



Understanding
the septage desludging models:
what works and what doesn't
work?

Jakarta and Surakarta Models

Budi Darmawan, Indonesia

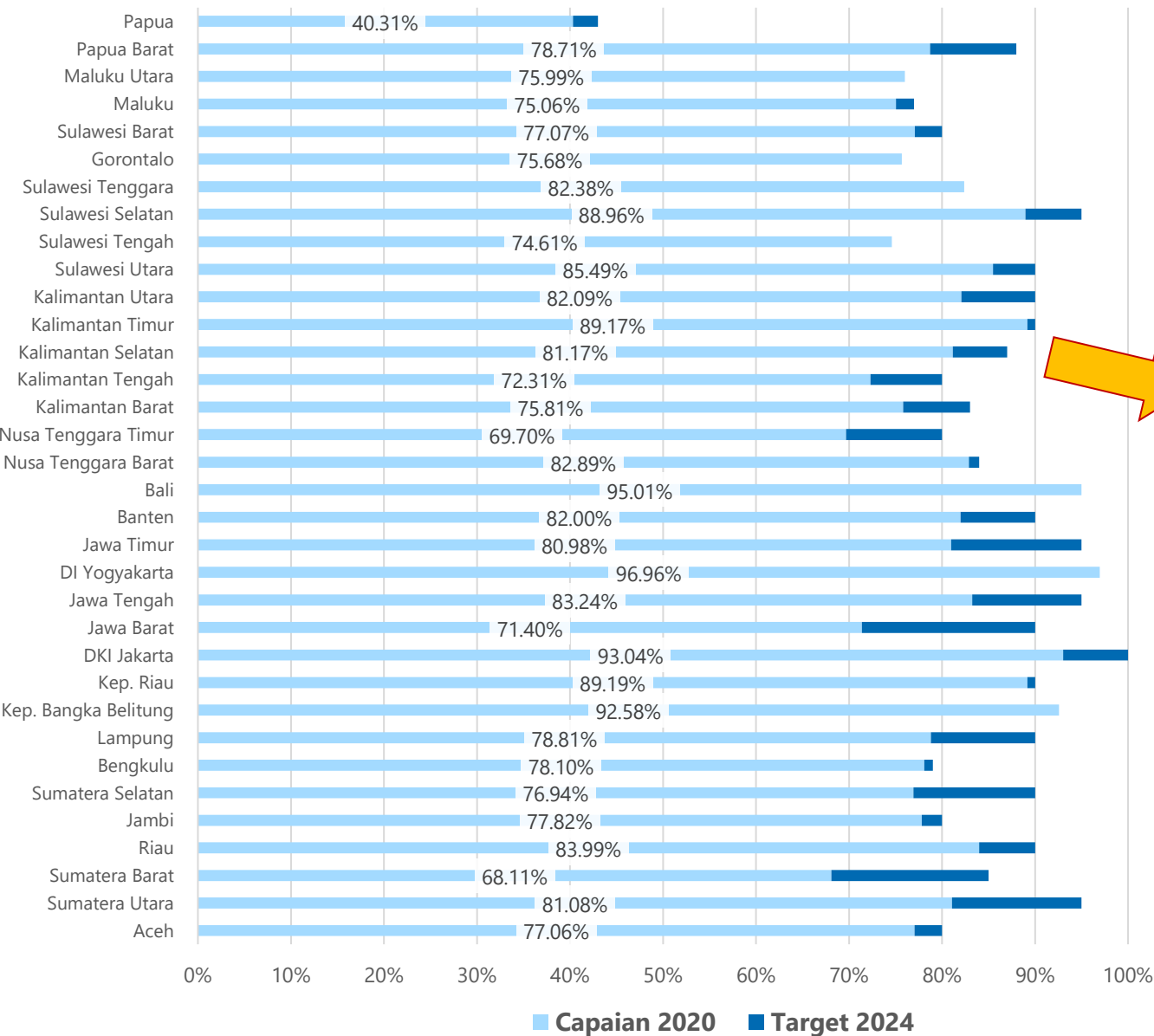
INDONESIA

- Big in size, big in population
- Archipelago and contour in geography
- Have national roadmaps and policies
- Progressing in organize, alignment and implementation
- Almost all cities support by private sector, 50 – 80%
- Cities : Advanced phase and starting phase
- Need more integrated effort and activities
- Need more new technology approaches

