



North Central Province

A Growth Diagnostic

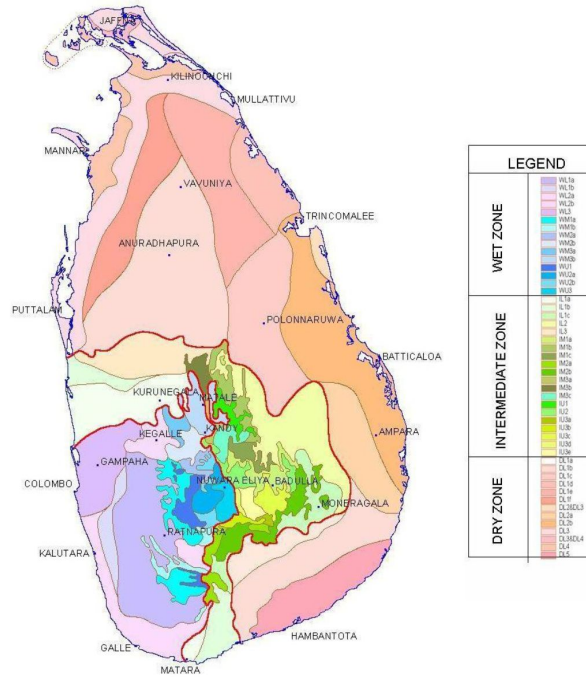
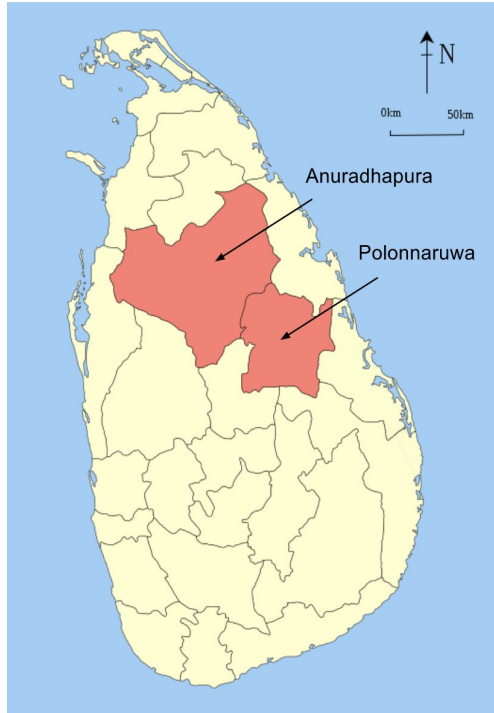
September 2018

Tim O'Brien, Research Fellow

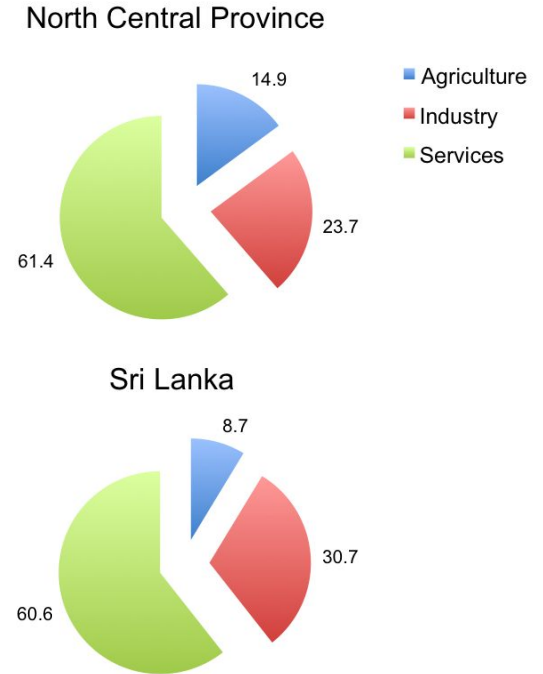
Center for International Development at
Harvard University



NCP Basics



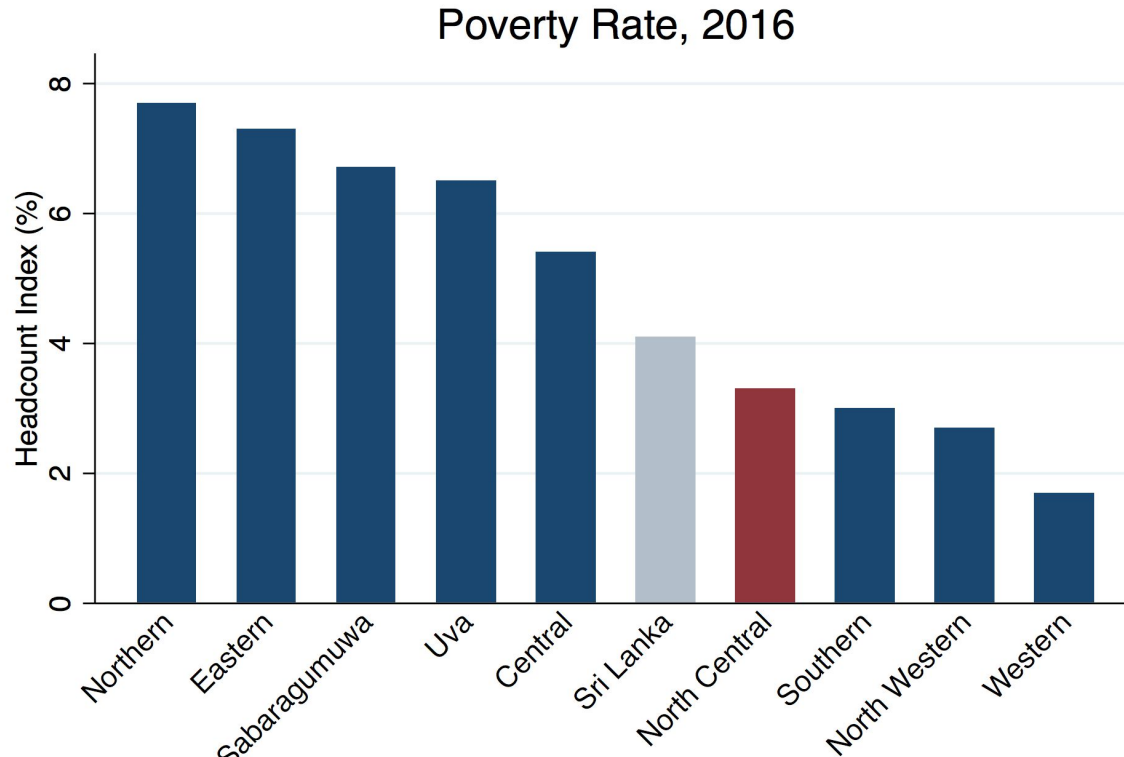
Share of Output, 2015



Source: Agro-ecological regions graph from Natural Resources Management Centre, Department of Agriculture (2003) via National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016-2025

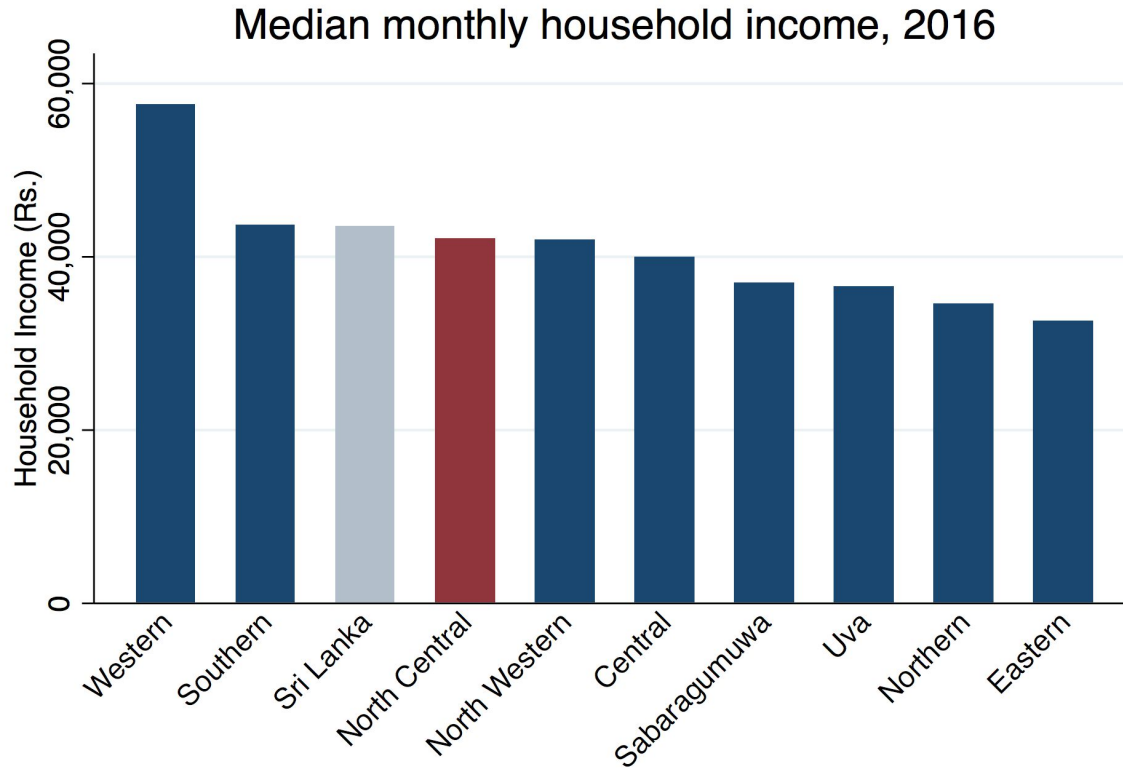
Source: HCID calculations using CBSL data

What is the growth problem?



Data source: DCS, using HIES 2016

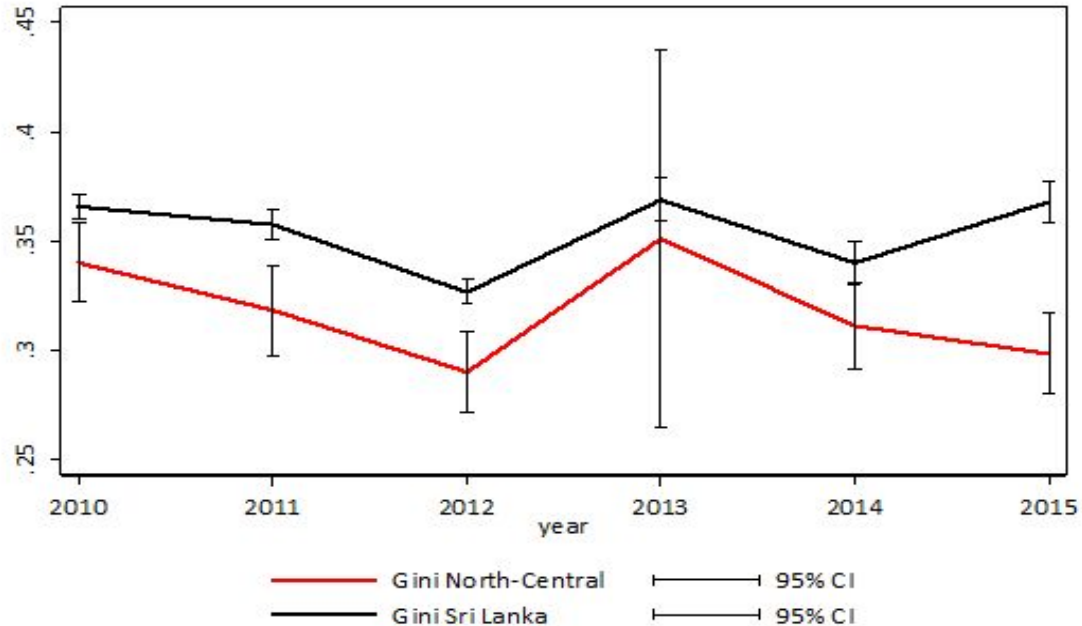
What is the growth problem?



Data source: DCS, using HIES 2016

What is the growth problem?

GINI Coefficient (worker-level)

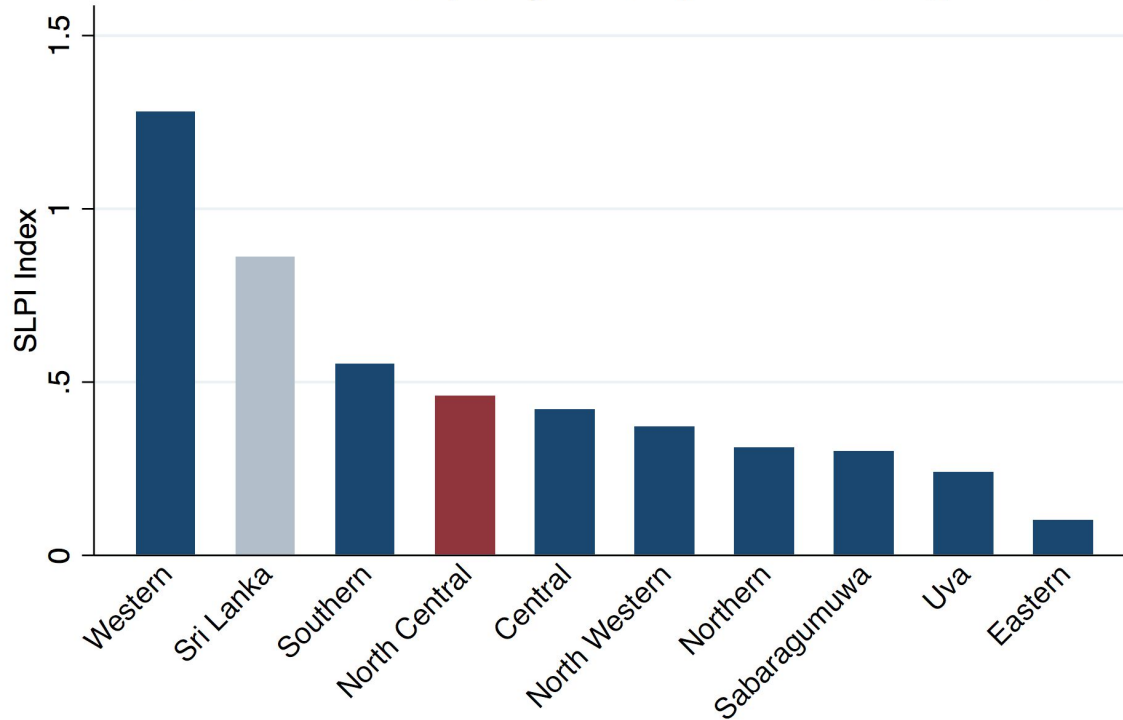


Gini calculated using total monthly income from 1st and 2nd job

Source: CID calculations using Labor Force Surveys

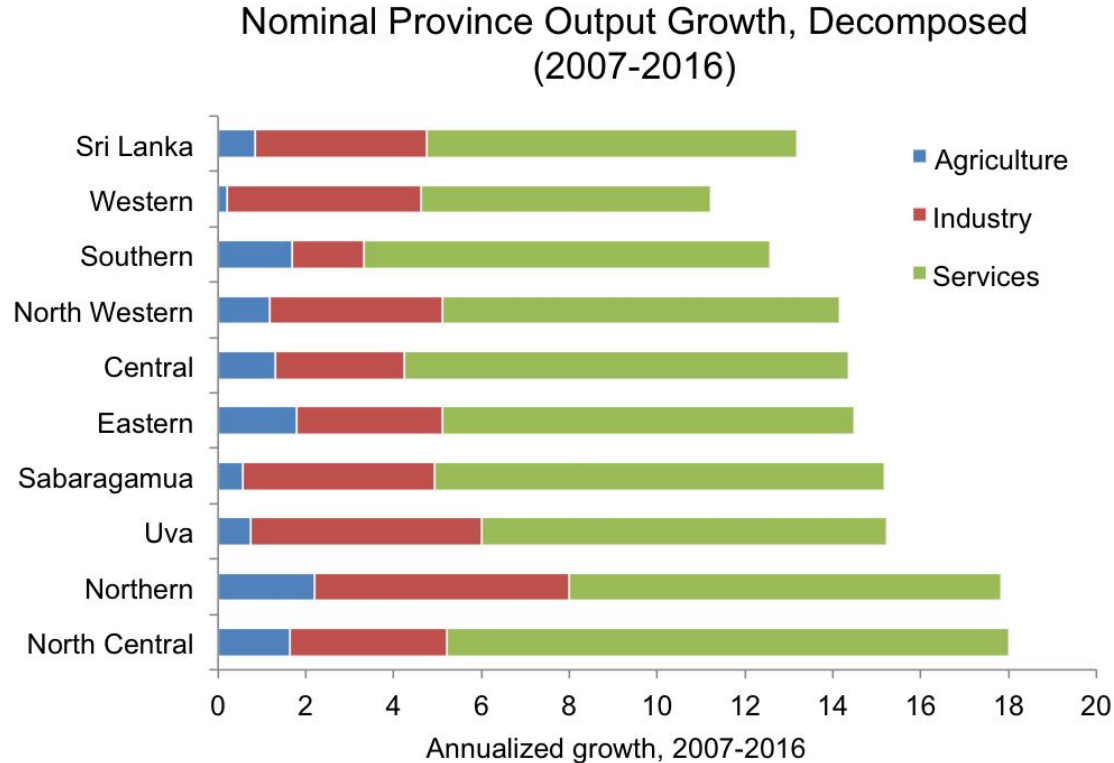
What is the growth problem?

