AIR POLLUTION REDUCTION MEASUREMENTS IN ULAANBAATAR CITY

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CAREC Central Asia Regional Economic Cooperation Program

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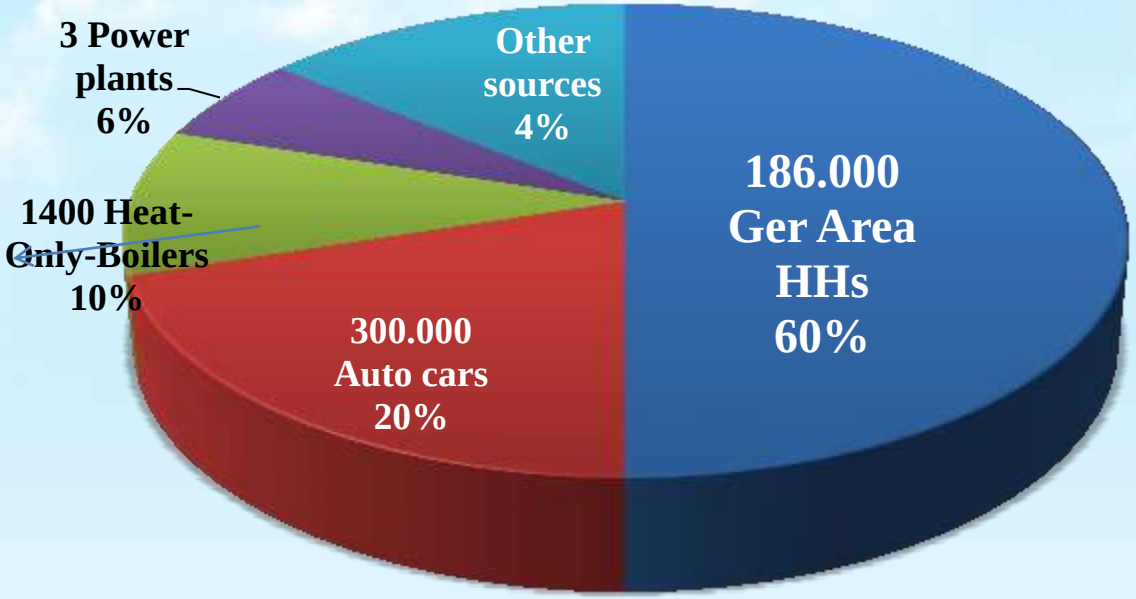
ULAANBAATAR is the coldest capital city in the world

Duration of heating season-180 days

Temperature: -20-30°C

Territory :	4,704.4 km^2
Population:	1,278,000
Housing	40%
Ger area	60%
Density	272/km2