CONCEPT OF WASTEWATER MANAGEMENT IN INDONESIA

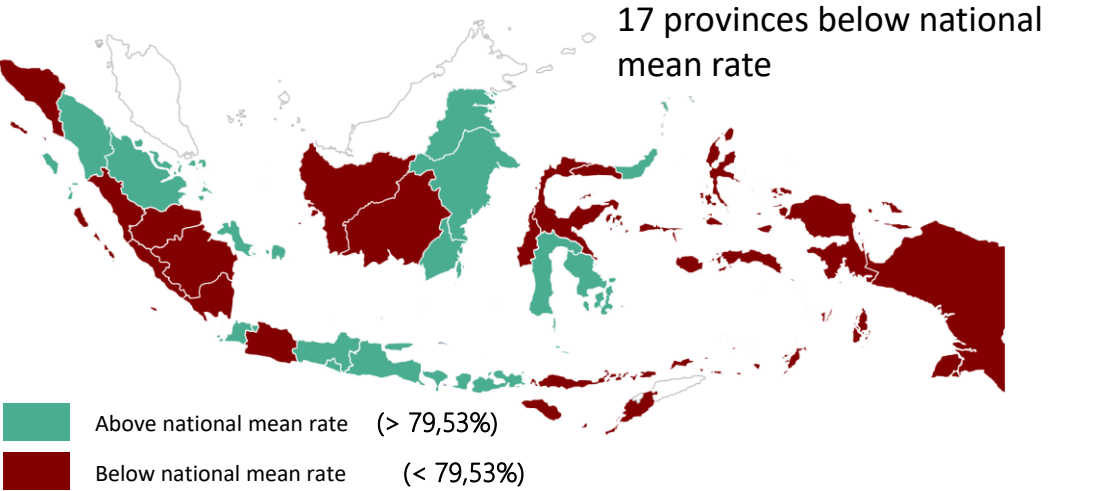


Achievement and Target 2024 Sanitation Access Per-Province



PROVINSI	CAPAIAN 2020	TARGET 2024
Aceh	77,06%	80%
Sumatra Utara	81,08%	95%
Sumatra Barat	68,11%	85%
Riau	83,99%	90%
Jambi	77,82%	80%
Sumatra Selatan	76,94%	90%
Bengkulu	78,10%	79%
Lampung	78,81%	90%
Kepulauan Bangka Belitung		90%
Kepulauan Riau	89,19%	90%
DKI Jakarta	93,04%	100%
Jawa Barat	71,40%	90%
Jawa Tengah	83,24%	95%
D.I. Yogyakarta	96,96%	95%
Jawa Timur	80,98%	95%
Banten	82,00%	90%
Bali	95,01%	90%

PROVINSI	CAPAIAN 2020	TARGET 2024
Nusa Tenggara Barat	82,89%	84%
Nusa Tenggara Timur	69,70%	80%
Kalimantan Barat	75,81%	83%
Kalimantan Tengah	72,31%	80%
Kalimantan Selatan	81,17%	87%
Kalimantan Timur	89,17%	90%
Kalimantan Utara	82,09%	90%
Sulawesi Utara	85,49%	90%
Sulawesi Tengah	74,61%	73%
Sulawesi Selatan	88,96%	95%
Sulawesi Tenggara	82,38%	81%
Gorontalo	75,68%	70%
Sulawesi Barat	77,07%	80%
Maluku	75,06%	77%
Maluku Utara	75,99%	75%
Papua Barat	78,71%	88%
Papua	40,31%	43%



SEWERAGE PROJECTS IN INDONESIA (UPCOMING PROJECTS)

Jakarta Zone 1 – New WWTP

Expected beneficiaries: 989.389 people
Status: supervision consultant is on bidding stage

Jakarta Zone 6 – New WWTP

Expected beneficiaries: 180.800 people
Status: design and supervision consultant is on bidding stage

Pontianak – New WWTP

Expected beneficiaries: 135.085 people
Status: FS has been completed. DED document is under preparation