Sri Lanka Prosperity Index (overall score), 2015



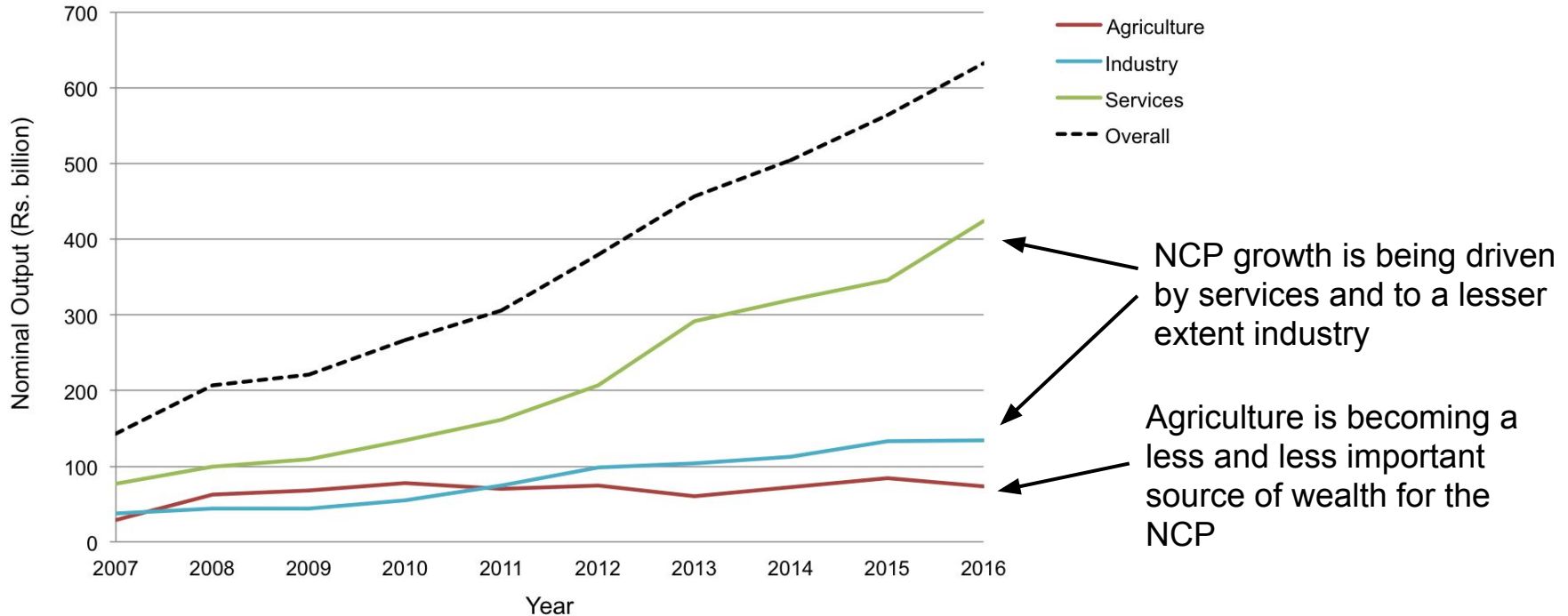
Data source: CBSL, Sri Lanka Prosperity Index

What is the growth problem?



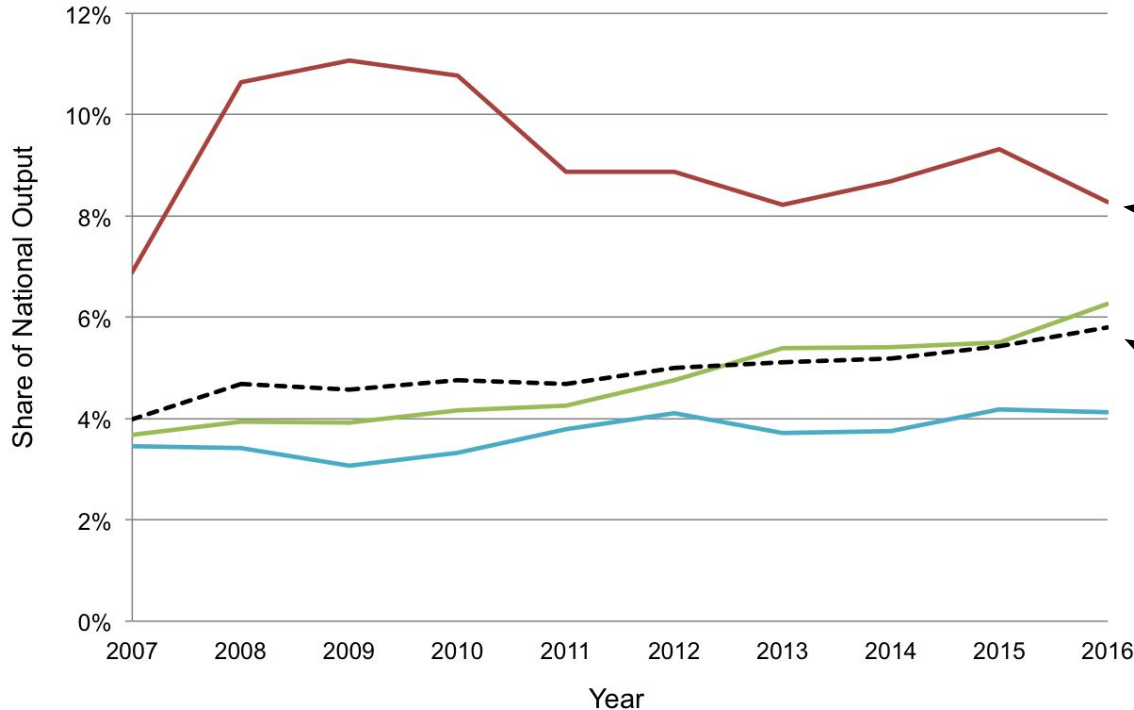
What is the growth problem?

North Central Province



What is the growth problem?

North Central Province



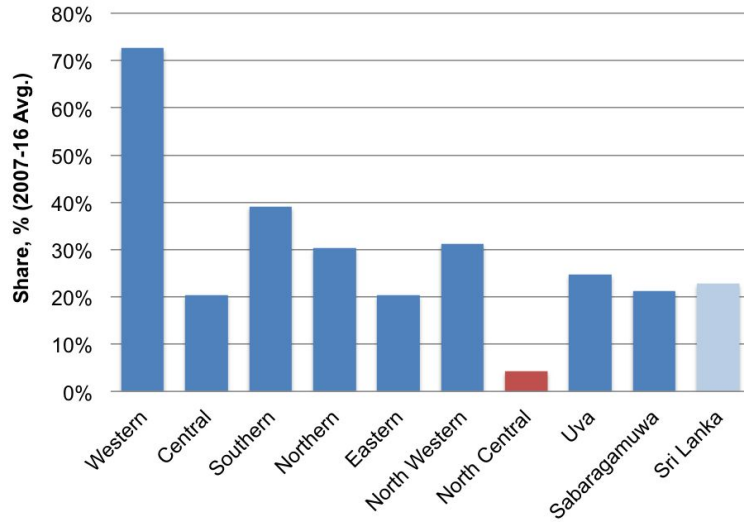
— Agriculture
— Industry
— Services
- - Overall

NCP agriculture output makes up a large but volatile share of national agriculture output.

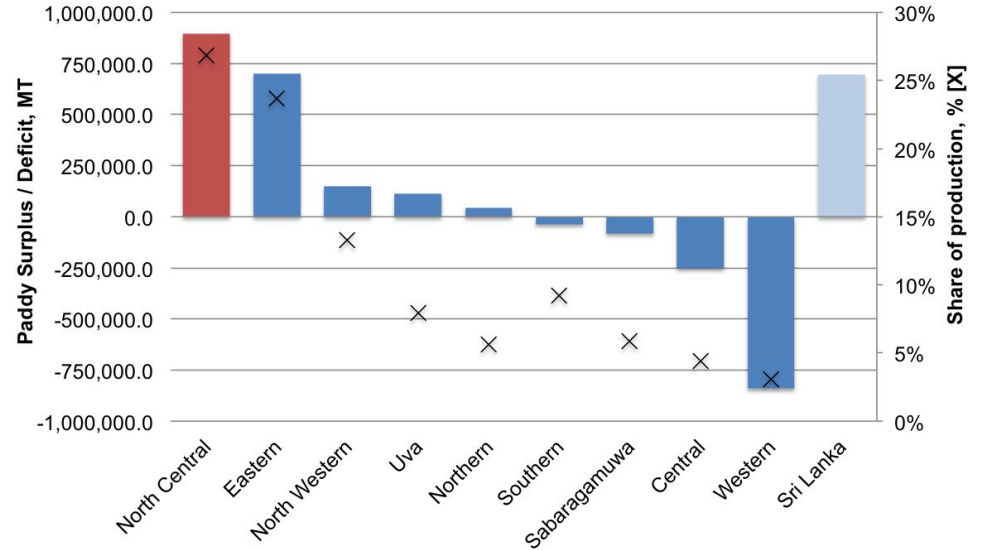
The NCP's economy has grown significantly as a share of national output, driven mostly by services. Industry has grown but remains underrepresented in the national economy.

Paddy production in the NCP

Paddy: Share Rainfed (2007-16 Avg.)



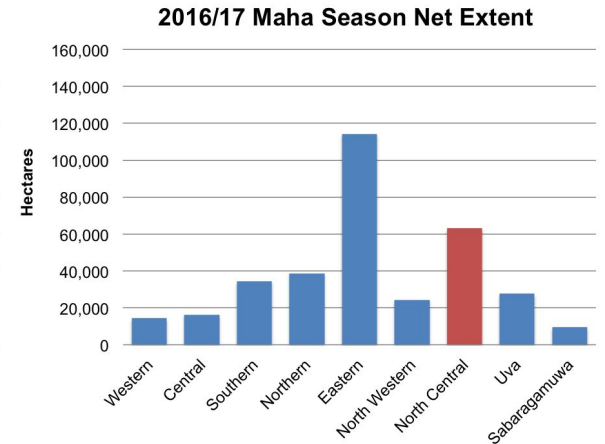
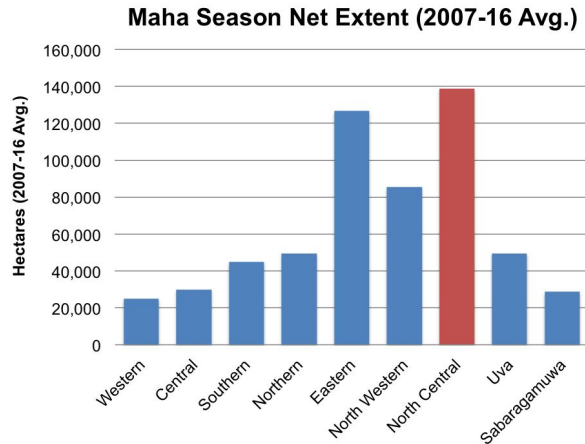
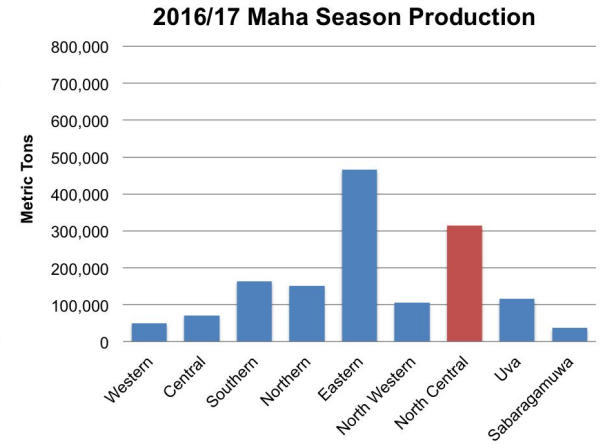
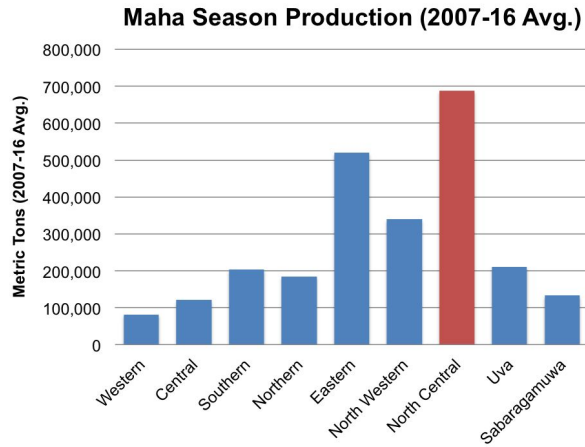
Paddy Surplus/Deficit and Production Share (2010-15 Averages)



Source: Harvard CID calculations using data from Agriculture and Environmental Statistics Division, DCS
 Notes: North Central Province includes Mahaweli 'H'. Sabarakgamuwa Province includes Uda Walawe.