The sources of Air Pollution in Ulaanbaatar

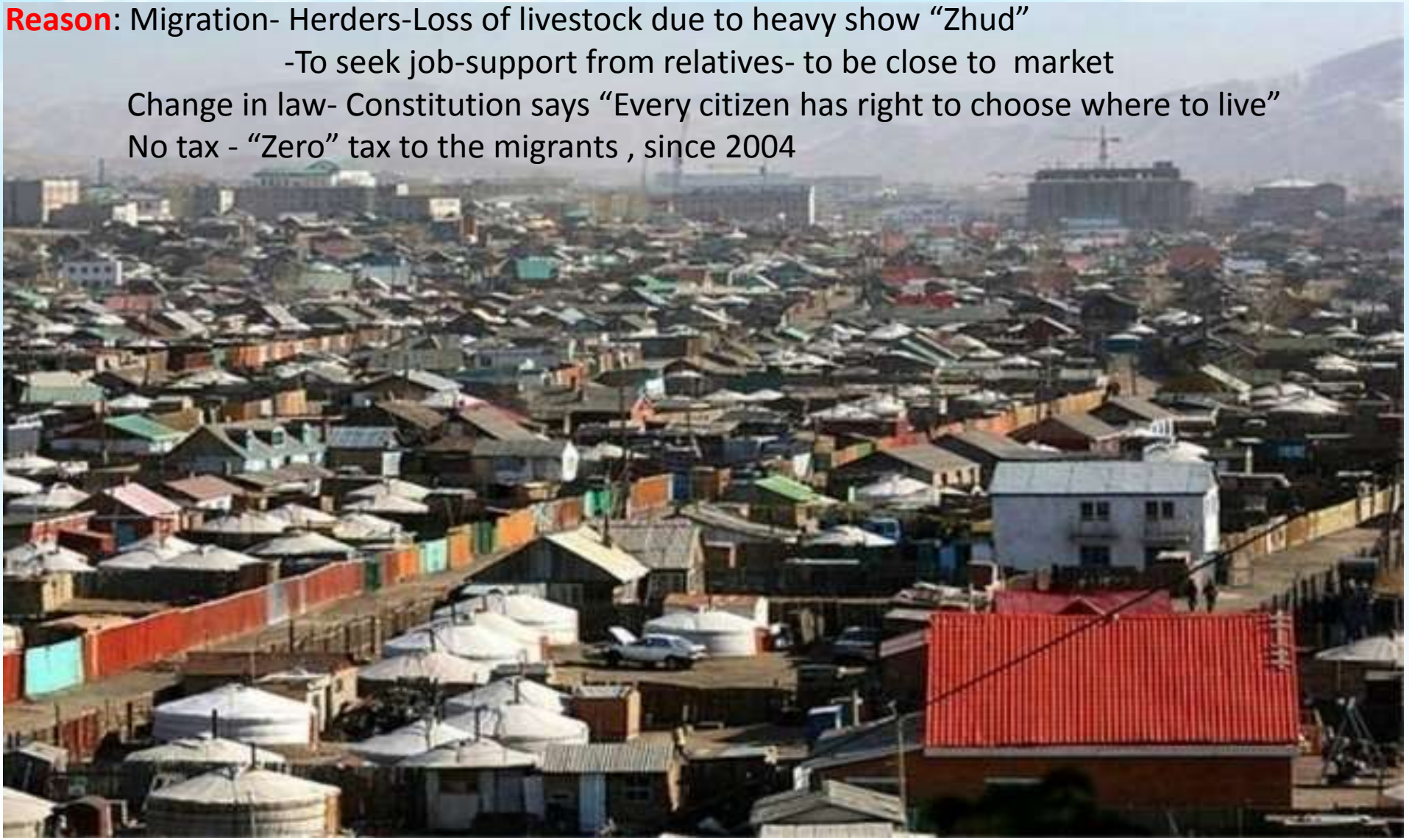


Ger area

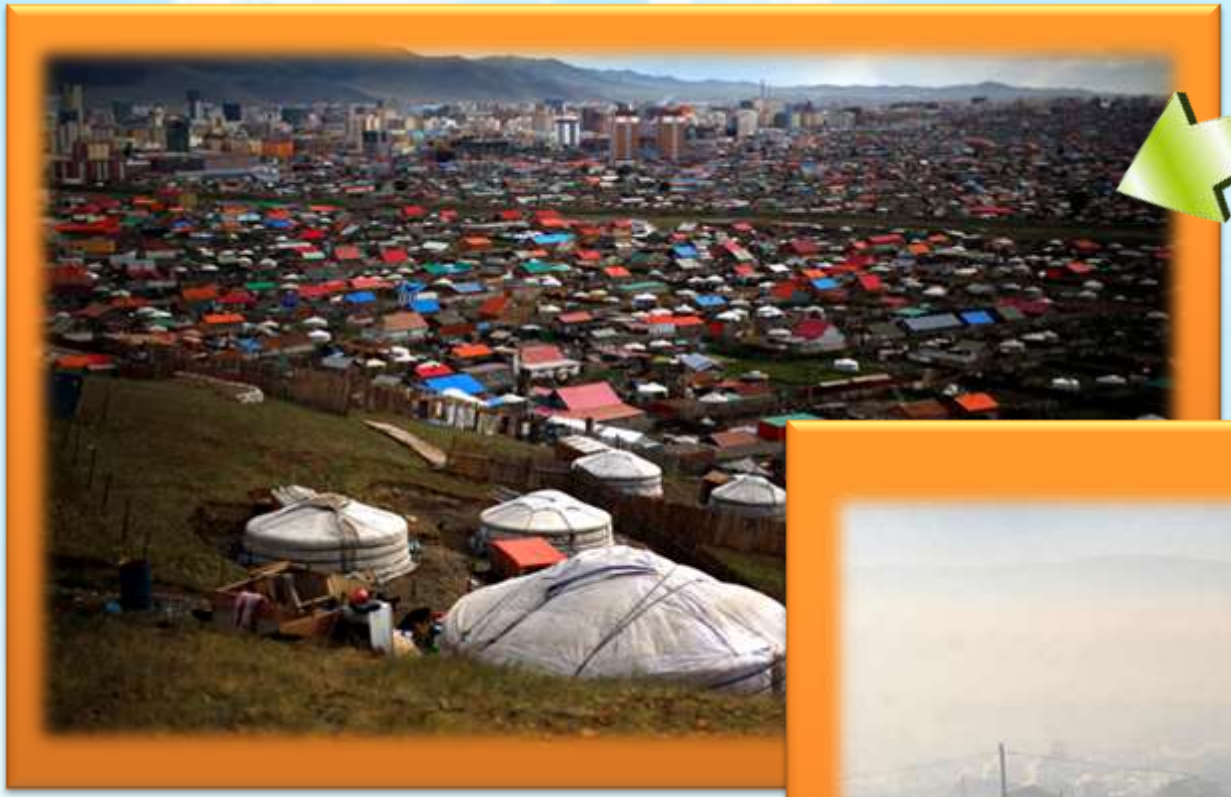
Cars

GER Area: Informal settlement where no basic urban services
Household burn row coal for heating and cooking
Contributes 60% to UB air pollution

Reason: Migration- Herders-Loss of livestock due to heavy show "Zhud"
-To seek job-support from relatives- to be close to market
Change in law- Constitution says "Every citizen has right to choose where to live"
No tax - "Zero" tax to the migrants , since 2004



Ger areas in Ulaanbaatar



IN SUMMER

83% of households use electricity for cooking

IN WINTER

92% of households use stoves for heating and cooking

3 types of traditional stoves

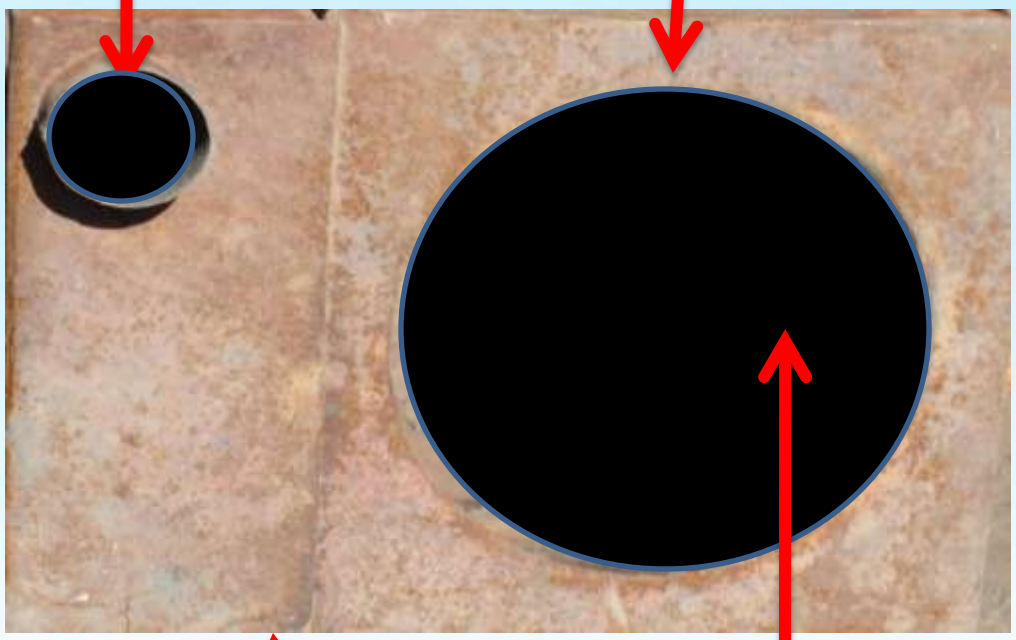
- **Round**

- **Rectangular**

- **Heating wall**

We spent more than 20 years to shift from one type to another type

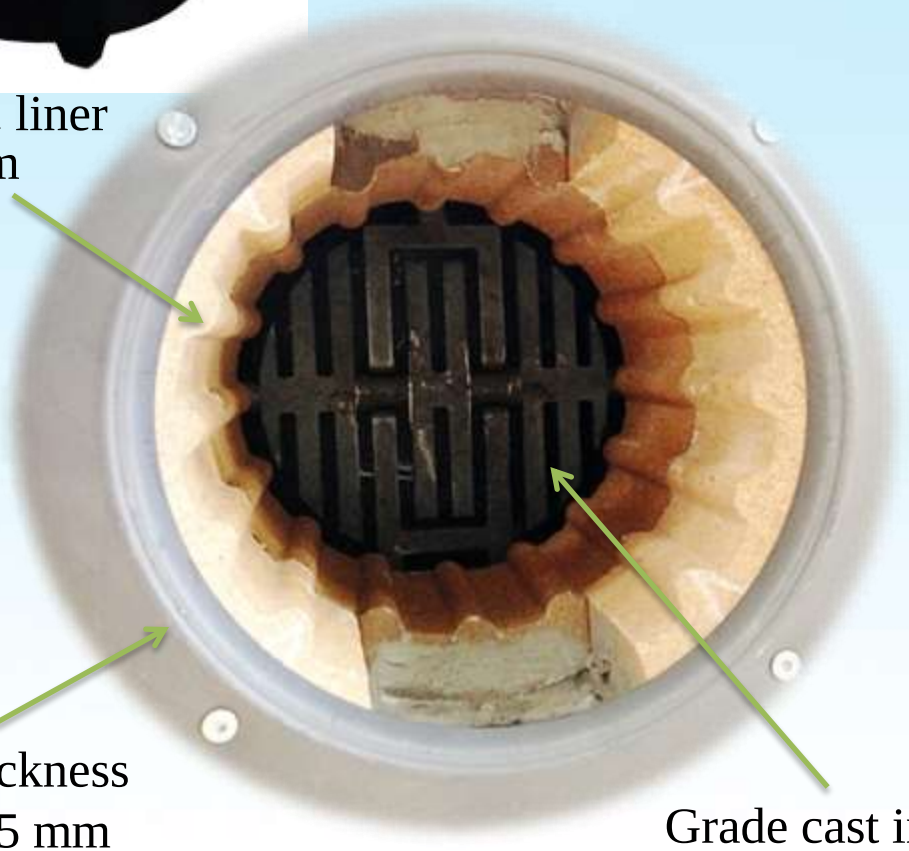
What features are of the traditional stove



- Keeping heat short time-max 3 hours
- quick become cool
- High fuel consumption-30%-50%
- High emission-more than 20 times than clean stove