Semarang – New WWTP

Expected beneficiaries: 764.287 people
Status: FS document improvement

Bekasi – New WWTP

Expected beneficiaries: 90.050 people
Status: DED Document preparation

Mataram – New WWTP

Expected beneficiaries: 80.000 people
Status: DED document preparation

Bogor – New WWTP

Expected beneficiaries: 330.000 people
Status: Fundraising for Full FS

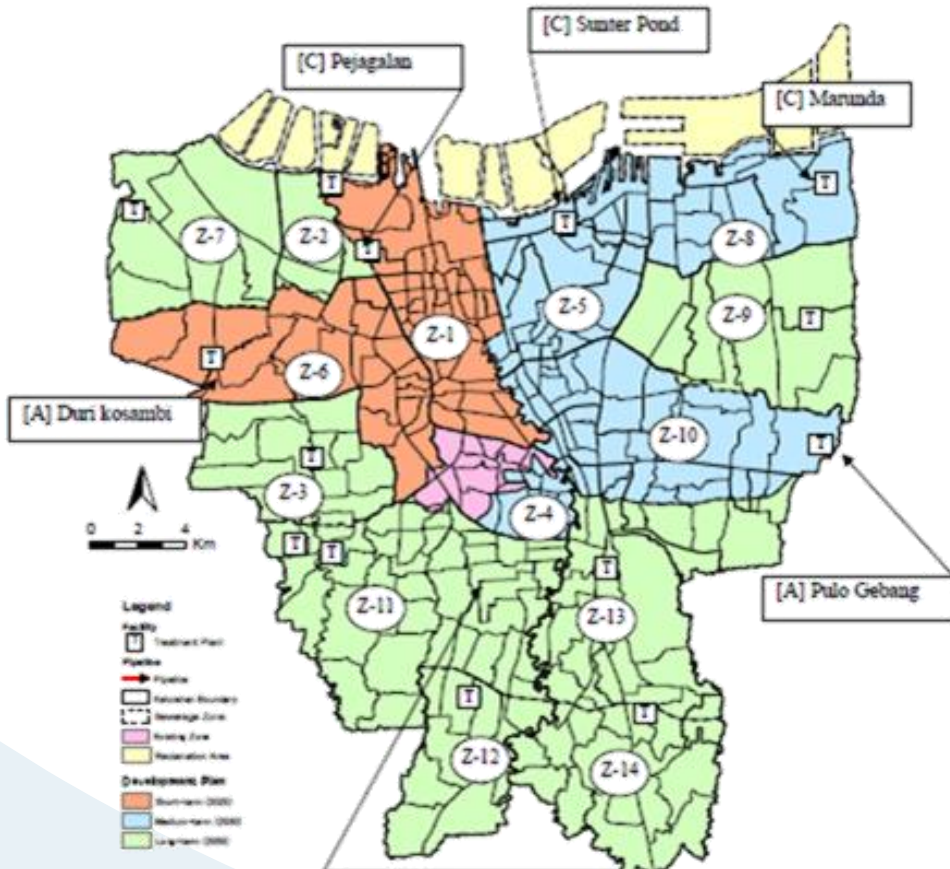
Bandung – WWTP rehabilitation and expansion

Expected beneficiaries: 3.000.000 people (PE)
Status: FS document has been completed

Denpasar – WWTP upgrade and expansion

Expected beneficiaries: 489.354 people
Status: DED Document revision

JAKARTA SEWERAGE DEVELOPMENT PROJECT (Zone 1)