Implications of drought in the NCP

- Emptying of reservoirs
- Water shortages for >100,000 individuals in the NCP as of late 2016
- Lower reach of irrigated water & decreased paddy production
- Resulting in higher rice prices nationwide



Source: Harvard CID calculations using data from Agriculture and Environmental Statistics Division, DCS

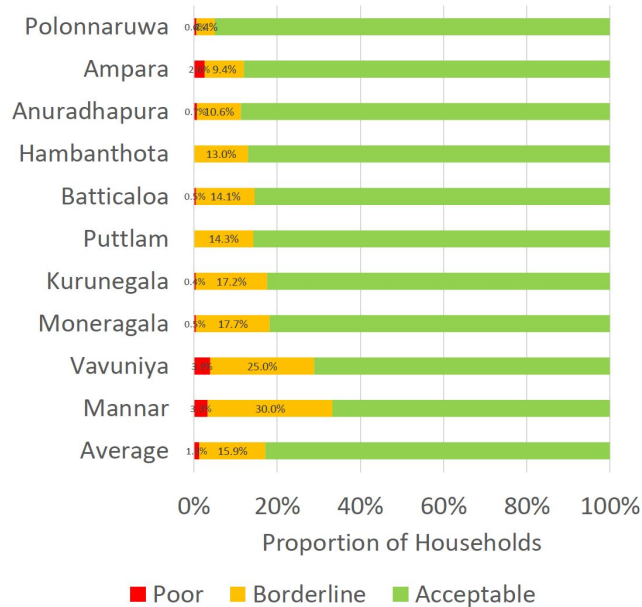
Notes: Averages cover 2006/07 Maha Season to 2015/16 Maha Season. North Central Province includes Mahaweli 'H'. Sabaragamuwa Province includes Uda Walawe.

Implications of drought in the NCP

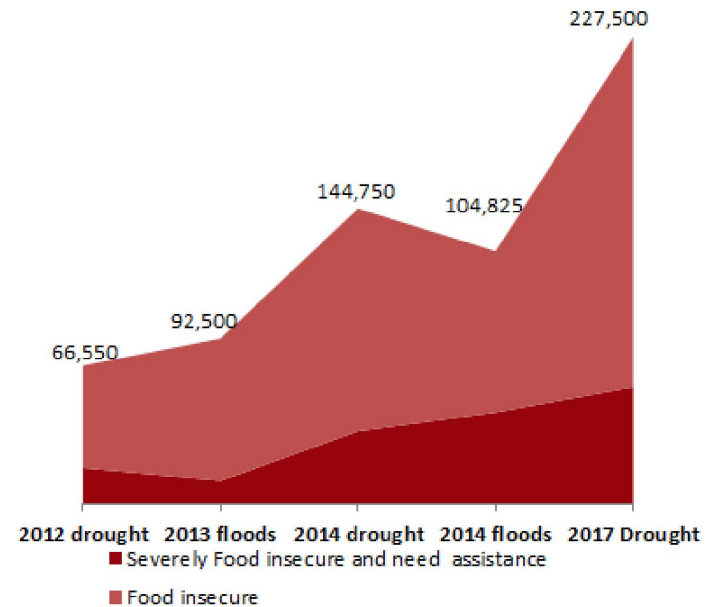
...higher prices lead to food insecurity that extends far beyond the NCP

As of August 2017, price rise of 18% & 300,000 food insecure households

Food Consumption Levels in 2017, High Food Insecurity Districts



Number of Food Insecure Households Nationwide, by Disaster (2012-2017)

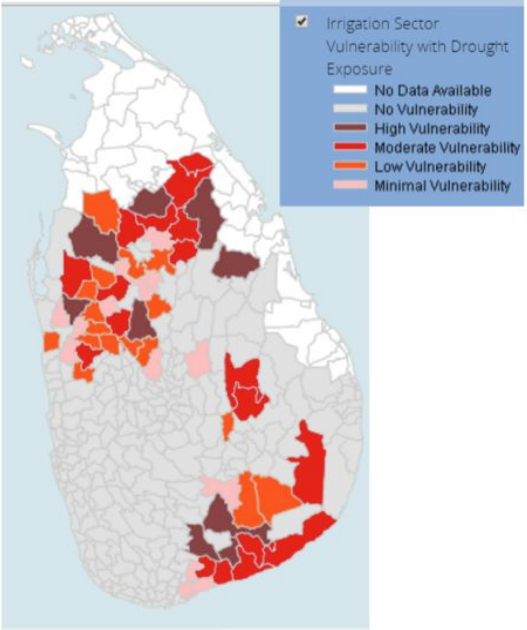


The basis of a long-established comparative advantage appears to be changing



Tank pictured here in Anuradhapura was originally constructed earlier than 300 BC!

Irrigation Vulnerability to Drought



Source: IWMI, CGIAR

Critical to understand two separate problems

- (1) National Problem of Food Insecurity: Poor households across Sri Lanka are overly reliant on domestically grown paddy for their caloric intake, and food insecurity is increasing due to recurring droughts and floods.

Note: Global climate change is intensifying both problems through the weakening of the East Asian monsoon (Sri Lanka's Northeast monsoon).

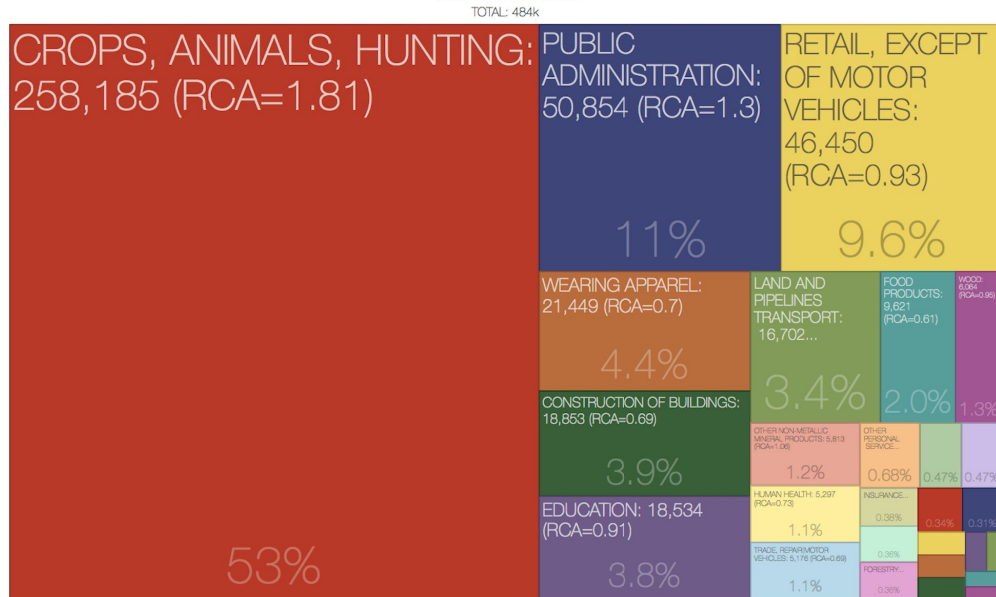
Critical to understand two separate problems

- (1) National Problem of Food Insecurity: Poor households across Sri Lanka are overly reliant on domestically grown paddy for their caloric intake, and food insecurity is increasing due to recurring droughts and floods.
- (2) NCP Growth Problem: Well-being in the NCP lags significantly behind the Western Province, and incomes based on traditional agriculture are increasingly vulnerable in the region. **How can the NCP accelerate its growth and increase the resilience of its growth to climate change?**

Note: Global climate change is intensifying both problems through the weakening of the East Asian monsoon (Sri Lanka's Northeast monsoon).

How can the NCP accelerate its growth and increase the resilience of its growth to climate change?

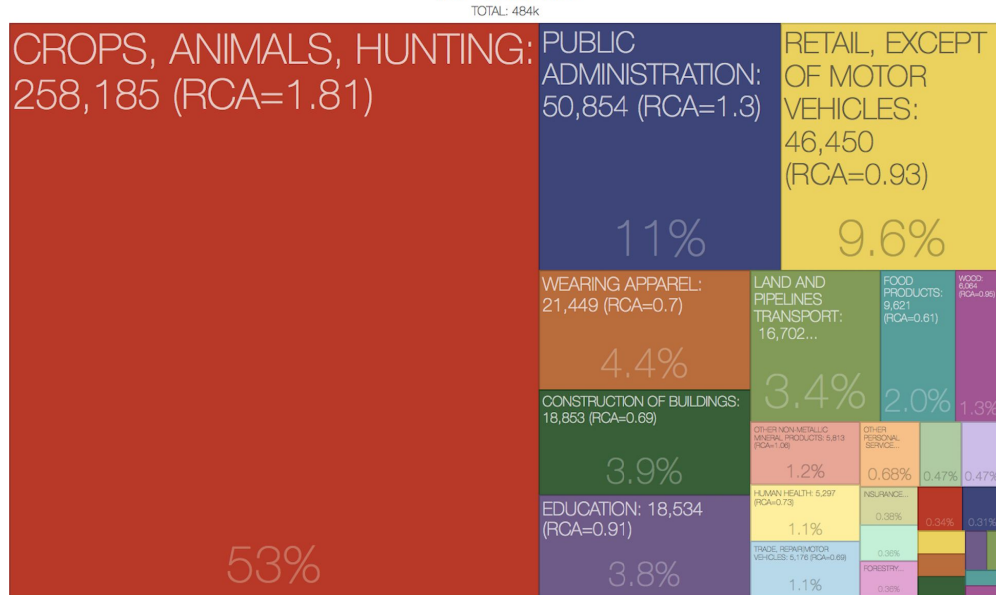
Jobs in the NCP, by Industry



- By addressing constraints to the growth of manufacturing jobs (which are far less vulnerable to climate change than agriculture), which will in turn increase local demand for continued services growth.

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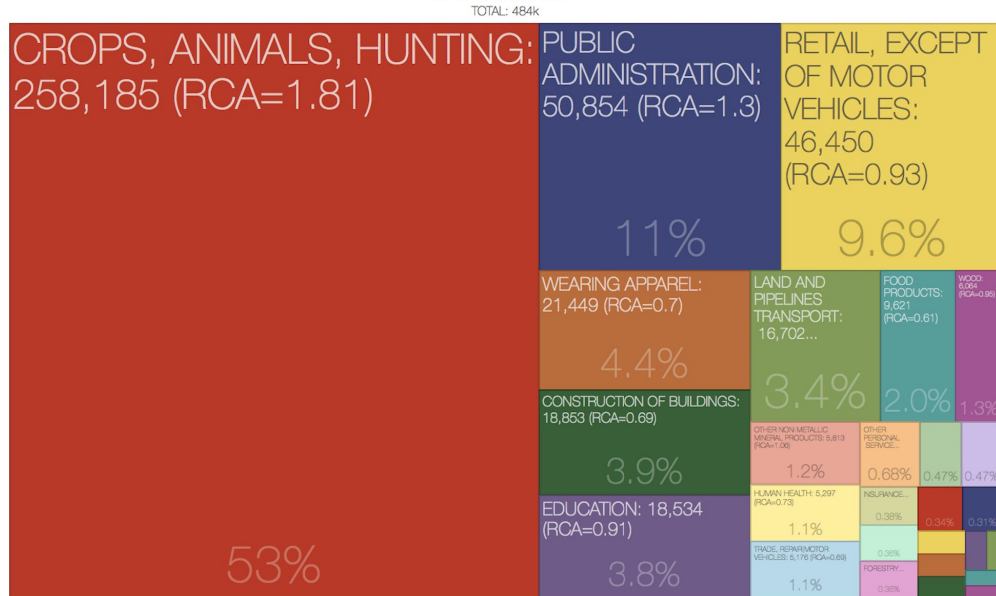
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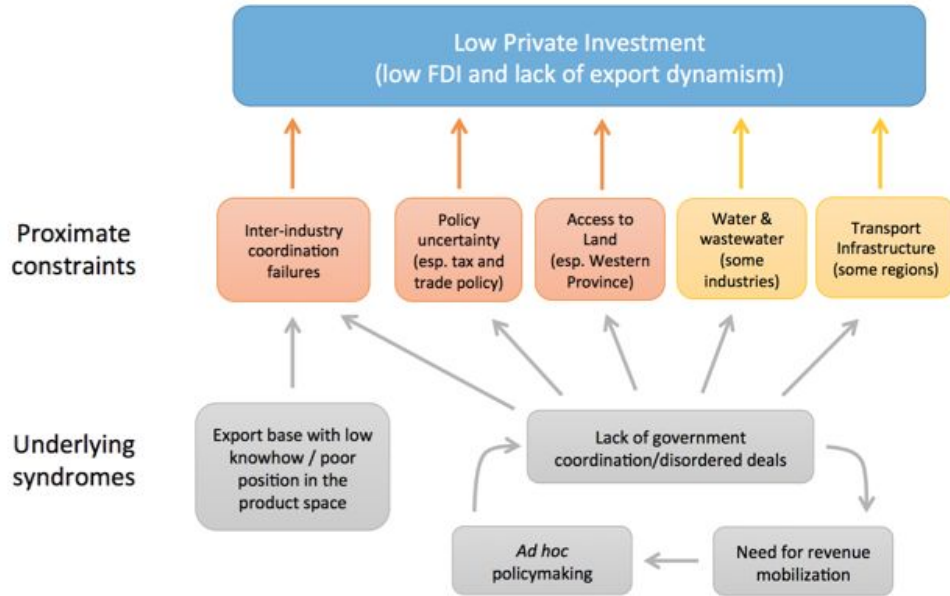
Jobs in the NCP, by Industry



Source: Labor Force Surveys, 2014-2015 averages

- By addressing constraints to the growth of manufacturing jobs (which are far less vulnerable to climate change than agriculture), which will in turn increase local demand for continued services growth.
- By capitalizing on tourism potential to accelerate already strong services growth and increase NCP wages.
- By increasing resilience of the agriculture sector and supplying targeted public goods to adapt to climate change.

National Level Growth Diagnostic



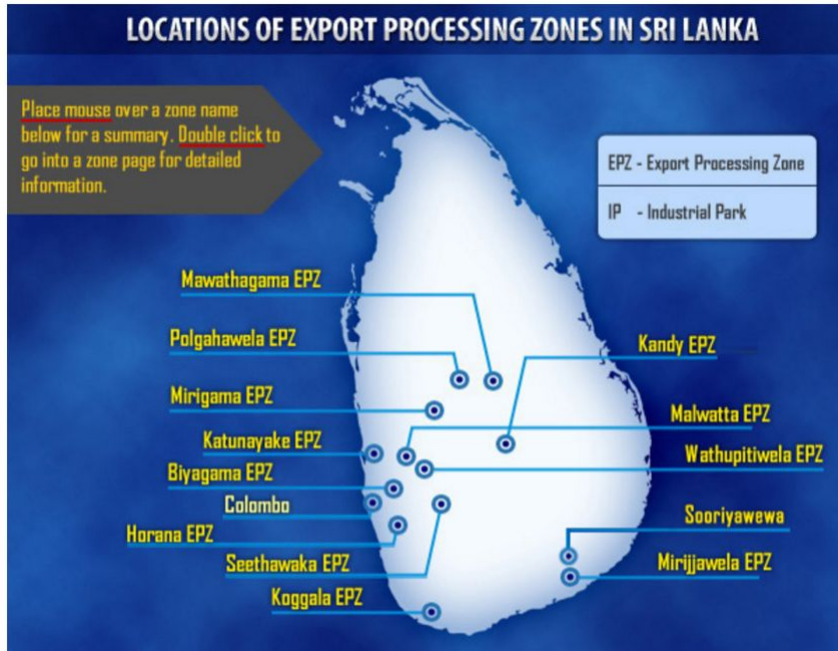
● ● ● Targeting Sectors for FDI Attraction & Export Promotion

Table 2: Index scores for top priority full sectors

Rank /30	Sectors	Priority index scores				Promotion index scores			
		Overall	Impact for Sri Lanka	Market opportunity	Investor interest	Strategy	Current strength	Current know-how	Hard & soft assets
Top Sectors (ranked 1st to 6th)									
1	Electronics	0.63	🟡	🟢	🟡	🌐	🟡	🟡	🟡
2	Industrial machinery	0.55	🟡	🟡	🟡	🌐	🟡	🟡	🟡
3	Automotive	0.52	🟡	🟡	🟡	🌐	🟡	🟡	🟡
4	Tourism	0.48	🟡	🟡	🟡	🌐	🟡	n/a	🟡
5	Electrical equipment	0.39	🟡	🟡	🟡	🌐	🟡	🟡	🟡
6	Fabricated metal products	0.38	🟡	🟡	🟡	🌐	🟡	🟡	🟡

Note: [National Growth Diagnostic](#) and [BOI/EDB Targeting Report](#) are available on Harvard CID's website.