Improved stove structure and common features

View



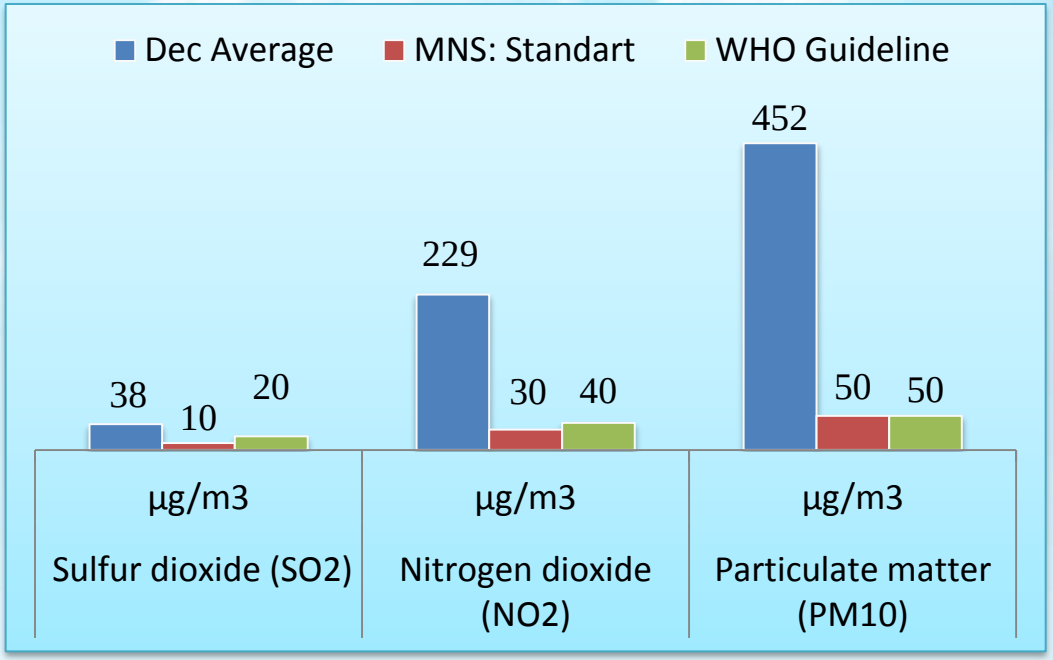
Ceramic liner
5 cm

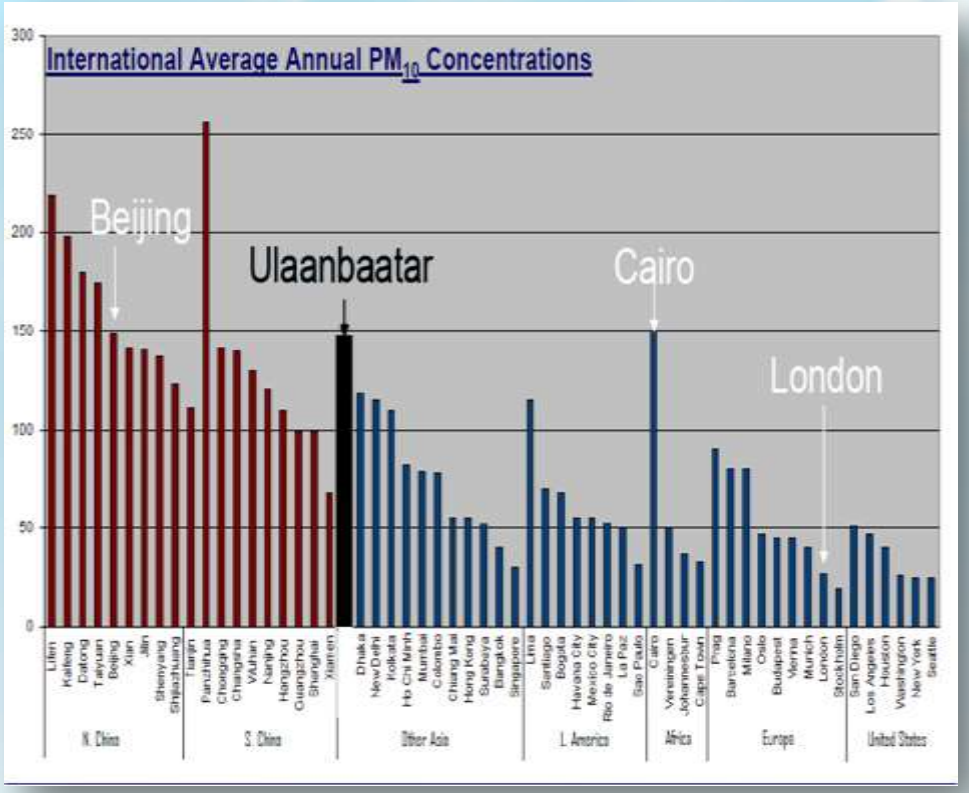
Iron thickness
2.5-3.5 mm

Grade cast iron

- Emission reduction 85-95%
- Keep heat for long time
- Fuel savings-30%
- Easy operate

Ulaanbaatar - Air pollution in 2009





UB is the most air polluted city in the world:

The level of UB air pollution is clearly exceeds all international air pollution standards. The Ger area households' burning of raw coal is the largest contributor to the ground level pollution people inhale, which causes many severe health problems

What to do? What is priority

LACK OF COMPREHENSIVE STUDY!!!

How was in past / 2007/

- No legal framework
- No adequate financial resource
- No technical study / standard
- No coordination

No integrated plan and strategy

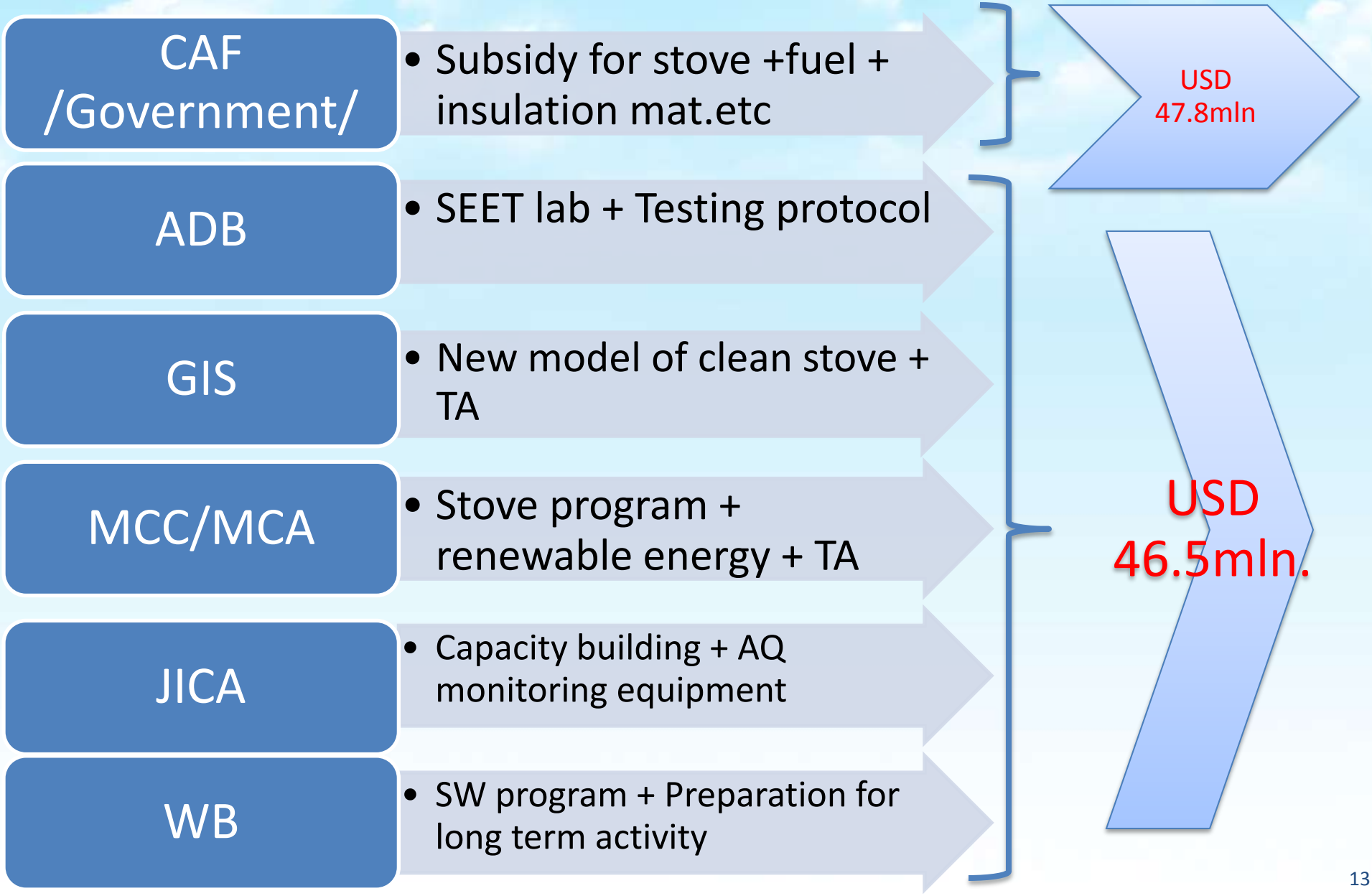
Outcomes on legal framework

Actions to be done on Air quality	Law on Air	Law on air pollution payment	Law on APR in the Capital City	Establishment of NCAPR	Clean air foundation
					