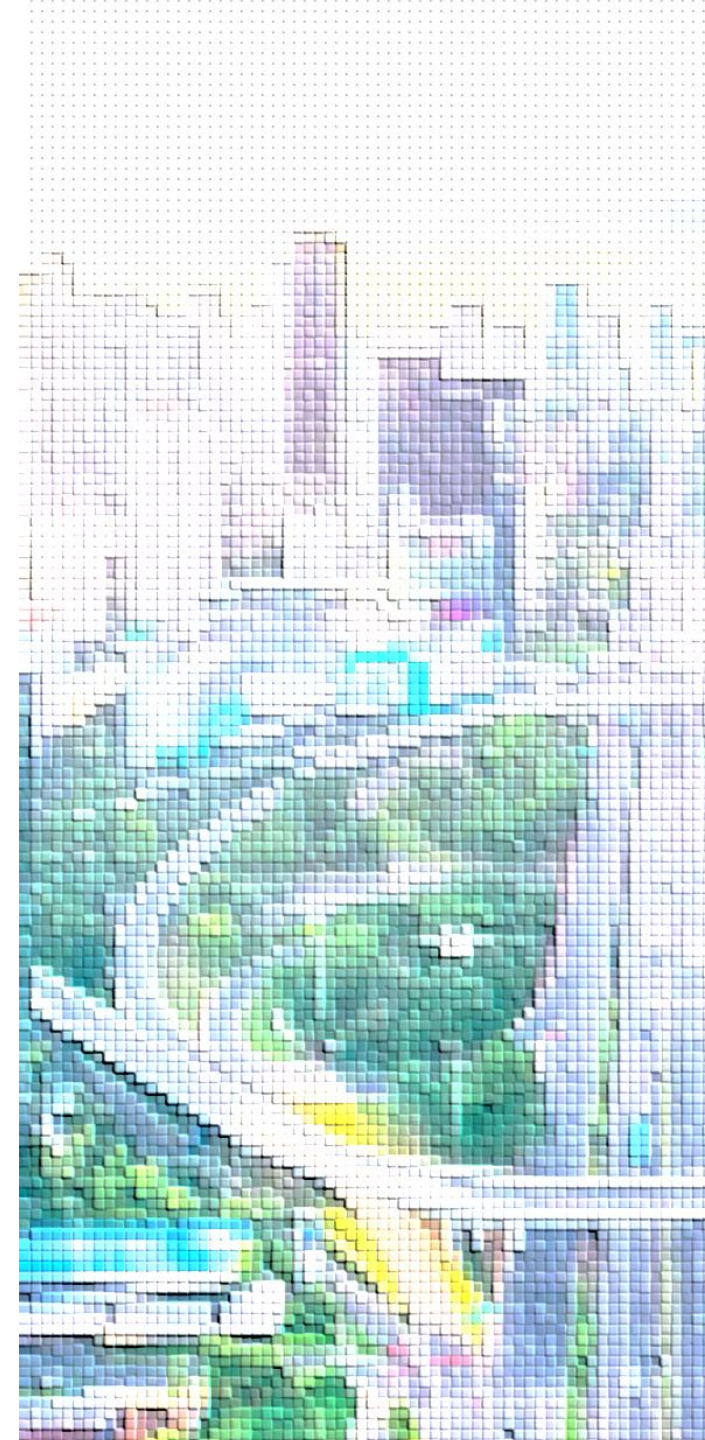
- **WWTP Location** : Pluit (3,9 Ha)
- **WWTP Capacity** : 240.000 m³/day
- **Coverage** : 4.901 Ha
- **Total Cost** : Rp 8,72 Trillions
- **Benefit Recipients** : 989.389 People
- **WWTP Technology** : A2O – MBR
- **Coverage Area** : **Penjaringan, Pademangan (Jakarta Utara), Taman Sari, Tambora (Jakarta Barat), Sawah Besar, Gambir, Tanah Abang dan Menteng(Jakarta Pusat)**

Scope of Works	Cost Estimation	Status
Supervision Consultant for the Works Under Jakarta Sewerage Development Project (Zone 1)	Rp. 351.314.687.695	on bidding stage
Package 1: Construction of WWTP (JICA Loan)	Rp. 4.001.758.631.853	1. Revision of PQ document and bidding document 2. Determination of the cost estimation plan is on process of approval from Director General of Human Settlements
Package 2: Construction of Sewers in Area 1-1 (JICA Loan)	Rp. 915.659.258.642	
Package 3: Construction of Sewers in Area 1-2 (JICA Loan)	Rp. 1.983.818.324.349	
Package 4: Construction of Sewers in Pilot Area (JICA Loan)	Rp. 118.020.820.405	Tender Process Begin at 2022I0
Package 5: Construction of Sewers in Area 2-1 (APBD DKI)	Rp. 1.050.714.126.103	Discussion of draft PQ document and Tender document
Package 6: Construction of Sewers in Area 2-2 (APBD DKI)	Rp. 740.960.166.651	