What is the binding constraint to the growth of industry in the NCP? Access to Industrial Land?



Access to industrial land is a main national-level constraint - the supply of export processing zones has not kept pace with demand for them.

The NCP lacks any BOI Export Processing zones. However, the NCP is home to 1 Ministry of Industry and Commerce industrial zone and used to have 2 Industrial Development Board (IDB) zones - now reportedly defunct.

Minimal signals of demand for new zones in the NCP

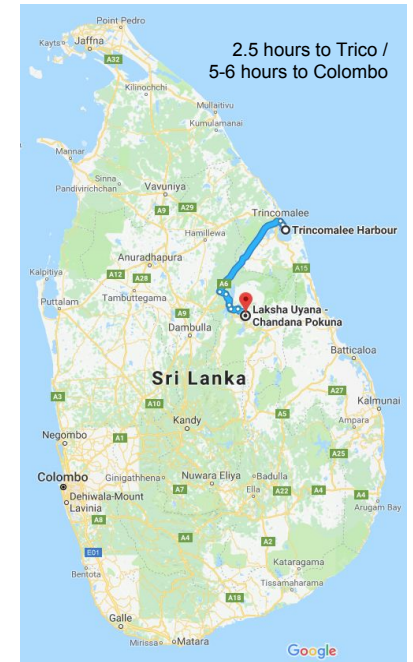
And over 90% of international exports from the NCP are in garments, with over 90% of garment exports from the province originating from 2 companies.

The Ministry of Industry and Commerce zone represents a highly limited “frontier” of industry production.

Source: Industrial Development Board

According to MOIC documents on Industrial Estates (part of Regional Industrial Development Programme):

- **Laksha Uyana Zone**, established in 1998
- 48 acres (24 owned by the Divisional Secretariat)
- 1 of 29 industrial estates in Sri Lanka
- 10-12 companies; ~500 employees
- Industries present:
 - Tyre re-filling
 - Tyre powder production
 - Tyres and tubes
 - Machinery for paddy mills
 - Polysac bags
 - Furniture
 - Ready-made concrete production
 - Selling plant seeds (Hayleys Agro Farms)



BOI's L-Team reviewed one zone site in the NCP and found it to be uncompetitive

BENCHMARKING IDENTIFIED SITES BY L-TEAM WITH EXISTING BOI ZONES



134 Ha potential site in Polonnaruwa ranked 19th out of 20 locations benchmarked, and lower than all existing zones

Source: BOI Land Team, "Identification of Lands for Industrial Zones and Parks", September 2017

Low score reflects distance from the Colombo Port, low A-level grads, lack of hazardous waste treatment

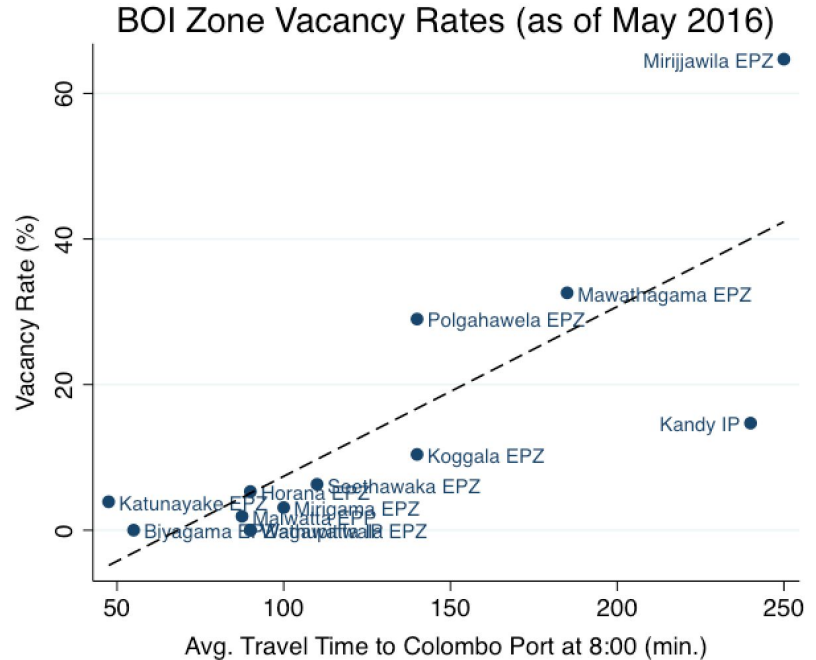
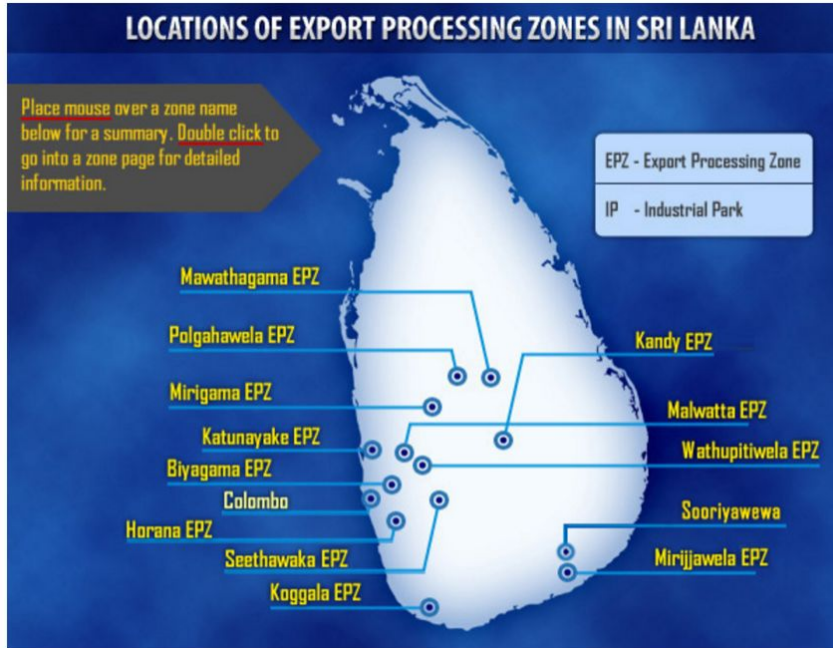
SCORING CRITERIA : LAND CHARACTERISTICS

Parameter	Scoring Criteria		
	5	3	1
Hard Assets Availability			
Industrial Land Intensity	>400 acres	200 acres	75 Acres
Industrial-use water	8000m ³ /d or above	4500m ³ /d	<100m ³ /d
Wastewater treatment	6400 m ³ /d or above	3600m ³ /day	<80 m ³ /d
Solid waste treatment	>50 MT/d	30 MT/d	10MT/d
Hazardous waste treatment	>40 MT/d	30 MT/d	10MT/d
Electricity supply	>50KVA	30 KVA	10 KVA
Electricity stability	<20 Disturbance/year	100 disturbances /year	>200 Disturbance/year
Soft Assets Availability			
Skilled Employees	more than double national rate	same as national rate,	less than half national rate
General Employees	more than double national rate	same as national rate,	less than half national rate
General Conditions			
Land Topography	Flat	Slightly Undulating	Undulating
Flooding Landslides	No Flood		High Flood
Landslides	No Land Slides		High Land Slides
Relocation and Resettlement	No Relocation		High Relocation
Development Cost	Low Development Cost		High Development Cost
Accessibility			
Road	A Grade Road	B Grade Road	C Grade Road
Distance to Railway Line	Less than 1 Km	12 km	More than 25Km
Distance to Colombo Port	Less than 50 Km		More than 200 Km



Source: BOI Land Team, "Identification of Lands for Industrial Zones and Parks", September 2017

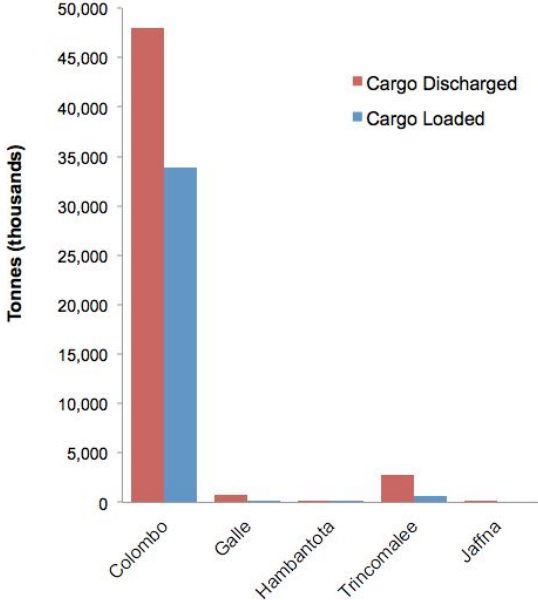
Historically, EPZ location has been as least somewhat endogenous to transport (and politics)



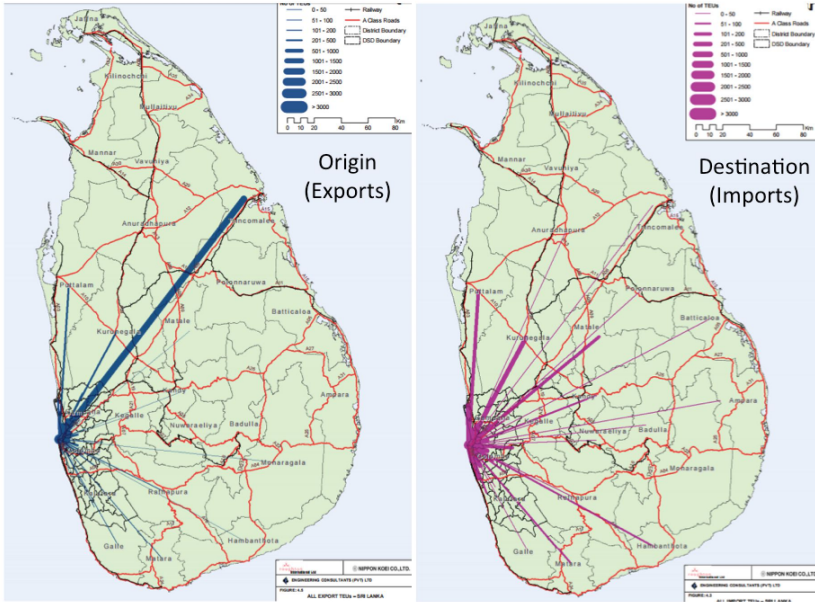
Note: Vacancy rates calculated as vacant land area / industrial land area for each zone. Source: Zone data provided by BOI and travel times based on Google Maps

For the time being, the NCP is stuck relying on port and airport infrastructure in Colombo

Cargo Handled by Port, 2016
(Discharged = Imports; Loaded = Exports)

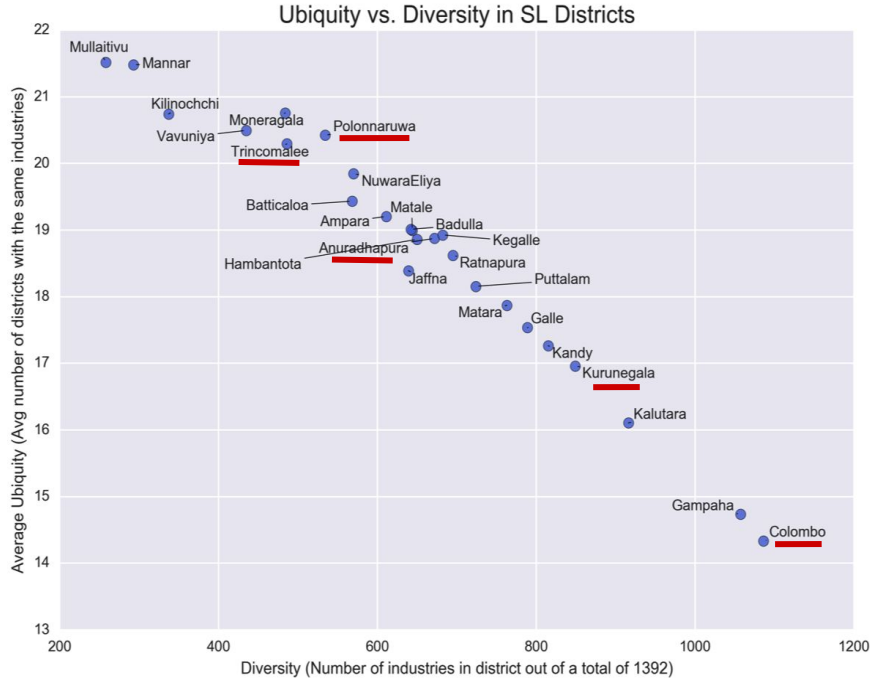


Origin/Destination of Trucks Entering/Leaving the Colombo Port (June 2011)