2008.01.16	2010.06.24 2012.05.17	2010.06.24	2011. 02.10	2012	2011

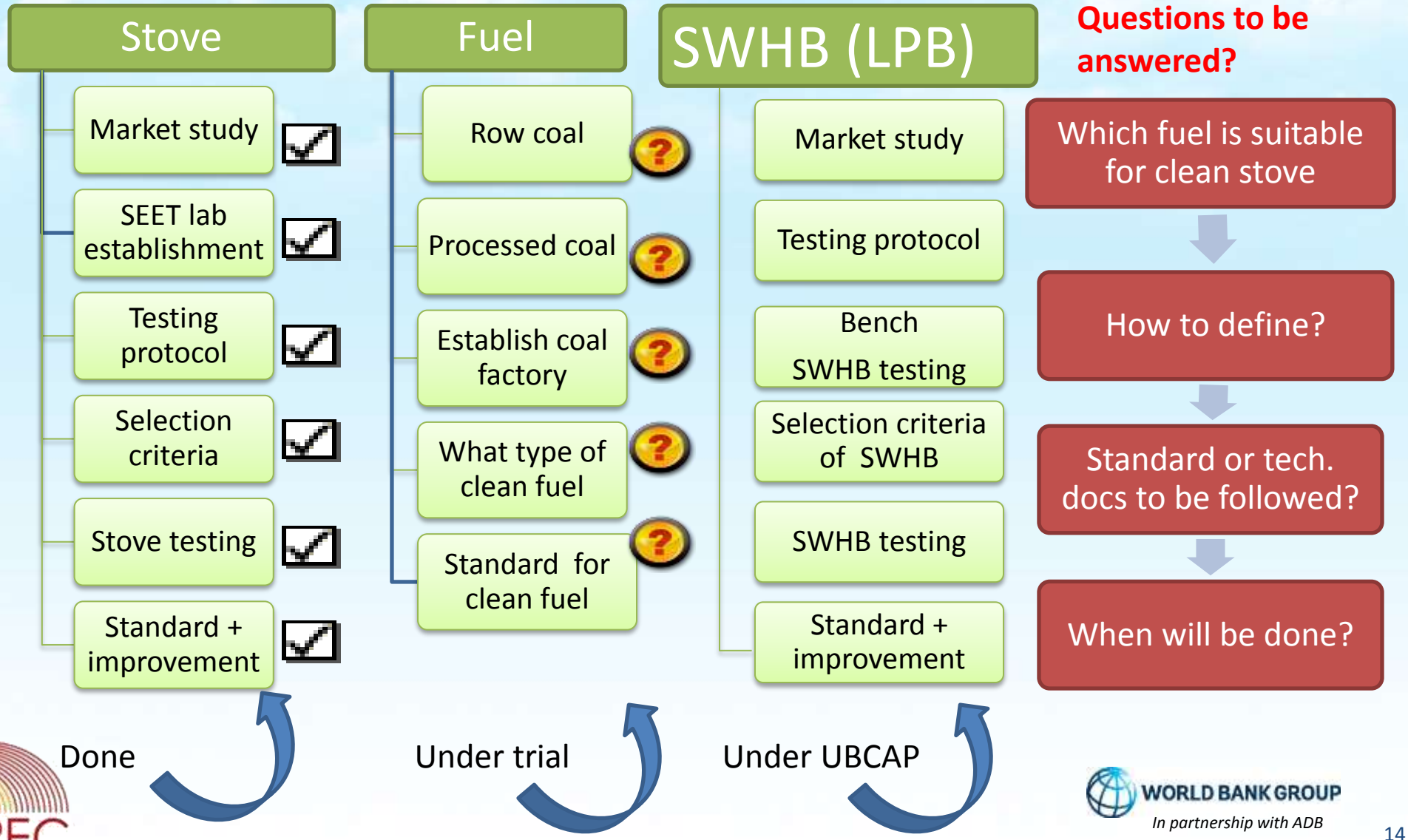
Purpose of the Laws and regulations :

Is to coordinate the various aspects related to the implementation of activities to reduce air pollution in the Capital City**.**

Attracted donors on air pollution issues



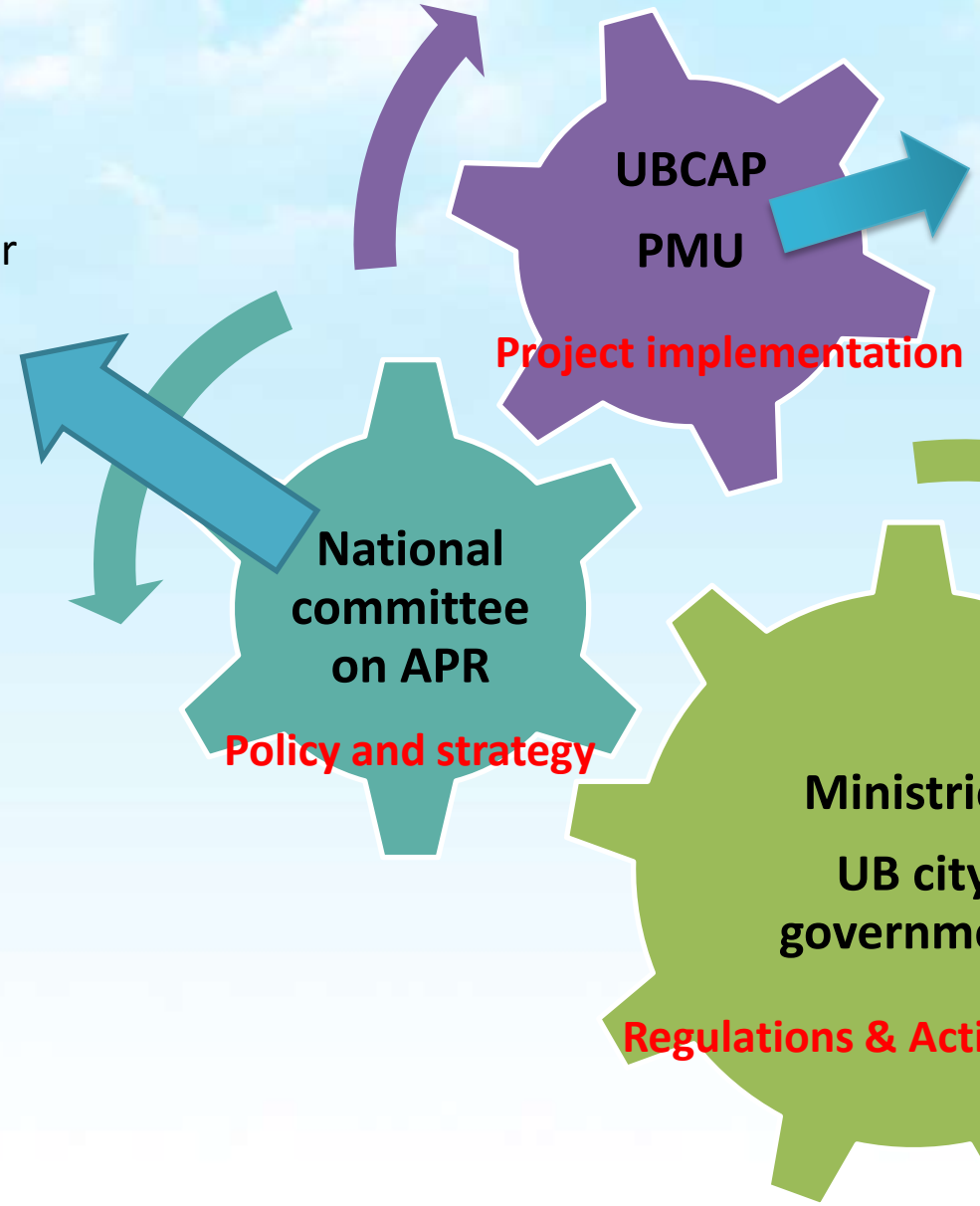
Developed technical documents and standards



Improved coordination and interrelation

UBCAP will focus on
Stove switching program and
Studies and policy documents
for medium and long term
actions

How to sustain the achievements in Air pollution reduction??
What is policy in outside UB??