1 US\$ = Rp. 14.500.

JAKARTA

- **What works**
 - Regulation of subsidized improve sanitation launched
 - Survey and data of program targeted respondent
 - Construction of onsite system in every eligible household
- **What doesn't work (yet)**
 - Huge budget refocusing due to covid19 pandemi
 - Monitoring before-after
 - Regular desludging as main target





KEPUTUSAN KEPALA DINAS SUMBER DAYA AIR
PROVINSI DAERAH KHUSUS IBUKOTA JAKARTA

NOMOR

TENTANG

PENETAPAN LOKASI REVITALISASI TANGKI SEPTIK UNTUK 441 CALON
PENERIMA SUBSIDI DINAS SUMBER DAYA AIR PROVINSI DKI JAKARTA



Menetapkan : KEPUTUSAN KEPALA DINAS SUMBER DAYA AIR PROVINSI DKI JAKARTA TENTANG PENETAPAN LOKASI REVITALISASI TANGKI SEPTIK UNTUK 441 CALON PENERIMA SUBSIDI DINAS SUMBER DAYA AIR PROVINSI DKI JAKARTA

KESATU : Penetapan lokasi revitalisasi tangki septik untuk 441 calon penerima subsidi Dinas Sumber Daya Air Provinsi DKI Jakarta sebagaimana dalam lampiran keputusan ini;