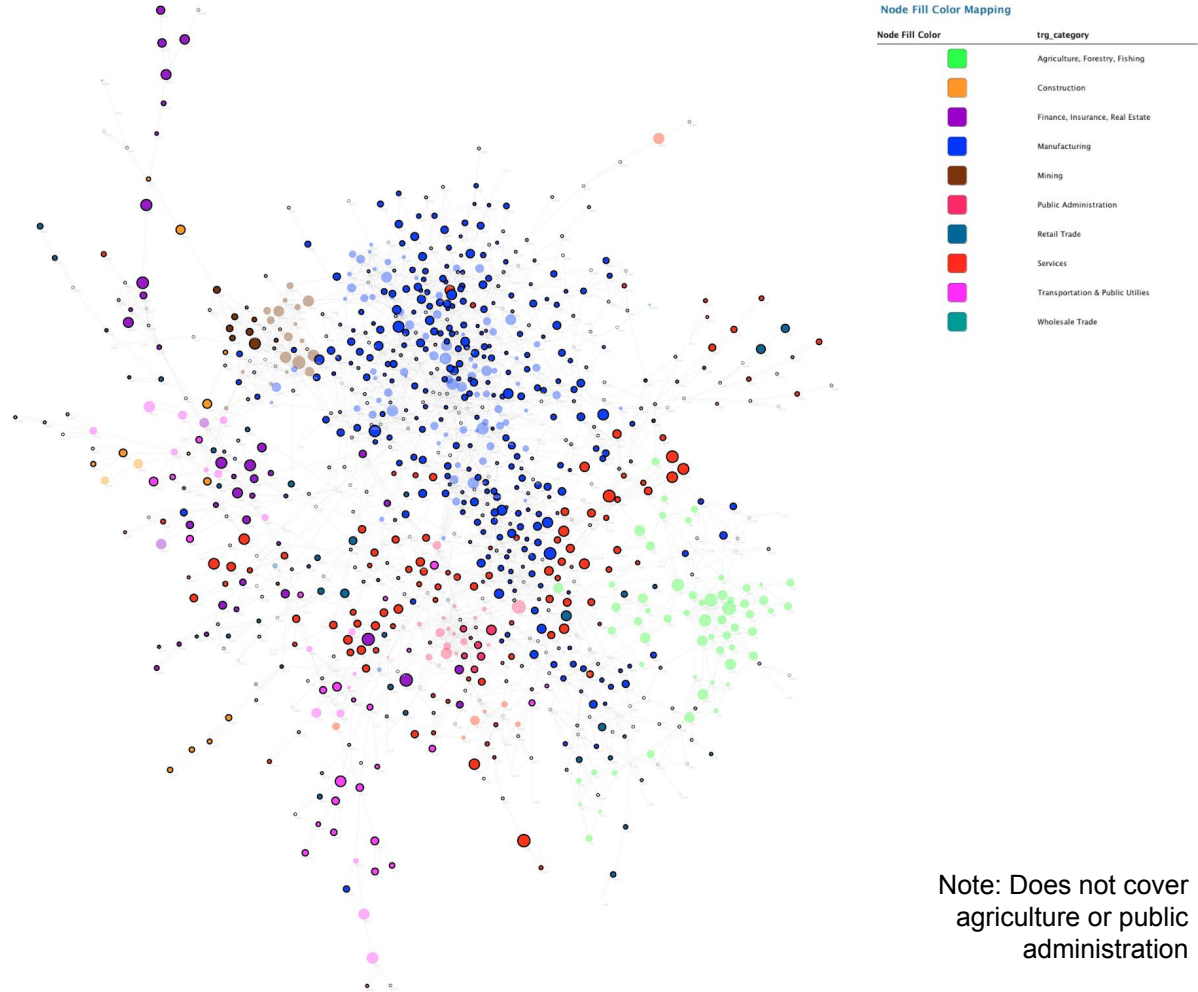
Sources: Ministry of Ports and Shipping, 2016 Performance Report; ADB Multimodal Transport Project Report, June 2012

Distance to Colombo has implications beyond just access to ports and airports

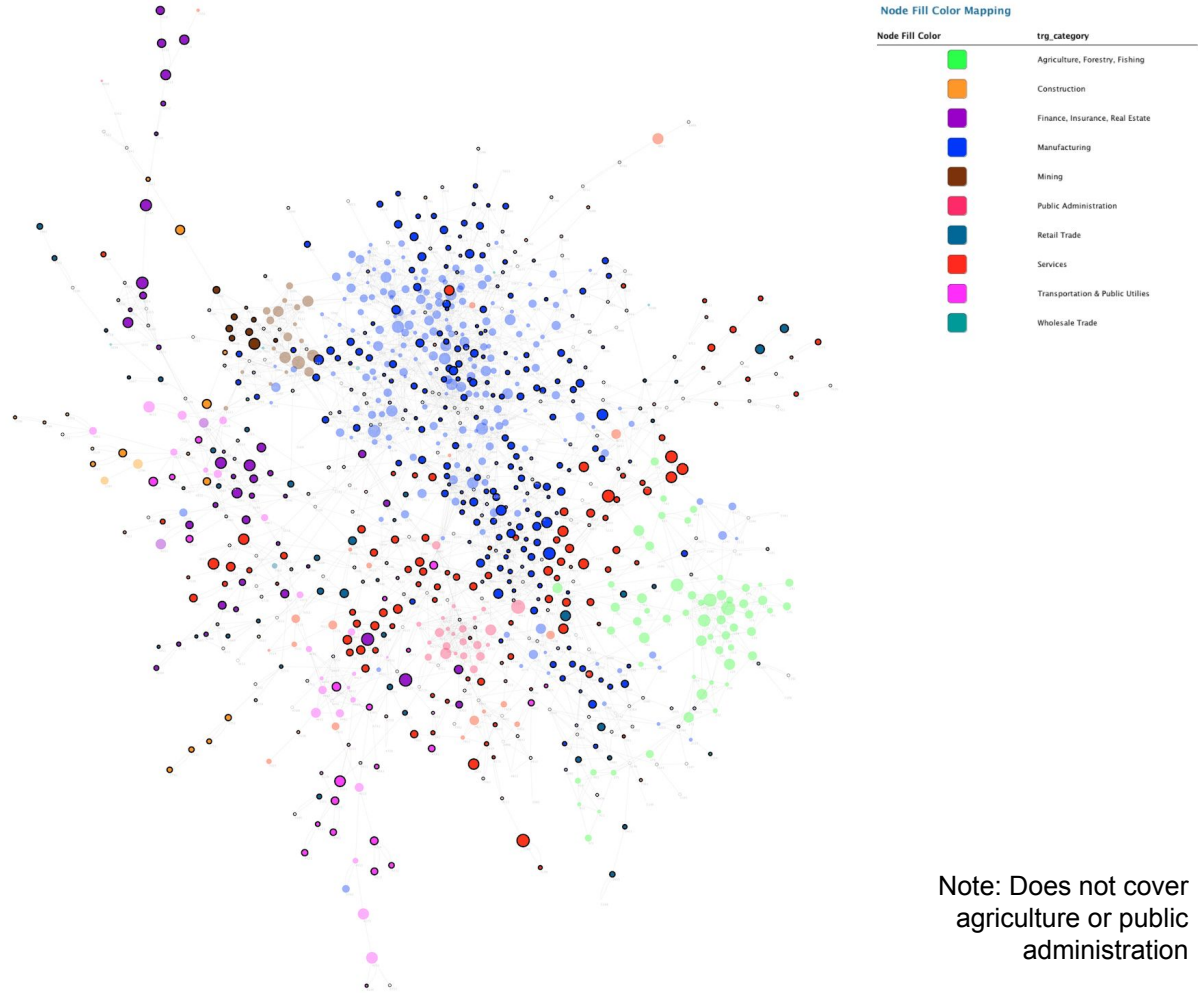


Sri Lanka's Industry Space

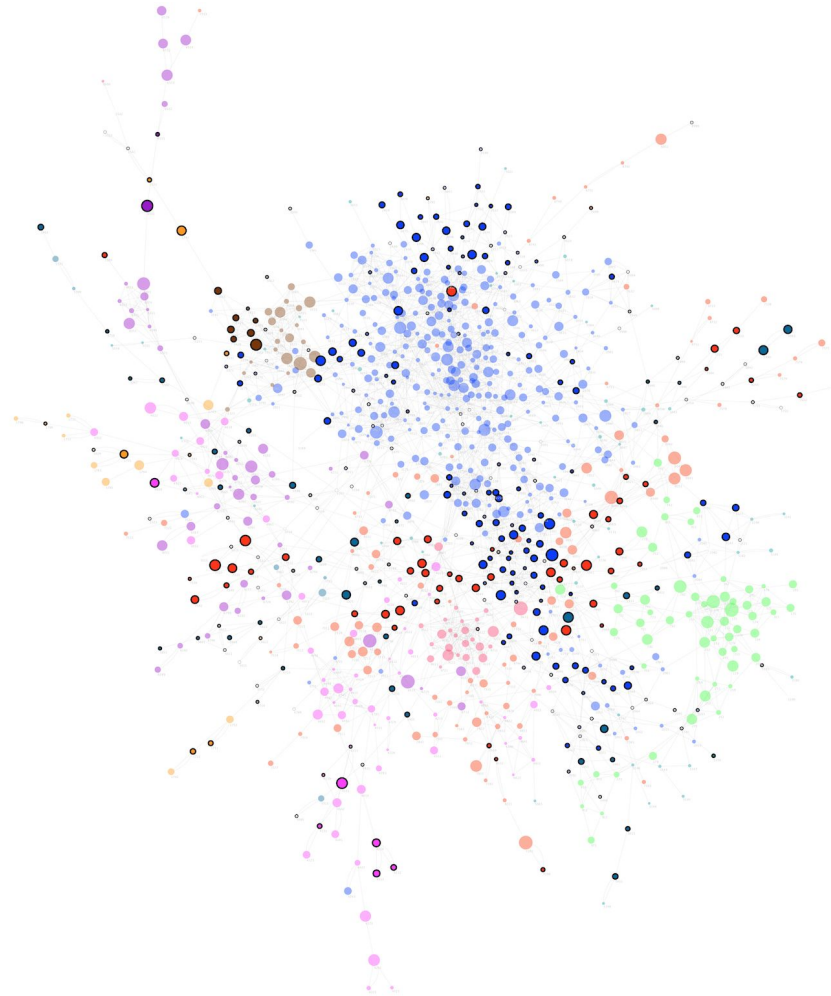
Based on Sri
Lanka's 2013/14
Economic Census
(not covering
agriculture or public
administration)



Industry Space Colombo District



Industry Space Kurunegala District



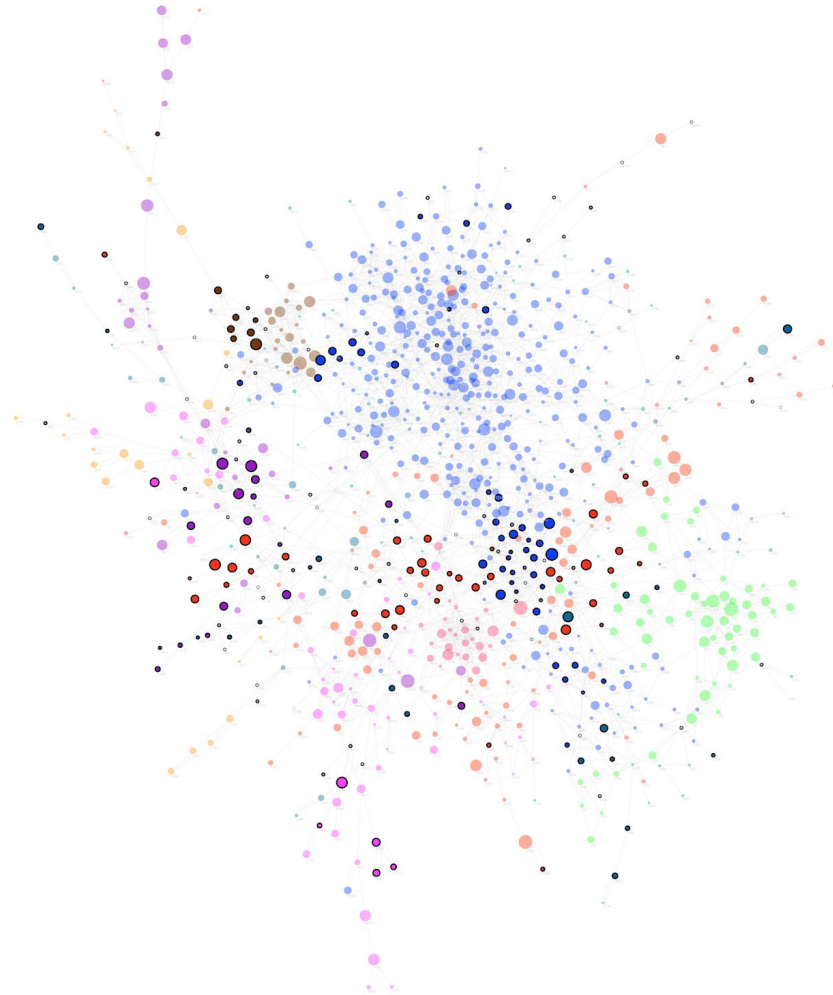
Node Fill Color Mapping

Node Fill Color	trg_category
Green	Agriculture, Forestry, Fishing
Orange	Construction
Purple	Finance, Insurance, Real Estate
Blue	Manufacturing
Brown	Mining
Pink	Public Administration
Teal	Retail Trade
Red	Services
Magenta	Transportation & Public Utilities
Cyan	Wholesale Trade

Note: Does not cover
agriculture or public
administration

Industry Space

Anuradhapura District

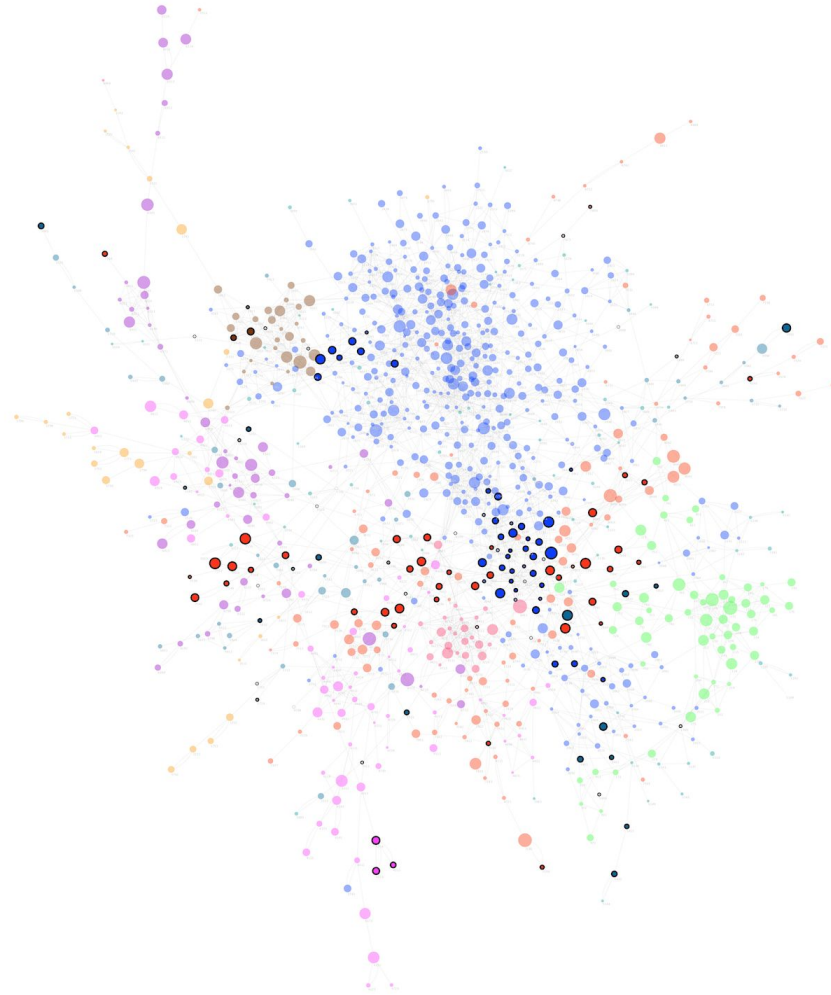


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Note: Does not cover
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Industry Space Polonnaruwa District