Implementation of laws
Regulations
Air quality measurement
Clean Air Fund
Increase accountability??
Monitoring

If Ger area contributes 60% to air pollution then how to decrease ??

A very ambitious goal
-Long term
-Costly

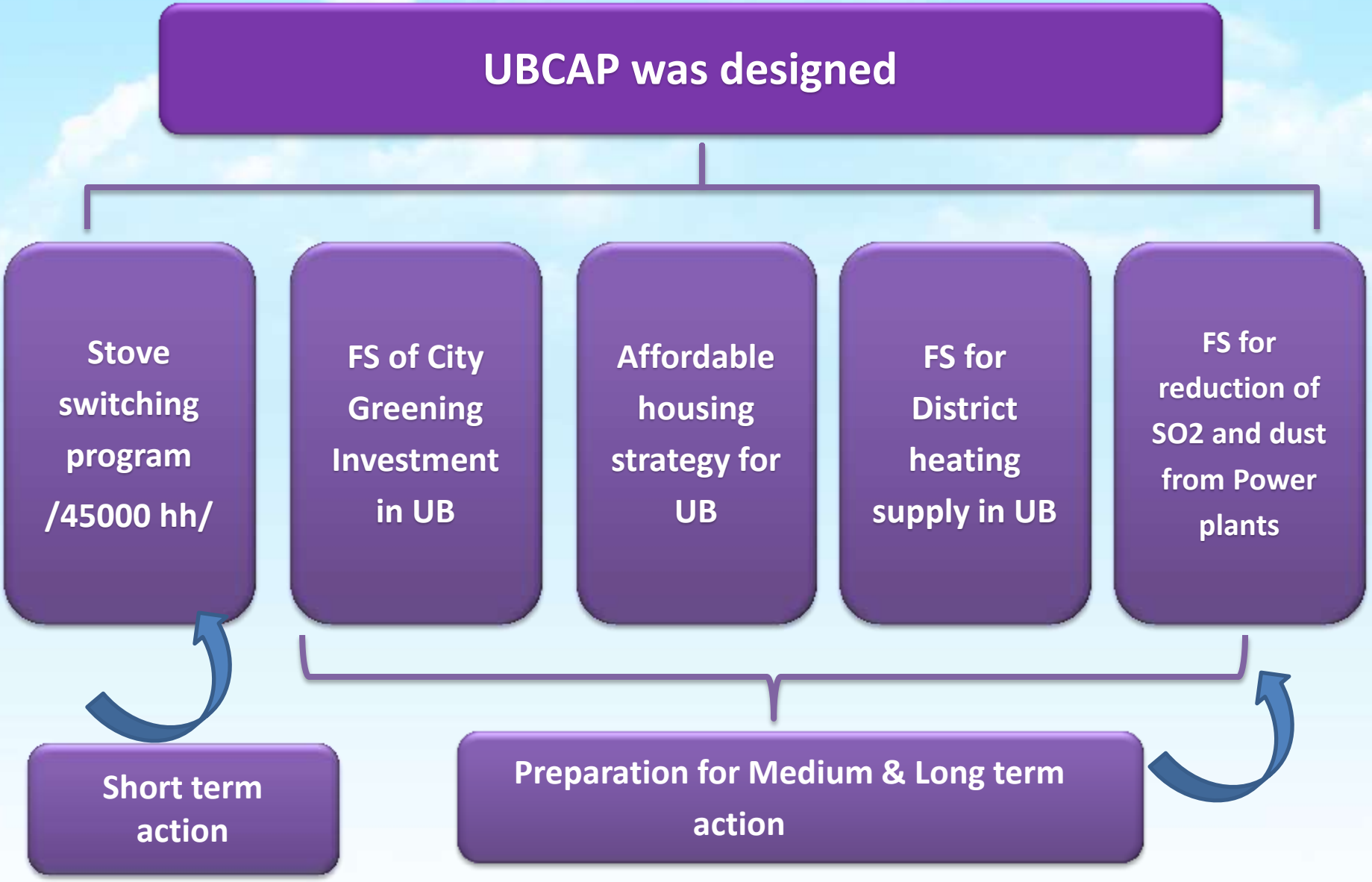
A lot of activities:
-
-
-

MIDDLE AND LONG TERM ACTIONS

People shouldn't suffer waiting
- Short term actions will be needed
-Requires less money

A lot of activities:
-
-
-

STOVE SWITCHING PROGRAM IS ONE OF THEM


UBCAP was designed
Stove switching program /45000 hh/
FS of City Greening Investment in UB
Affordable housing strategy for UB
FS for District heating supply in UB
FS for reduction of SO2 and dust from Power plants
Short term action
Preparation for Medium & Long term action