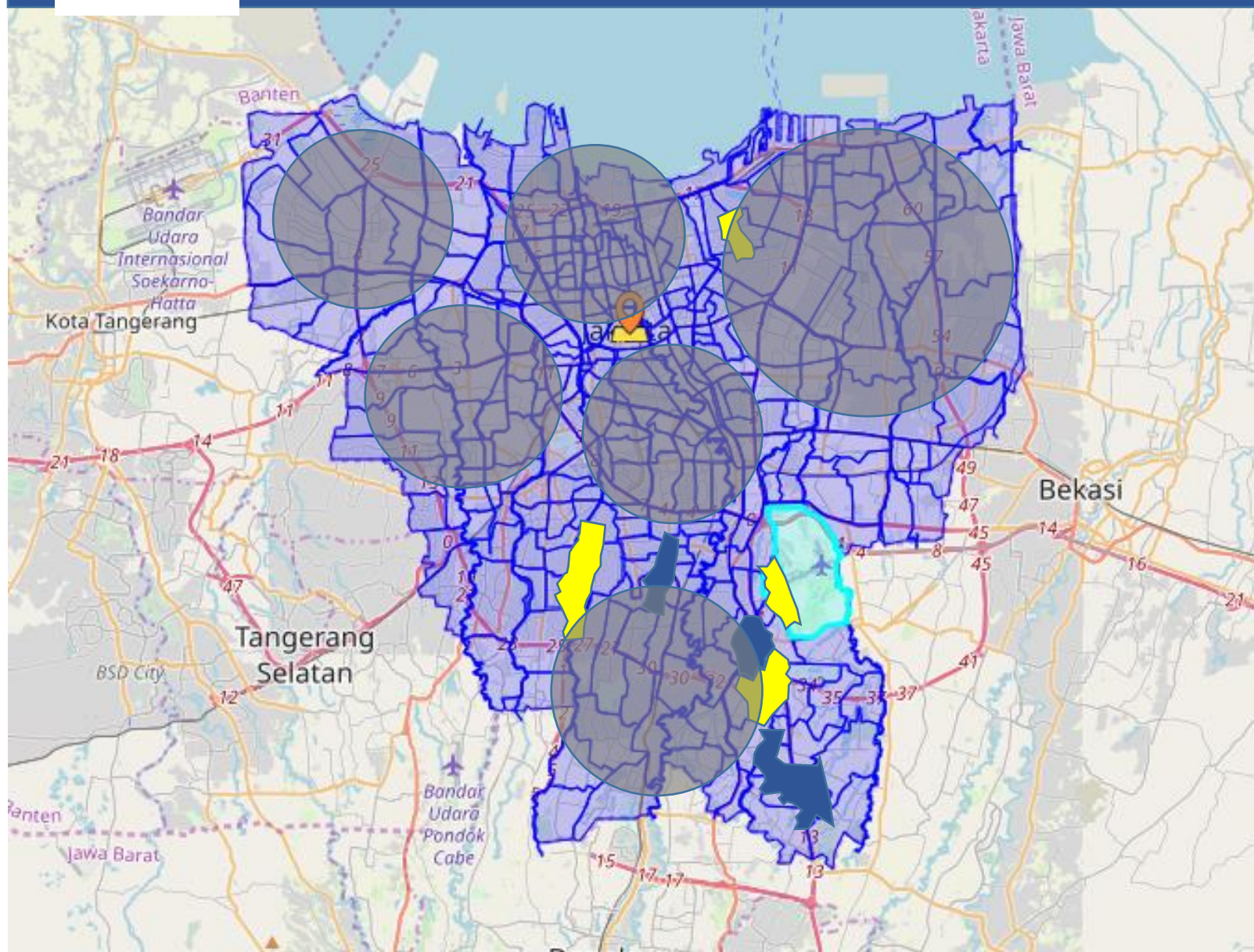
No. KTP		No. Telpun	ALAMAT	RT	RW	KELURAHAN	KOTA	BIOPAL	KAPASITAS	KETERANGAN
1	Amir / Desi			012	01	Susukan	Jakarta Timur	Individual	1m ³	Baseline
RW 002 RT 002 dan 010										
2	Hening Sutjana	312110503830007	08131751713	002	02	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
3	Sherry Iryanto	3121509124210011	08584265094	002	02	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
4	Norahika	3121509170660006	08786646938	002	02	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
5	Mudiono			010	02	Susukan	Jakarta Timur	Individual	1m ³	Baseline
6	Amunah			010	02	Susukan	Jakarta Timur	Individual	1m ³	Baseline
7	Yudi			010	02	Susukan	Jakarta Timur	Individual	1m ³	Baseline
8	M. Zulhika / Supriyastah	3121509458450002	08115597701	010	02	Susukan	Jakarta Timur	Individual	1m ³	Baseline
9	Jaya	31215047507170005	08547944228	010	02	Susukan	Jakarta Timur	Individual	1m ³	Baseline
RW 003 RT 001, 006, 007, 009										
10	Nuridin	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
11	Selget	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
12	Adnan Khulu	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
13	Muhammad Sholah	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
14	Taslim	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
15	Windu Astuti Setiati	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
16	Nuridin	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
17	Alvin Nuzul	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
18	Asep Suroso	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
19	Alvin Bin Pengki	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
20	Galen	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
21	Zahid / Wahyu	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
22	Dodi Agung Hino	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
23	Indah Dingsan	3121509788610003	08380401882	002	01	Susukan	Jakarta Timur	Individual	1m ³	Surat Perseutujuan
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DAFTAR CALON PENERIMA MANFAAT SUBSIDI TANGKI SEPTIK RUMAH TANGKAP											
KELURAHAN PASIR MINGGU		No. KTP	No. Telepon	ALAMAT	RT	RW	KELURAHAN	KOTA	BIOPAL	KAPASITAS	KETERANGAN
NO	NAMA										
RW 001 RT 002											
1	Suliyanto				002	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
2	Yudi				002	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
3	Indri				002	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
4	Purni				002	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
5	Yanto				007	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
6	Nurhima				007	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
7	Iskandri				007	01	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
RW 005 RT 005, 013, 015											
8	Desak Mulya	33740418048R0001	081263387835	Jl. Palapa VIII No.3	005	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline dan Surat Persetujuan
RW 007 RT 002, 008											
9	Burnan / Rizki				013	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
10	Nurmalina				013	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
11	Murniati Sudar / Semp				013	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
12	Nawen				013	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
RW 007 RT 002, 008											
13	Budi				015	05	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
14	Mugim				002	07	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
15	Rizal				002	07	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline
16	Budi				002	07	Pasar Minggu	Jakarta Selatan	Individual	1m³	Baseline