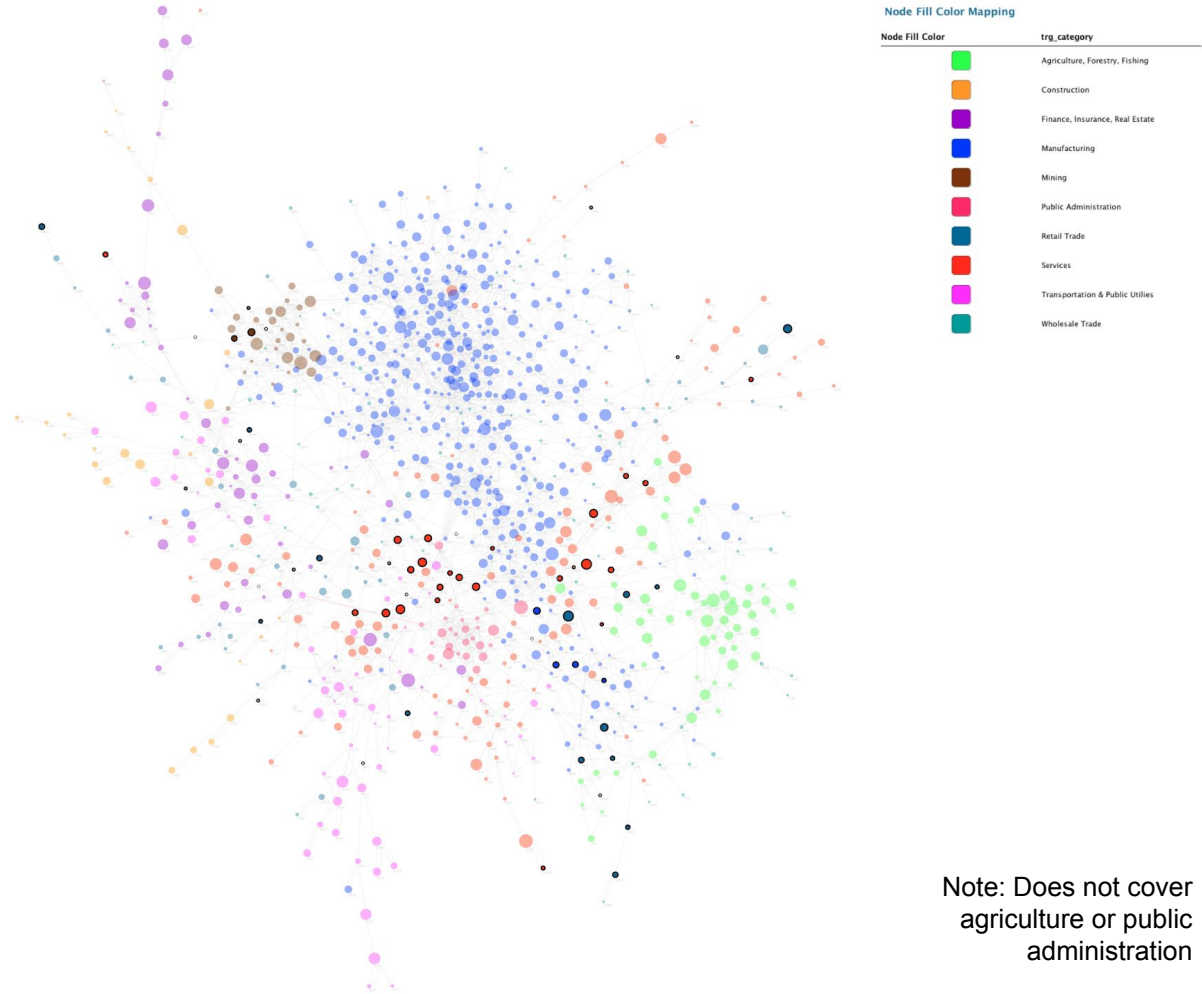


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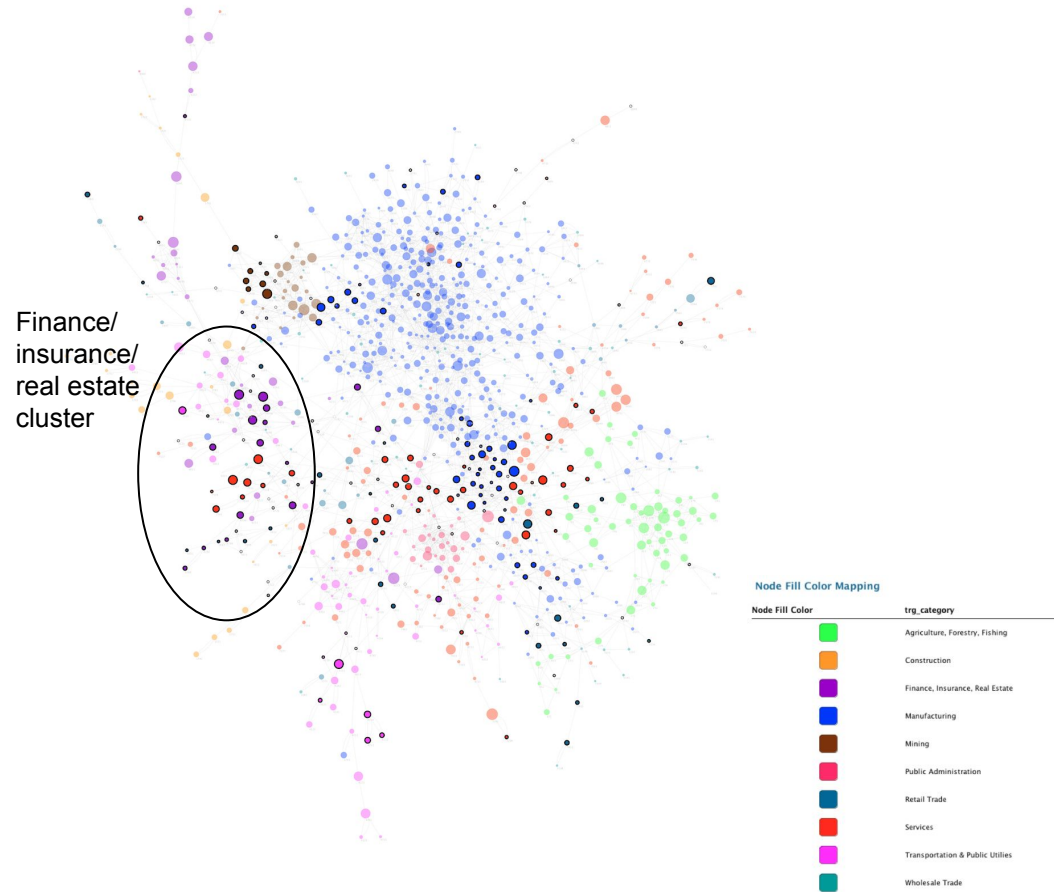
Industry Space Trincomalee District



Kurunegala

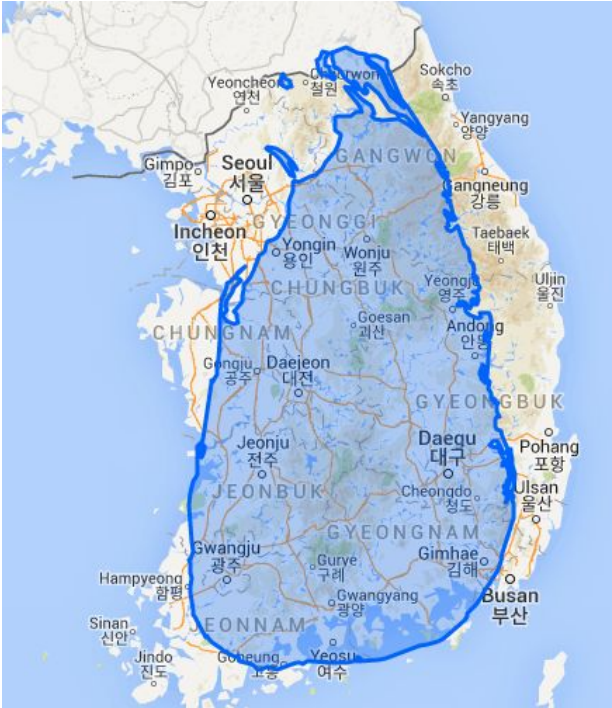
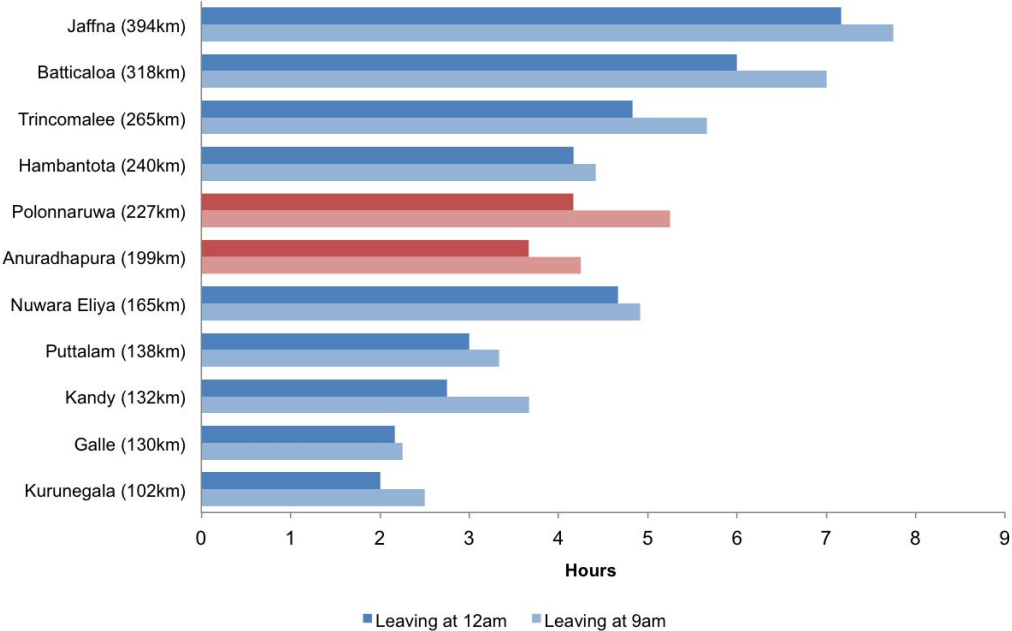


Anuradhapura



In the longer term, distance to Colombo need not remain the constraint it is today

Average Travel Time to Colombo Port by Road



Note: High speed rail between Seoul and Busan takes only 2 ½ hours!! Sources: Google Maps; thetruesize.com

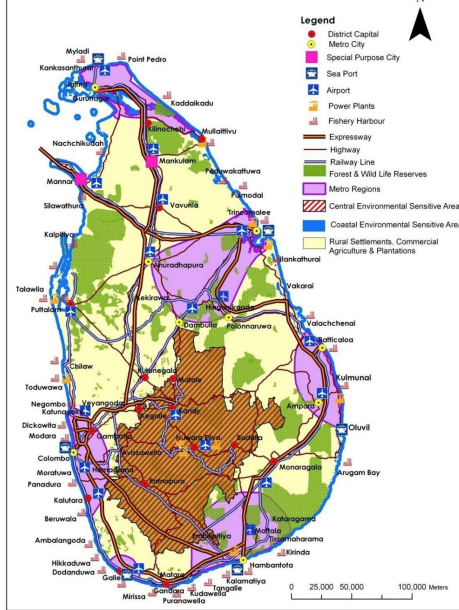
Improving connectivity between regions is not a problem of a lack of plans

National Physical Plan - 2030

Legend

- District Capital
- Metro City
- Special Purpose City
- Sea Port
- ✈ Airport
- Power Plants
- Fishery Harbour
- Expressway
- Highway
- Railway Line
- Forest & Wild Life Reserves
- Metro Regions
- ▨ Central Environmental Sensitive Area
- Coastal Environmental Sensitive Area
- Rural Settlements, Commercial Agriculture & Plantations

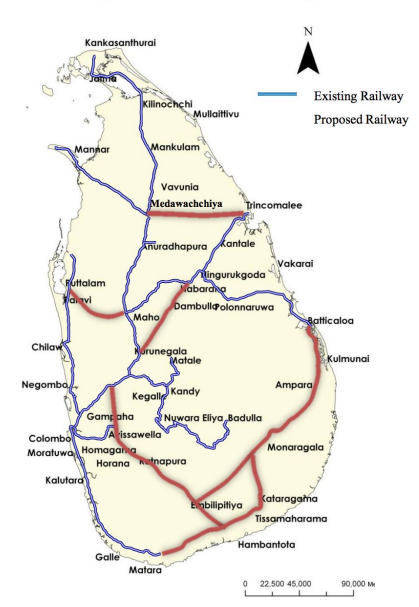
NATIONAL PHYSICAL STRUCTURE PLAN - 2030



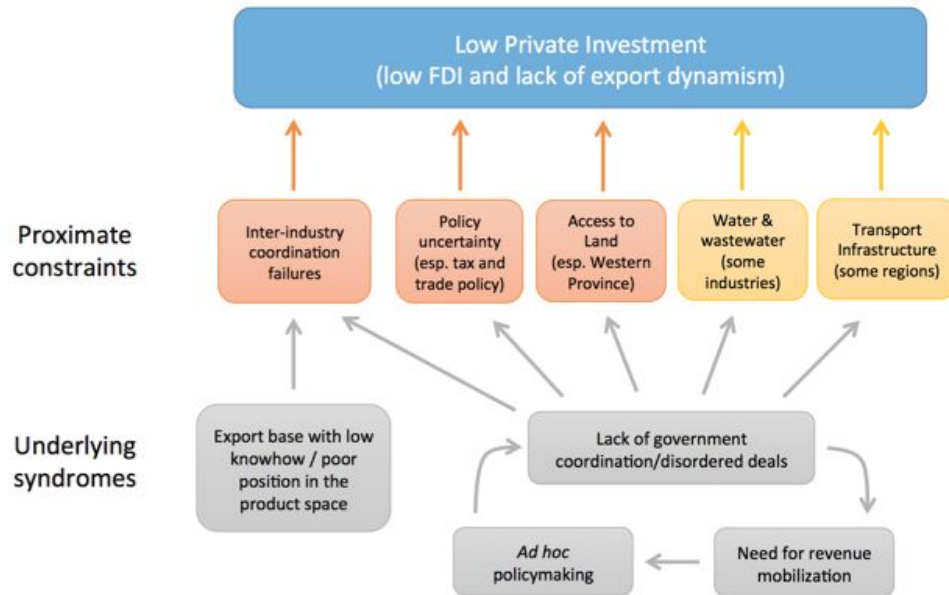
Road Development



Proposed Railways



It has more to do with a lack of coordination across government to prioritize and deliver public goods



economynext

Sri Lanka projects slowed down by counterparty funds, approvals: ADB

May 01, 2018 17:57 PM GMT+0530 | 0 Comment(s)

"Sri Lanka faced some key challenges in 2017, including insufficient budgetary allocations and lack of counterpart funds," the lender said in a recent report on the status of its programs in the island.

"The government also experienced difficulty in recruiting suitably qualified project management staff."

Project implementation in Sri Lanka is also affected by lengthy land acquisition procedures and procurement delays caused by several approvals being required from different government levels, the ADB said.

NCP Growth Strategy for accelerating growth and increasing resilience to climate change

- Key infrastructure is needed for long-term NCP growth (more good jobs that are less vulnerable):
 - Improve connectivity to the Western Province with roads, rail, logistics infrastructure (esp. cold chain infrastructure for agriculture)
 - Industrial zones building on the industrial ecosystem of Kurunegala District
 - A modern port in Trincomalee Harbour / Improved international connectivity through Northern Province

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 - A modern port in Trincomalee Harbour / Improved international connectivity through Northern Province
- **But there is much that can be accomplished in the shorter term.** This requires much greater collaboration (national, provincial, public, private, civil society, academic) based on locally prioritized problems and opportunities that can have shorter-term impacts.