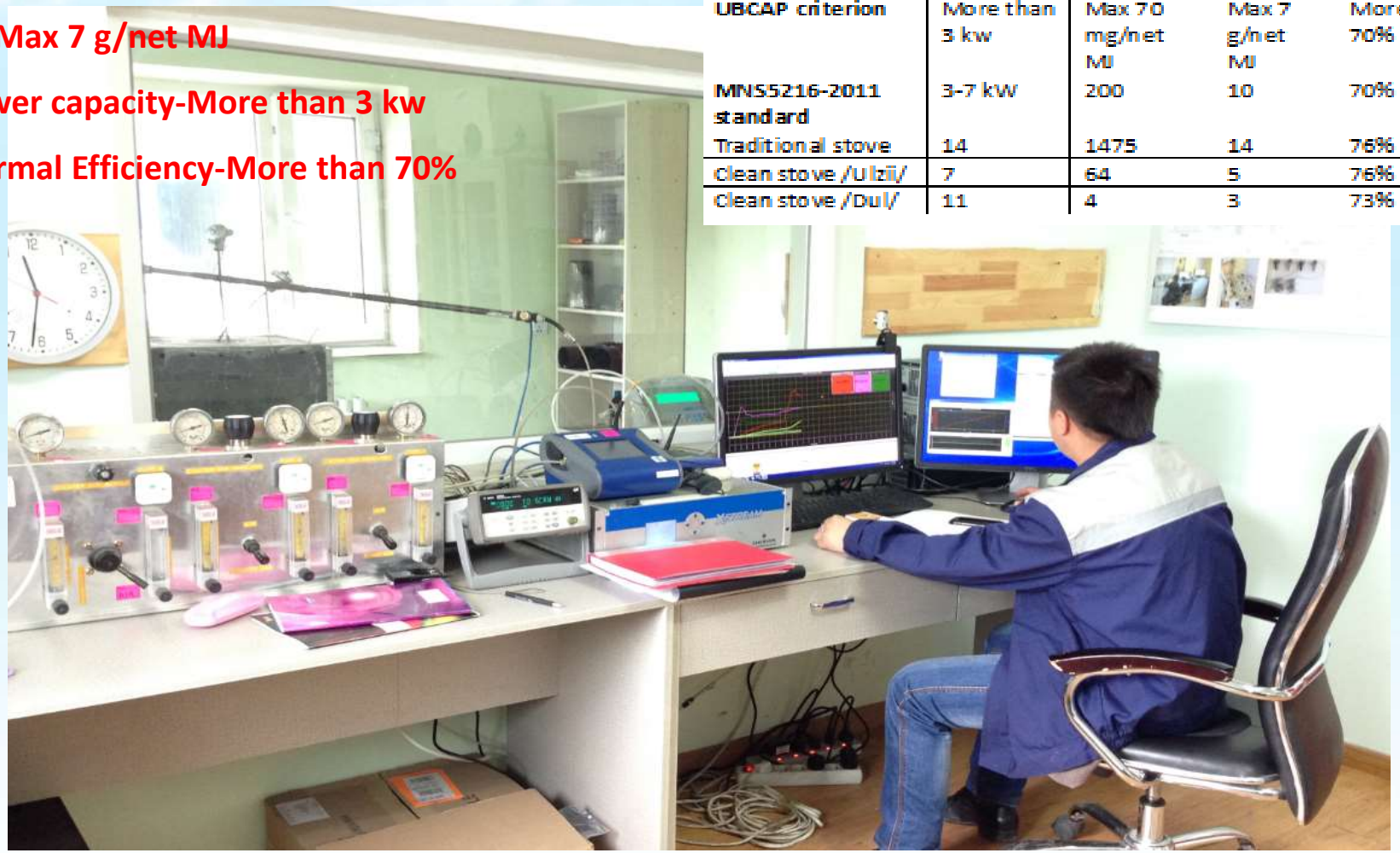
UBCAP
Short term activity

STOVE SWITCHING PROGRAM

ESTABLISHED STOVE EMISSIONS AND EFFICIENCY TESTING LABORATORY

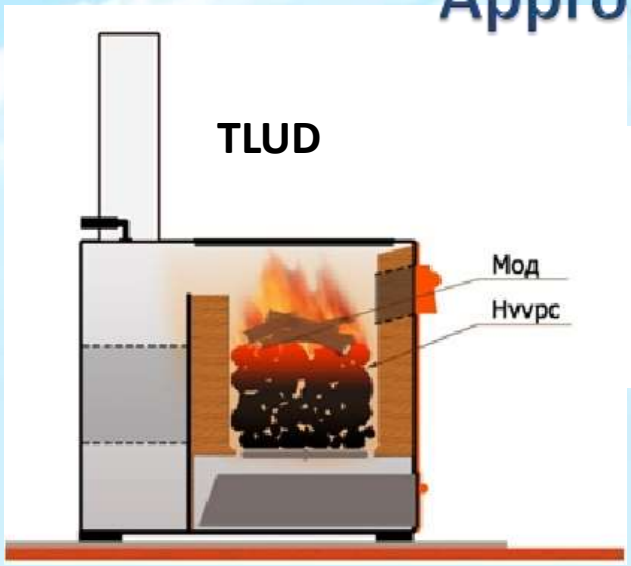
- ✓ $PM_{2.5}$ - Max 70 mg/net MJ
- ✓CO- Max 7 g/net MJ
- ✓ Power capacity-More than 3 kw
- ✓ Thermal Efficiency-More than 70%

Name	Power capacity	PM emission	CO emission	Thermal efficiency
UBCAP criterion	More than 3 kw	Max 70 mg/net MJ	Max 7 g/net MJ	More than 70%
MNS5216-2011 standard	3-7 kW	200	10	70%
Traditional stove	14	1475	14	76%
Clean stove /Ulzii/	7	64	5	76%
Clean stove /Dul/	11	4	3	73%



UBCAP

Approach for testing



Coal
5kg

+

Wood
500gr

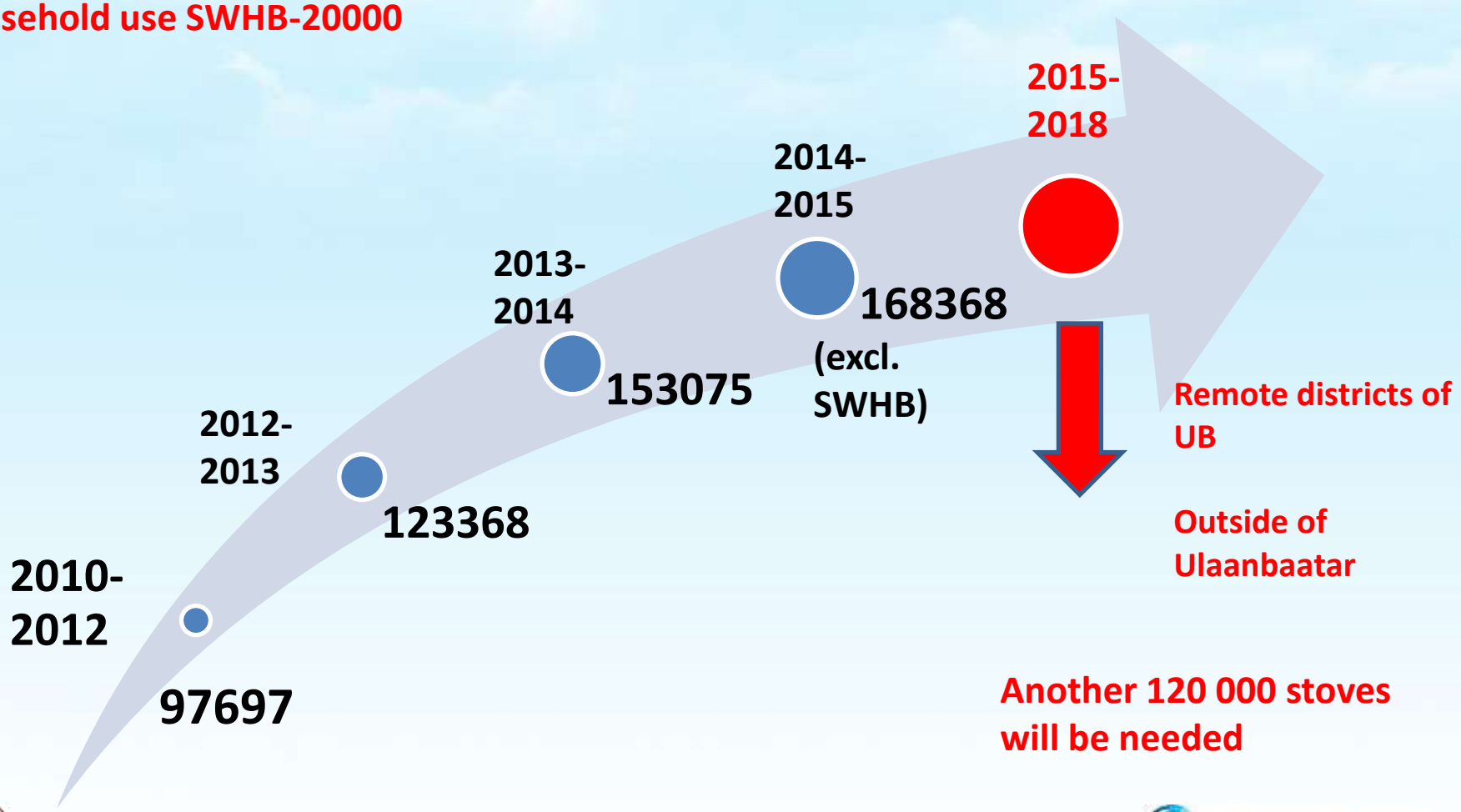
✓ **Base line-Traditional stove performance**

