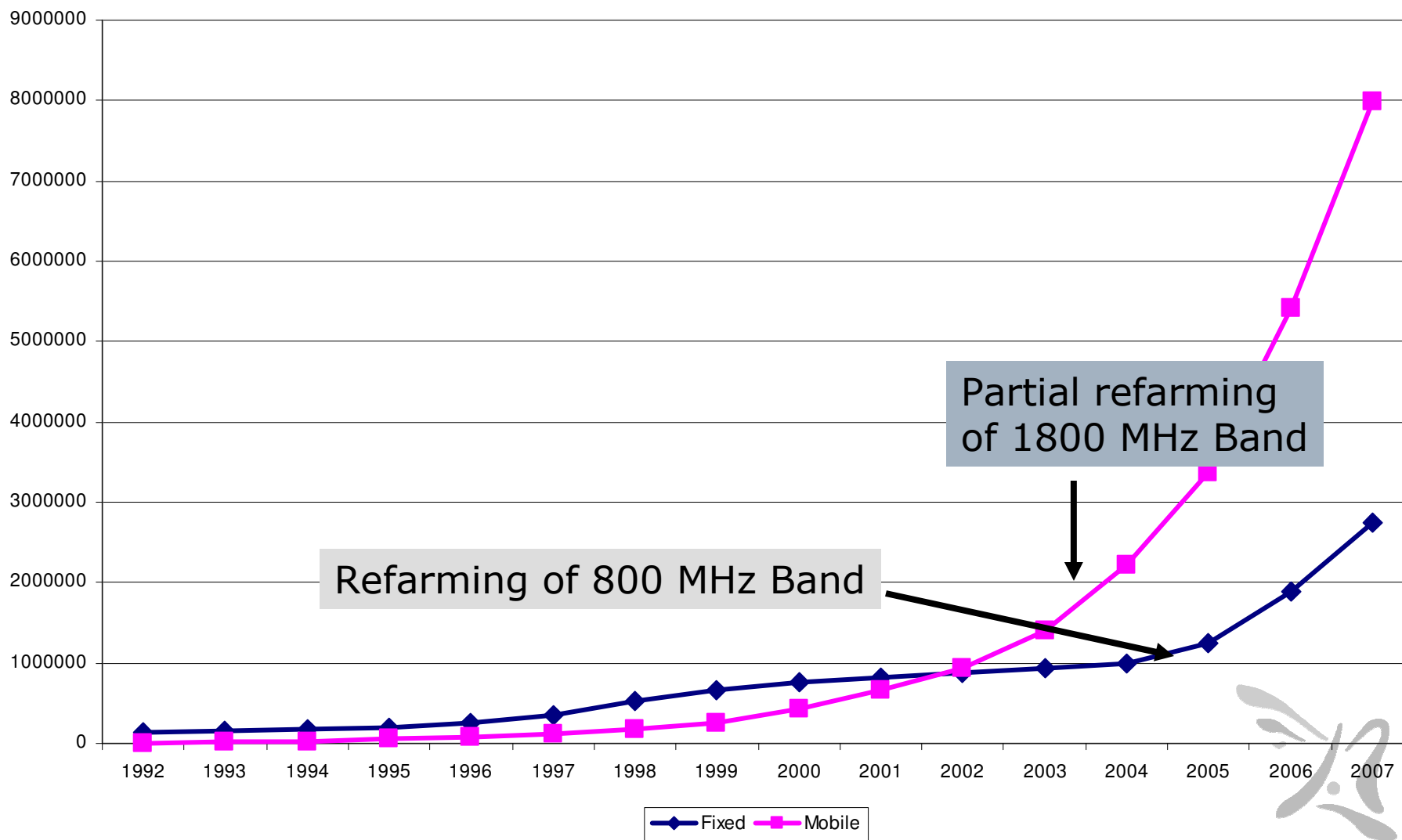
---

- ❑ Needed to get buy-in of operators who were sitting on GSM 900 and CDMA 800 frequencies
- ❑ As country emerged from what was thought to be a 20 year war, government wanted to show appreciation of those who invested in hard times
- ❑ Major telecom reforms in the offing, so did not need a spectrum fight on top



# Results:

Refarming was not the sole cause but definitely helped . . .



# Limits of the standard approach

---

- Commons is unavoidable
  - Almost every laptop comes equipped with WiFi nowadays
  - With “motes” and the “Internet of Things,” even greater role
- Yet, how do we clear frequencies for use in commons applications?
  - No obvious source of funds for clearing out low-value users



# Difficulties of co-existence

---

- What is commons use allowed with no quality guarantees and no clearing?
  - Commons users will be happy with non-assured quality standards, but others may object if some commons users increase power and cause interference
  - Spectrum wars may erupt with non-commons users periodically upping power levels to blast away commons users
- Any ideas?