[illegible]



Phase 3 – 10.000 locations



Plan 2021 - 2022

**Survey 2021
10.000 HHs**

**Const. 2021 - 2022
10.000 HHs**

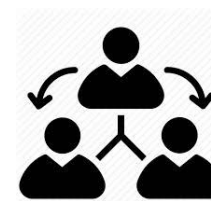


**Number of
enumerators and
surveyors increase**

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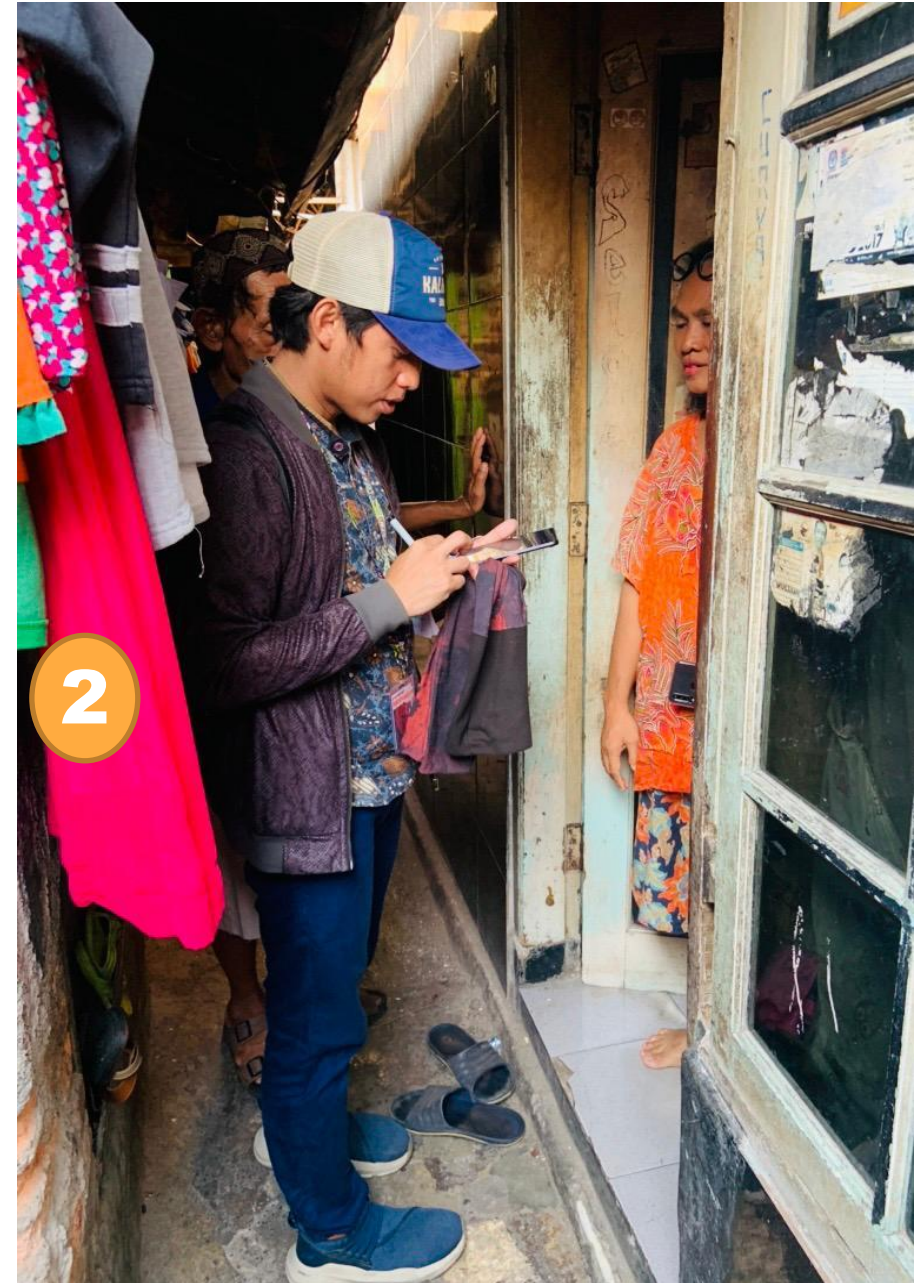
**Facilities and
supporting
strengthen**