Stoves meets the selection criteria of UBCAP

Costs: USD 150-260

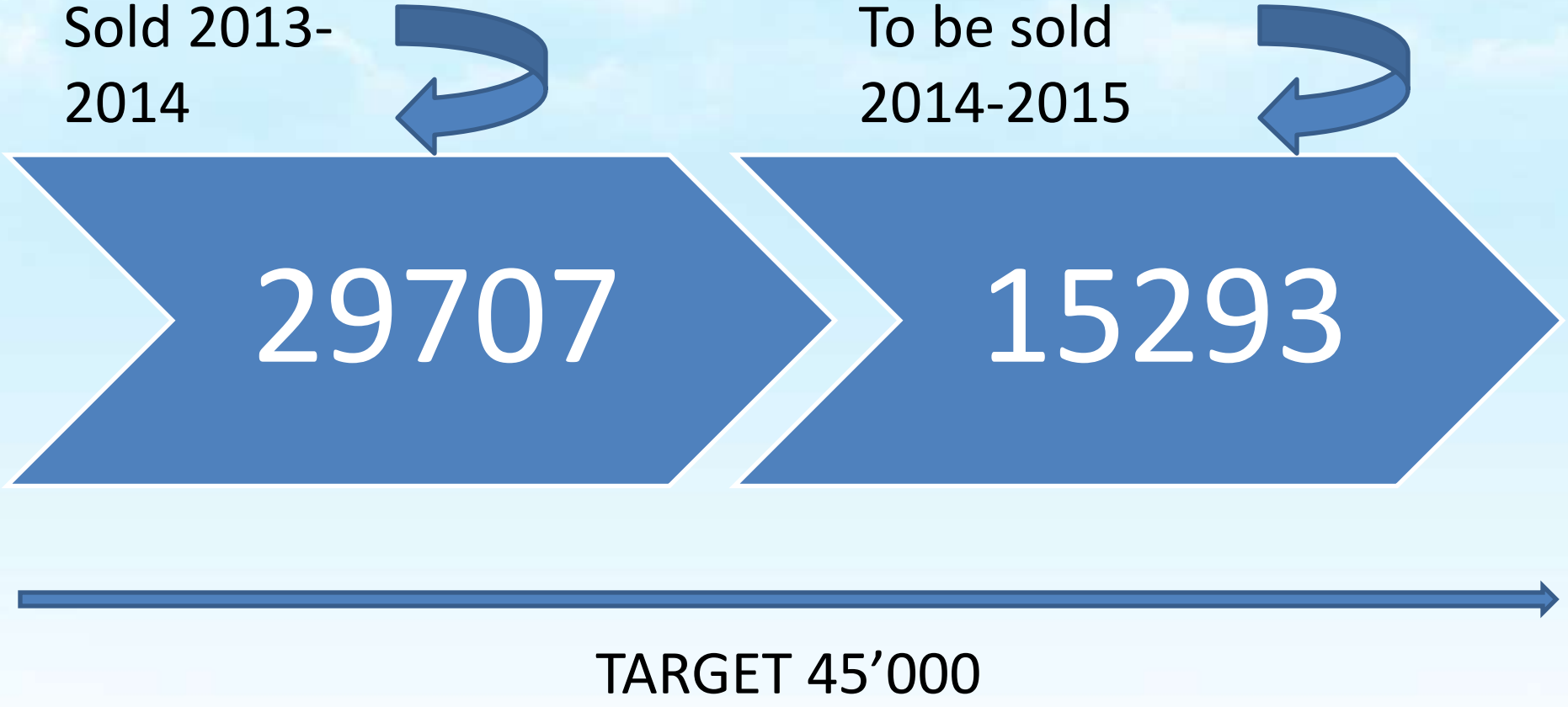
Clean stove coverage by 2015 in UB

Households of UB: 185000
Household use SWHB-20000



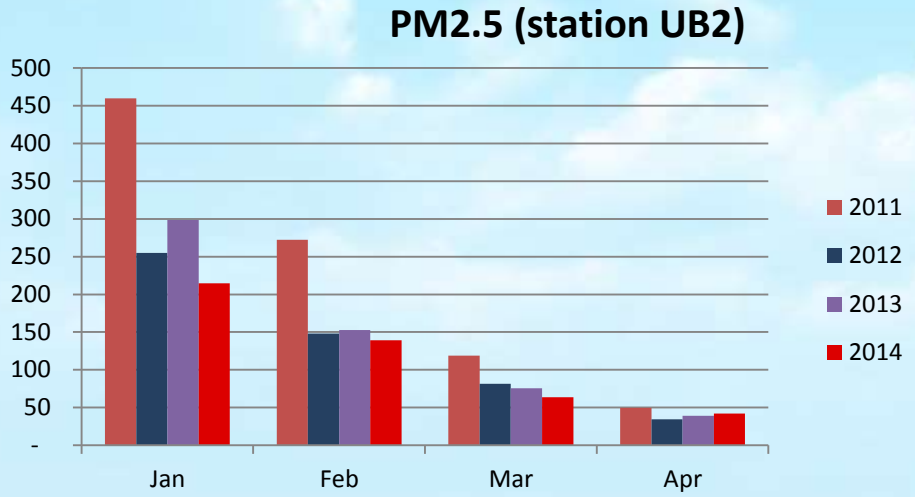
Another 120 000 stoves will be needed

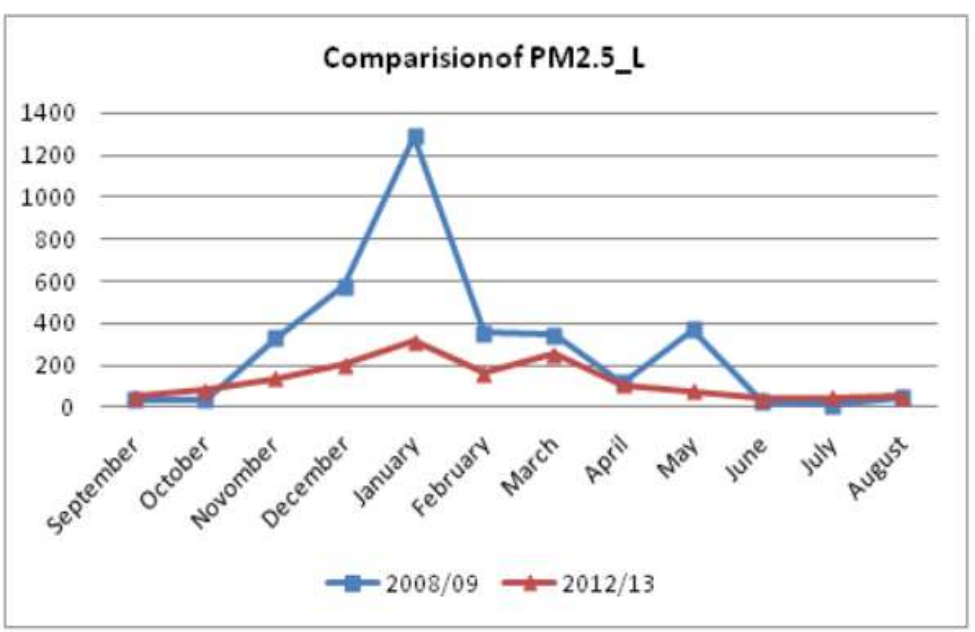
Progress of Stove switching program under UBCAP



Current Results of SSW program

- Government policies support a market-based, results-focused approach to stove market transformation.
- Promotes private sector supply and creates private sector jobs
- Transparent producer and product criteria,
- Autonomous testing
- Consumer subsidy (only upon installation) promotes consumer choice and competition
- Stove switching initiative yielded rapid and high penetration of low-e stoves in UB
- Average particulate matter concentrations in winter months decreased in UB /20-50% in some stations/
- Proven and reliable supply chain of low-e stoves established
- Good quality assurance system
- System for removing polluting stoves established
- Good results by any standard internationally





Source: Lodoysamba, Site UB5:

How to sustain low emission stove market

2 dangers

"No limitation" on "dirty" stoves

Supply of clean stoves with high subsidy

Threats to Low-e Stove Market Sustainability

- **Parallel existence of dirty stove**
- **No local, large-scale production** of qualified and affordable stove models
- **List prices of imported stoves unaffordable** without high subsidies
- **Threat, If subsidy stops the dirty stove will dominant again**
- **Re-sale** of subsidized stoves
- **Changes in subsidy can be opposed by current low emission stove suppliers and consumers**
- **Difficulties with identifying eligible households due to weak information management system**
- **Lack of technical capacity and materials for maintenance of low-e stoves after warrantee period (some materials not available in Mongolia)**
- **Consumers have hard time breaking with traditional fuelling/cooking habits. Improper use of low-e stoves increases emissions.**
- **Regulatory and policy inconsistencies** (e.g. no penalty on re-sale of stoves)

National low emission stove strategy

CSI financed "National low emission stove strategy" in 2014

Main issues:

- Pollution is not only in UB
- Parallel existence of traditional stoves
- Leakage of clean stoves to countryside
- Threat: If subsidy stop the traditional stove will dominate market

Main principles:

- Extend the market and attract the private sector
- Minimize the subsidy gradually
- Support local producers – through TA for SDC