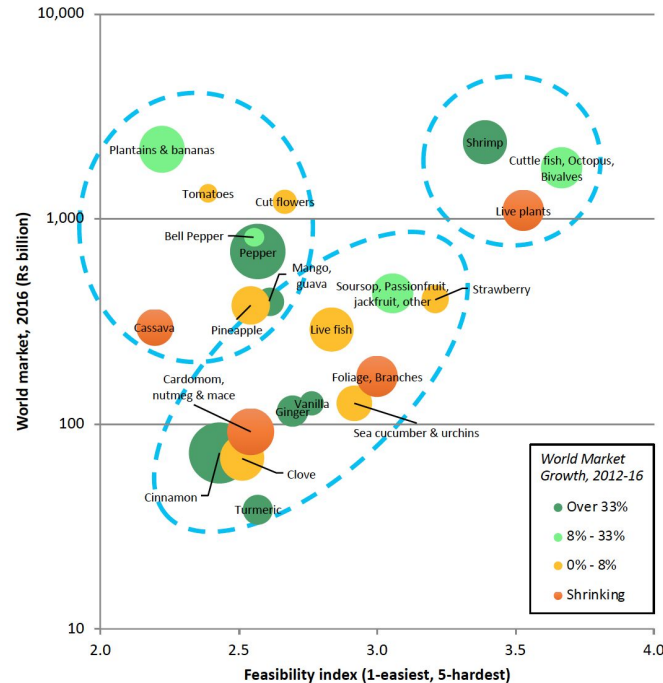
What can informal coordination work to address?

- Several key challenges & opportunities:
 - Connecting most vulnerable farmers to agriculture value chains
 - Investment promotion: domestic & FDI
 - Accelerating sustainable tourism growth
 - Capitalizing on national transportation and infrastructure projects
 - Scaling up locally-prioritized public goods for climate resilience

Key Opportunity: Agriculture Transformation

Must reach most vulnerable, paddy-dependent areas:

- Shift from paddy to less water-intensive crops for most vulnerable farmers, already ongoing (HARTI survey of paddy growers, 2017)
- Space for diversification into higher value crops.
- Critical need: strengthening linkages to national and international value chains



Province	Diversity
Uva	54
North Central	43
Central	41
Sabaragamuwa	38
Northern	25
Southern	24
North Western	19
Eastern	18
Western	8

Key Opportunity: Agriculture Transformation

How?

- By partnering with Sri Lankan companies with outgrower models to reach most vulnerable areas
- By reducing their costs and risks of reaching these areas
 - Risk: Government risk-sharing (contract arrangements, information campaigns, model farms), especially for vulnerable communities
 - Costs: Province connectivity / cold chain infrastructure and storage; Use of subsidies



Key Opportunity: Investment Promotion

One strategy for short jumps:

Employment in Kurunegala vs. NCP

	Kurunegala	Anuradhapura	Polonnaruwa
Textile Fibers	9,880	198	17
Fruit & Vegetable Processing	2,288	199	167
Knitted & Crocheted Apparel	1,127	2	10
Plastic Products	794	63	7
Pesticides / Agrochemicals	137	0	0

Note: These are selected industries with employment-based $RCA > 1$ in Kurunegala with particularly high employment and $RCA < 1$ in the NCP
Source: Economic Census listing data, 2013/14

Key Opportunity: FDI (including “long jumps”)

Several promising sectors stand out based on the NCP’s assets (lots of flat land, water, sunlight, trainable labor, rich agricultural knowhow, strong labor rights and environmental protections, cultural attractions):

- Food processing
- Light manufacturing
- Electronics
- Automotive parts
- Renewable energy generation
- Renewable energy technologies
(incl. battery storage)
- Tourism!

Note: Local suggestions can be put to use.

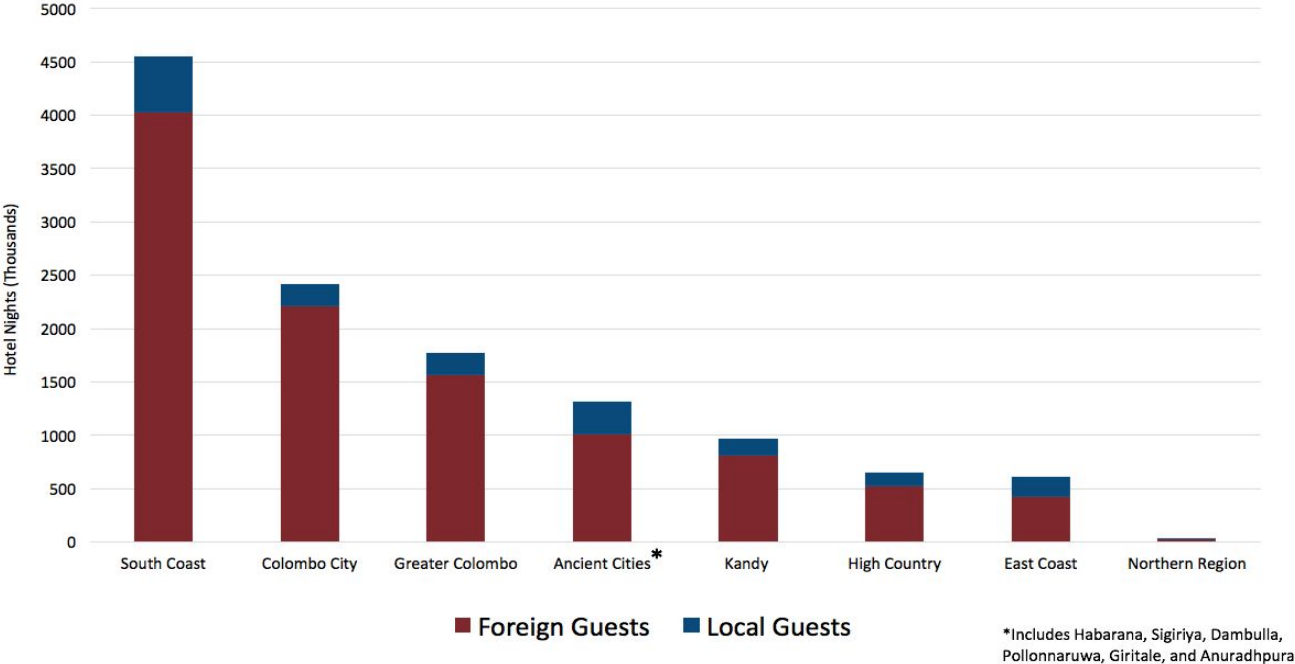
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2	Industrial machinery	0.55							
3	Automotive	0.52							
4	Tourism	0.48						n/a	
5	Electrical equipment	0.39							
6	Fabricated metal products	0.38							

Key Opportunity: Tourism

Guest Nights in Hotels - 2016

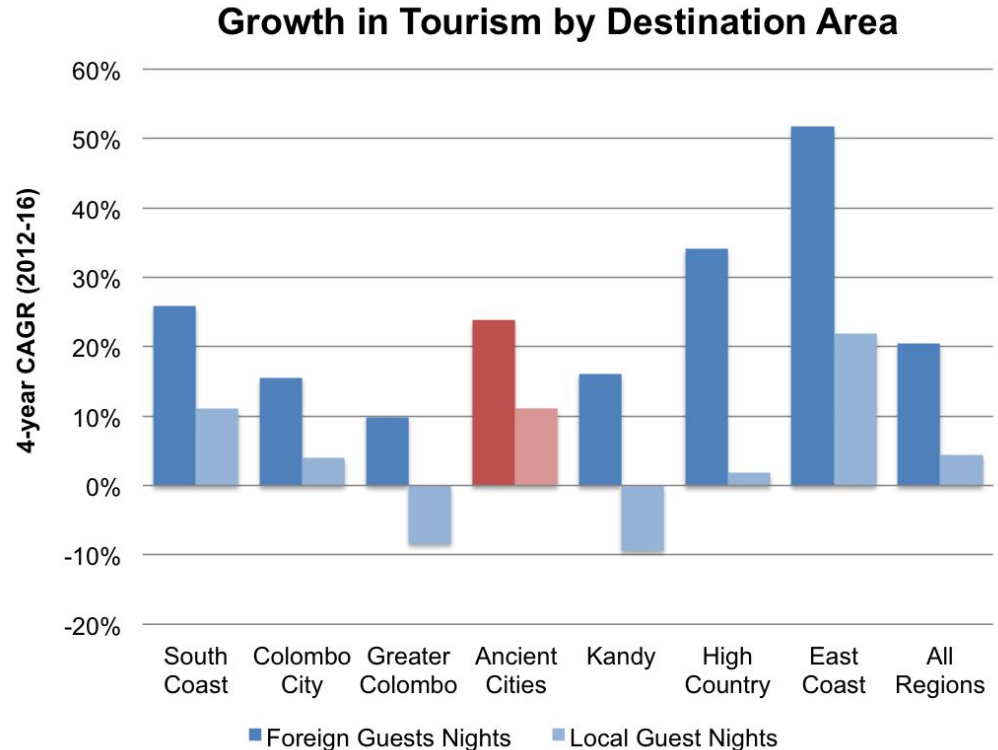


The Ancient Cities sees only ¼ the number of foreign guest nights as the South Coast!

Note: Figures are estimates;
Source: Sri Lanka Tourism Development Authority Statistical Report 2016

Key Opportunity: Tourism

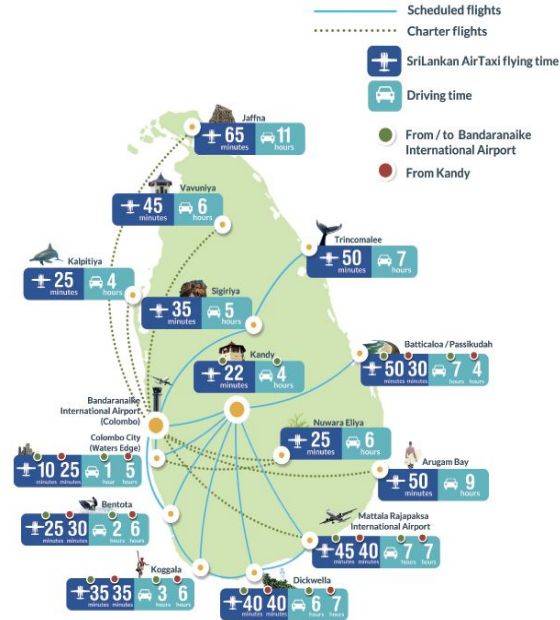
- Growth needs to outpace that of the more established South Coast.
- Must find and address constraints to sustainable tourism growth, one by one.
- Must be locally-led (Provincial Tourism Unit), regionally-linked (neighboring provinces), nationally-supported (SLTDA promotion).



Note: Figures are estimates; Northern Province not shown (48% annual growth in foreign guest nights, 121% domestic growth)
Source: Sri Lanka Tourism Development Authority Statistical Report 2016

Key Opportunity: Tourism

Limited / expensive air travel options may be one constraint to stronger tourism growth in the NCP, but it is not the only constraint.



Source: SriLankan Airlines



Pub Street, Siem Reap - photo by @stadtlandreisen (Instagram).

Source: SiemReap.net

Key Opportunity: Transportation & Logistics

Several roles for a local-national coordinating unit:

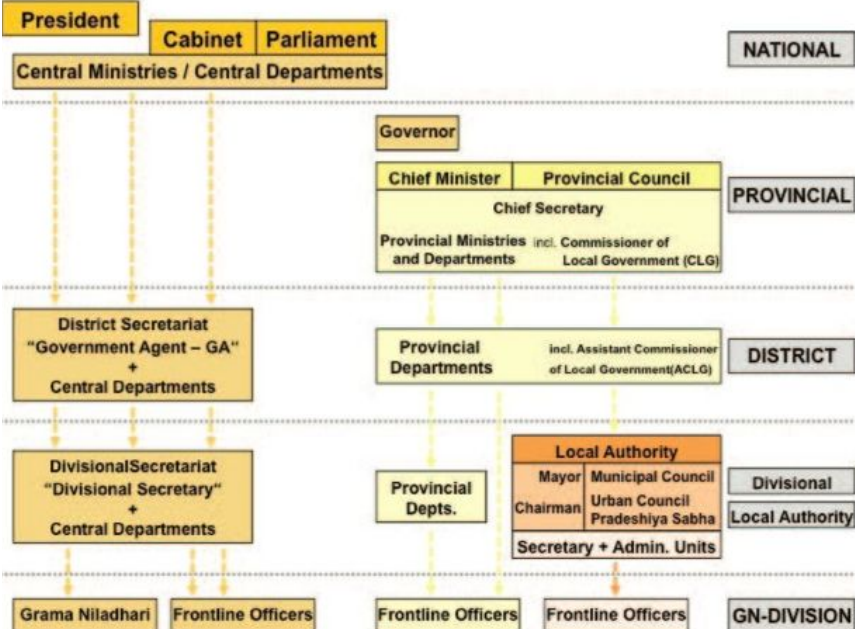
- Resolving issues that slow construction (Ex: mediating land disputes)
- Community-led spatial planning for areas to capitalize on expected connectivity (Ex: Off ramp locations)
- Local participation in development and management of logistics projects (cold chain and storage)
- Local participation in re-purposing of underutilized lands (nucleus farms) and industrial zones (closer to Colombo)

Key Challenge: Climate Resilience

- Opportunities up to this point have been to diversify jobs, incomes and markets, which will be critical to building overall resilience in the NCP.
- But the NCP also needs to scale up programs to address place-specific risks faced by most vulnerable communities (those most affected by droughts, floods, landslides, temperature rise).
 - This can be partly achieved through strengthening and expanding existing programs (multiplying staff resources, coordinated push for grant funding) that are already effective at identifying local vulnerabilities and implementing community-prioritized adaptation projects.**
 - A coordinating unit could also work to identify larger-scale infrastructure needs for resilience that affect many communities.

** For example, the project “Addressing Climate Change Impacts on Marginalized Agricultural Communities Living in the Mahaweli River Basin of Sri Lanka” delivers projects ranging from improving roads and irrigation canals and retaining walls to the introduction of new farming practices or crop varieties to the development of local institutions for continuous community action and risk sharing that are prioritized by local communities and draw in global experience and knowhow.

Previous Question: Who needs to own an NCP Growth Strategy?



Source: "Performance Improvement Project (PIP)" supported by GIZ

Answer: NCP needs informal coordination efforts focused on a few key problems and opportunities

Questions for today:

1. Are there key problems or opportunities on which to start?
2. Who would need to be involved? What role can you play?
3. How can the process start? How can it be sustained?

Thank you!