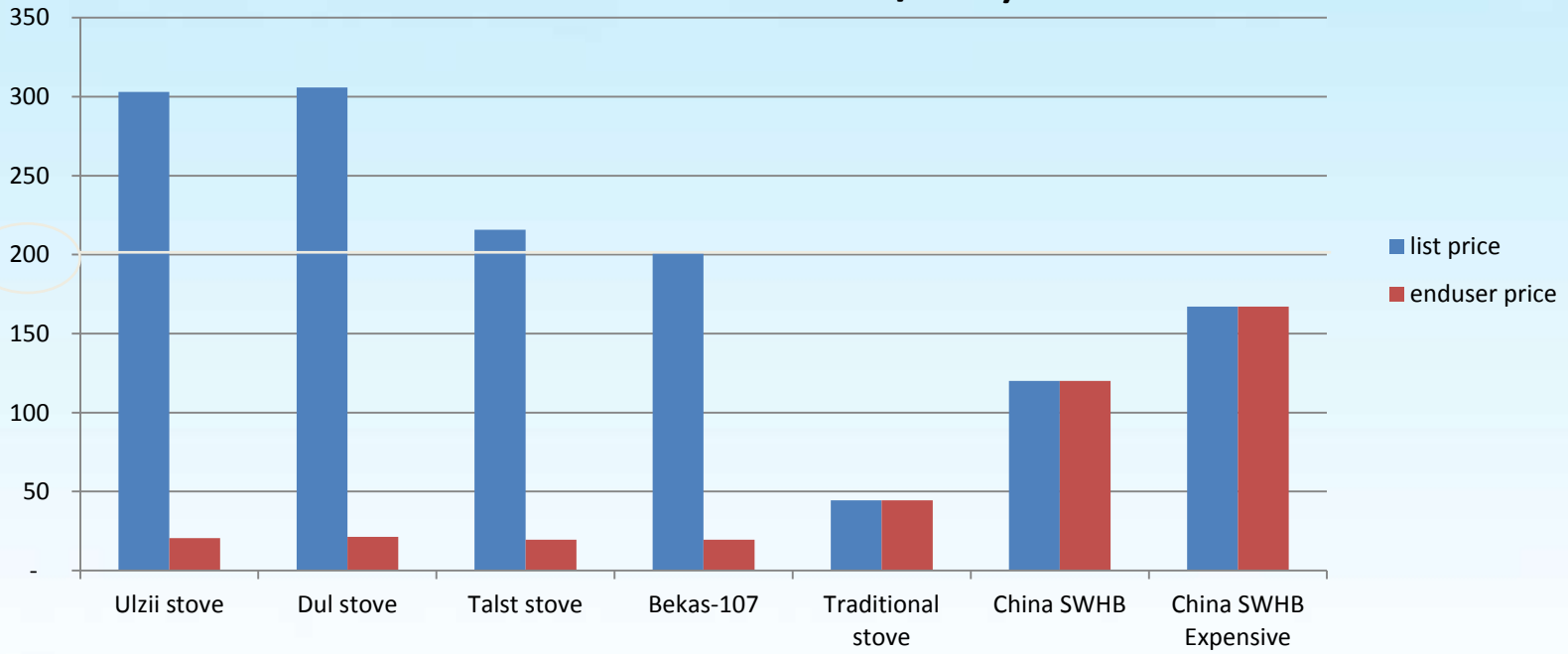
Proposed Target – 120,000 Stoves /2015-2018/

	2015-2016	2016-2017	2017-2018
Remote districts of Ulaanbaatar city	15,000	15,000	15,000
Outside of Ulaanbaatar	20,000	25,000	30,000
Subsidy level	66-50 %	33%	0%

Strategy – Towards a Sustainable Market for Low-E Stoves

- **Problem of low prices of clean stoves**
  - **Ulaanbaatar: US$201-$**306 (exchange rate MNT 1506/USD)
  - Beijing, by comparison: US$120-167 for SWHB

Current Stove Prices (US$, 2013-14, End User Price of Subsidized Models MNT1506/USD)



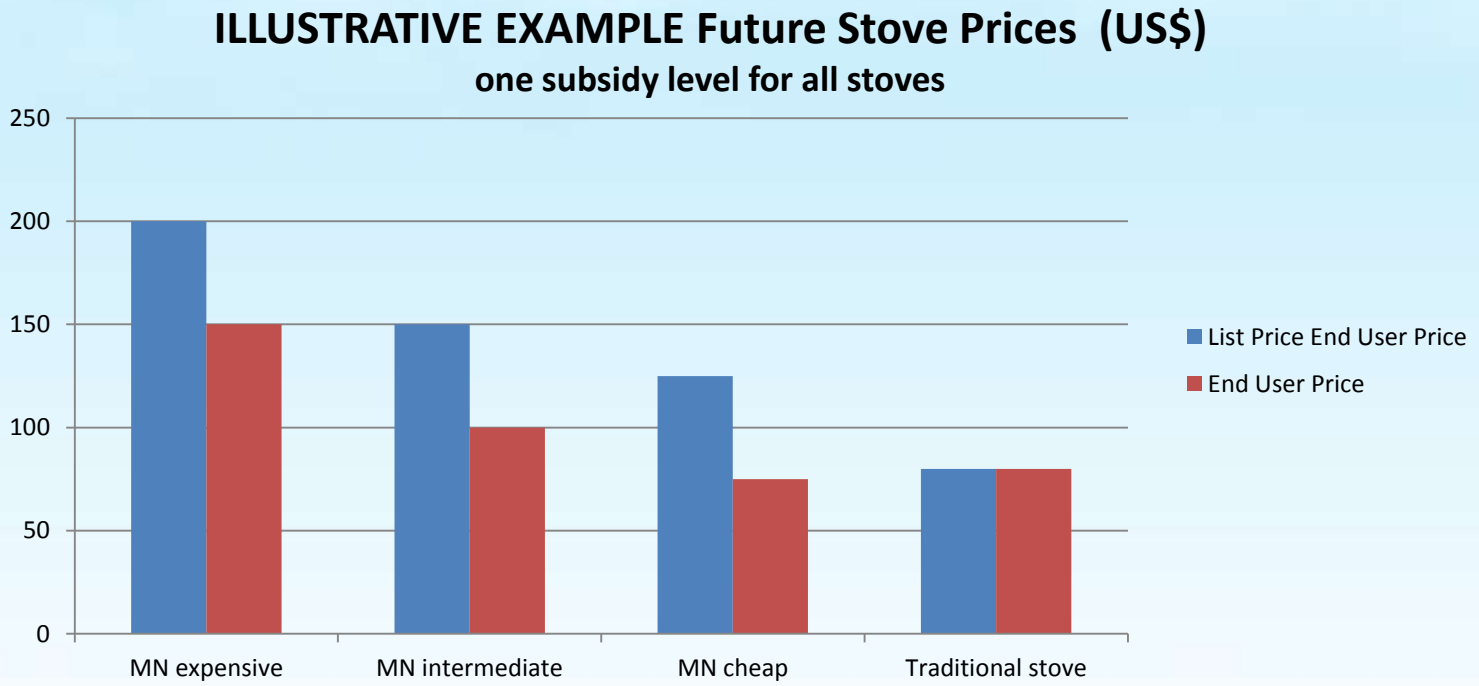
Cleaner Air
Healthy Families
Warm Homes

East Asia and Pacific Region
Clean Stove Initiative

Funded with support from the Government of Australia

Strategy – Towards a Sustainable Market for Low-E Stoves

- **Reforming the subsidy mechanism**
  - Fix subsidy amount
  - Subsidy for Aimags could include commission for sales centers (covers costs of quality assurance)



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LESSONS LEARNT / OUTCOMES

- ACHIEVEMENT

Studies for Medium term actions fulfilled 90%

More than 80% coverage of clean stoves

Coordination of stakeholders is improved

- Lessons

Improve accountability a responsibility of HHs;
Stop sale of dirty stove

Improvement of Registration system including movement in ger areas is critical

Shift from Gov. supported market to Market oriented;
PR, capacity building, training of local producers

THANK YOU

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