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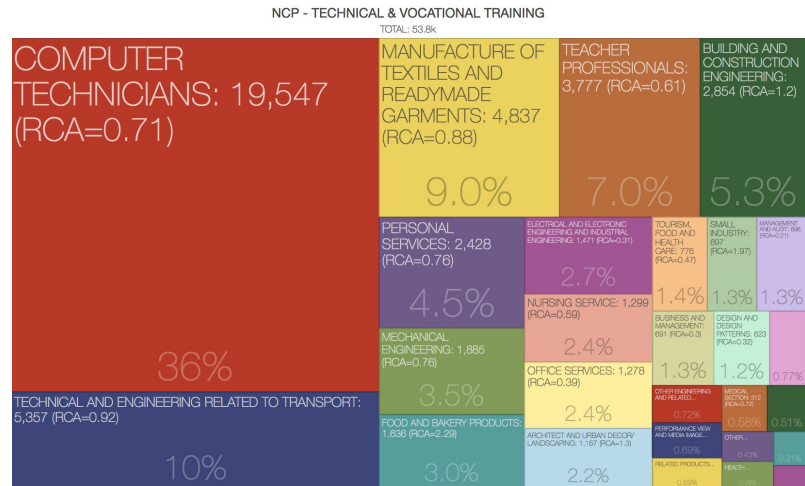
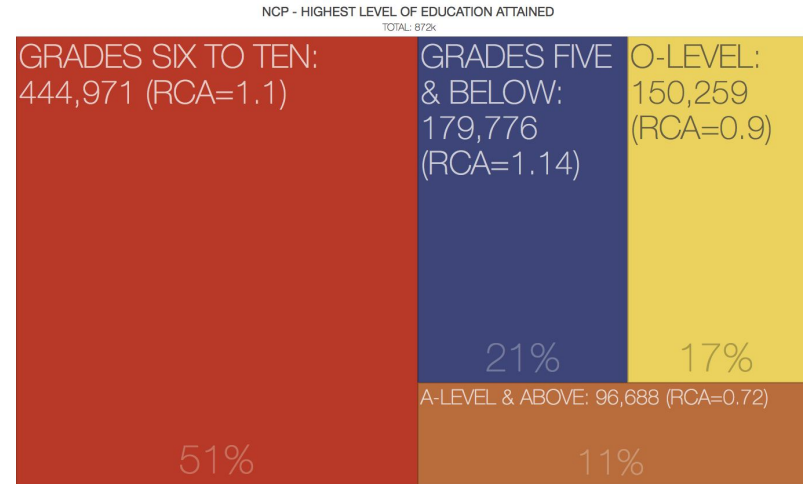
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Appendices

What about the absence of skilled labor?

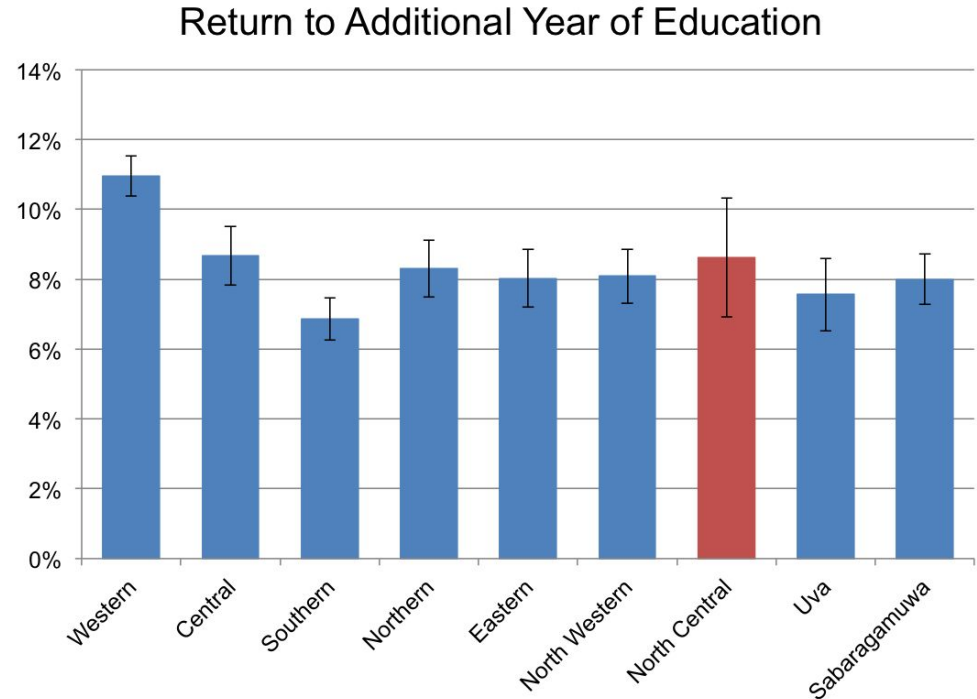
- The NCP does have a lower supply of A-Level graduates than other parts of the country (RCA = 0.72)
- But is this a cause of low industrial diversification or a result?
- What does the NCP need first - skilled graduates to attract companies or companies to attract and train skilled workers?

Source: Labor Force Surveys, 2014-2015 averages



We can tell by returns to education

- Returns for one additional year of schooling are also higher for the public sector (8.7%) than the private sector (3.6%).
- Returns to a college degree over A-levels are not statistically different from zero for the NCP!

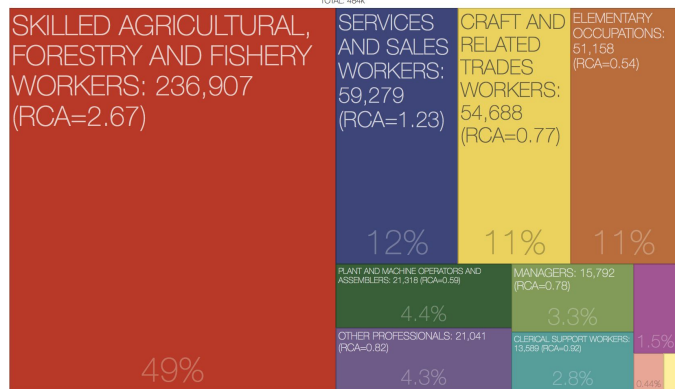


Source: Harvard CID calculations using Labor Force Survey data 2013-2015
Notes: Bars show coefficient from a mincer regression with cohort fixed effects.
Error bars show 95% confidence interval of estimate.

The pattern in the NCP reflects low demand for skills

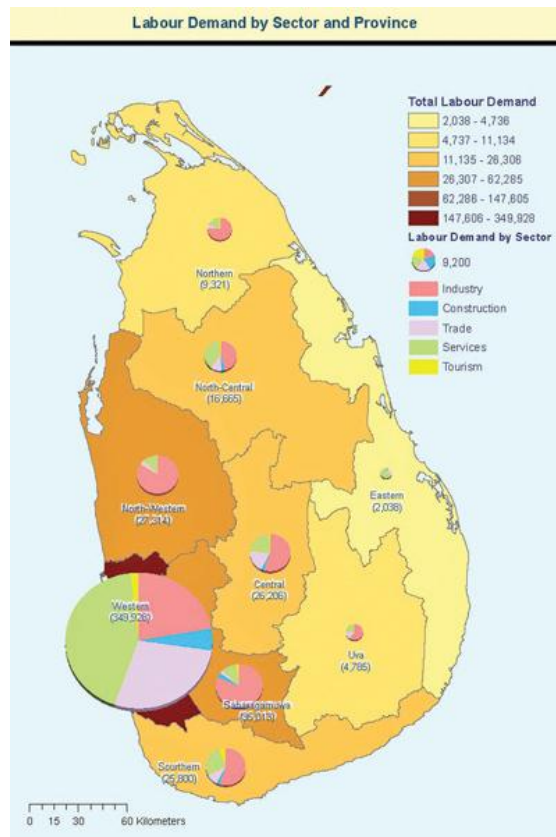
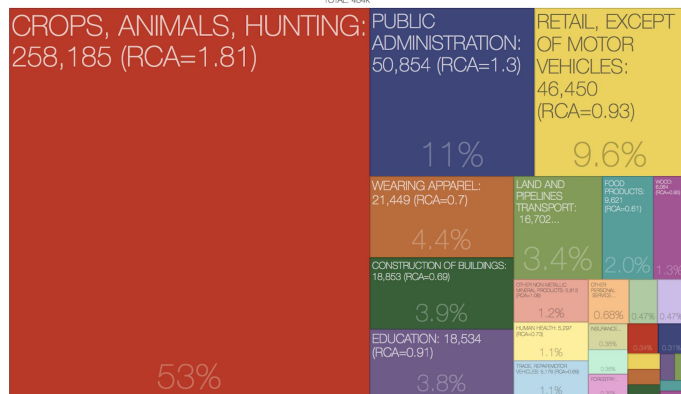
NCP - OCCUPATIONS

TOTAL: 484k



NCP - INDUSTRIES

TOTAL: 484k

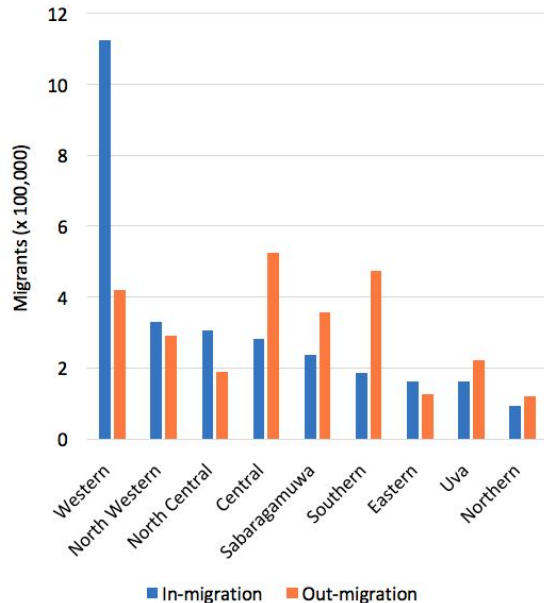


Occupation structure matches the industries that are present, and industries present in the NCP today report low demand for labor, particularly in industry.

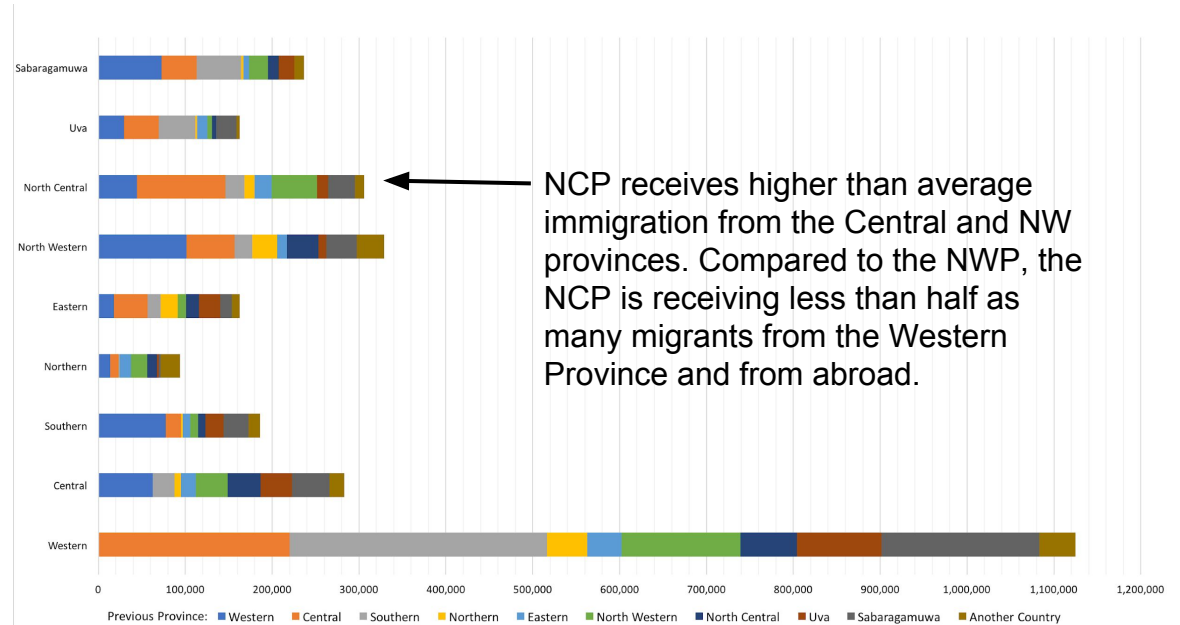
Sources: Labor Force Surveys, 2014-2015 averages; Sri Lanka Labor Demand Survey 2017

When skills are in demand, they may also come through migration (domestic and international).

Migration between Provinces

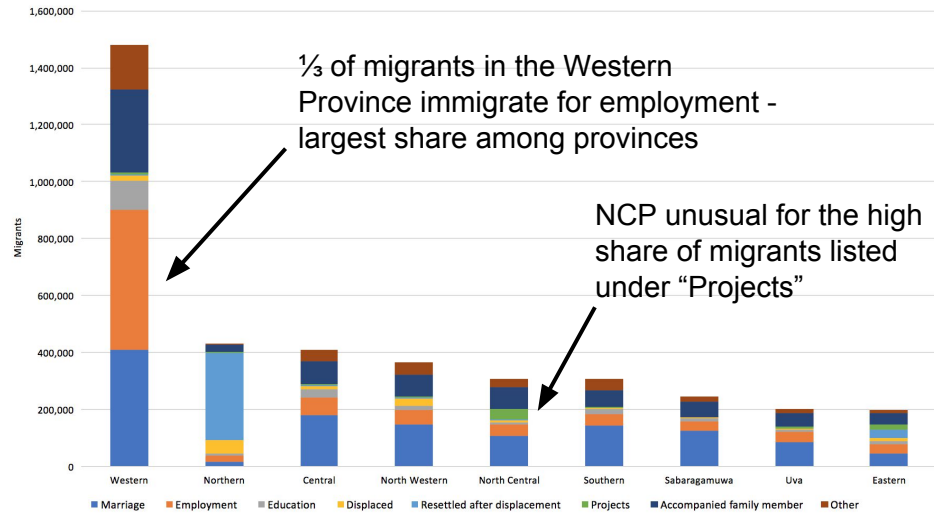


Migrant Population by Province of Previous Residence



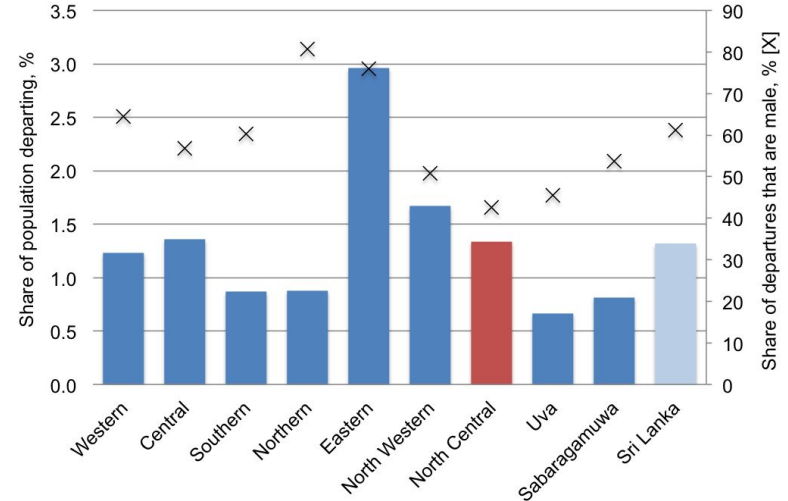
Over the period up to 2011, the NCP received migrants for specific projects. Currently, emigration abroad for work is high among females.

Reason for Immigration to Province



Source: Census of Population and Housing, 2011

Annual Departures for Foreign Employment & Gender Breakdown (2012-16 Averages)



Source: Sri Lanka Bureau of Foreign Employment (via CBSL)

Meanwhile, the NCP has (or had) a high share of military employment.

- As of 2011, there were 7.34 million employed individuals in Sri Lanka
 - 4.6% in Anuradhapura; 2.0% in Polonnaruwa
 - 6.6% in the NCP total (compare to 6.2% of the population overall)
- The armed forces represented 3.2% of overall employment
 - 9.6% of armed forces employment in Anuradhapura; 3.7% in Polonnaruwa
 - 13.3% of armed forces employment in the NCP
 - This may explain the high rate of migration for “projects” in the Census data