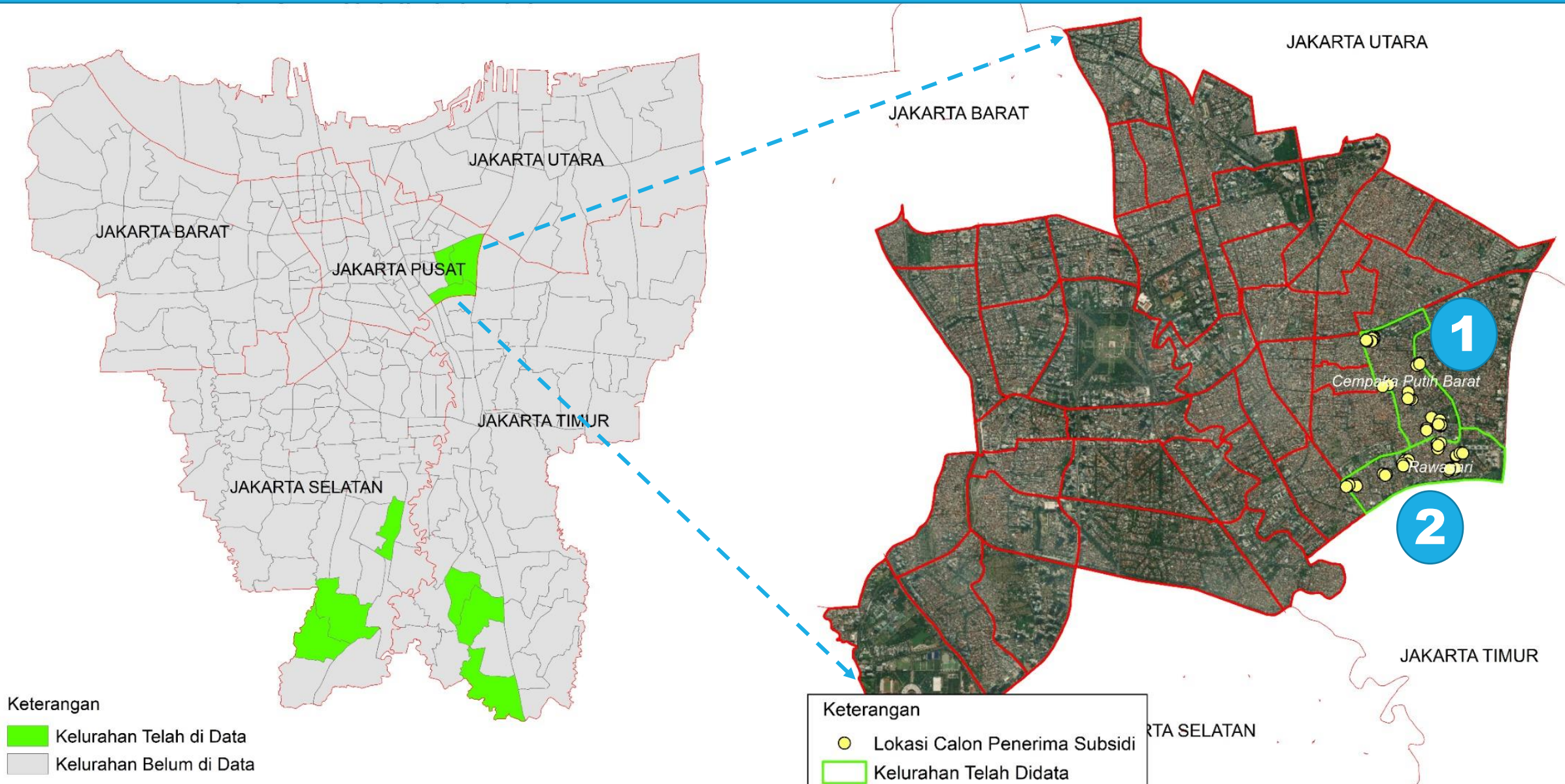
**Scheduled
stakeholders
coordination
meetings**

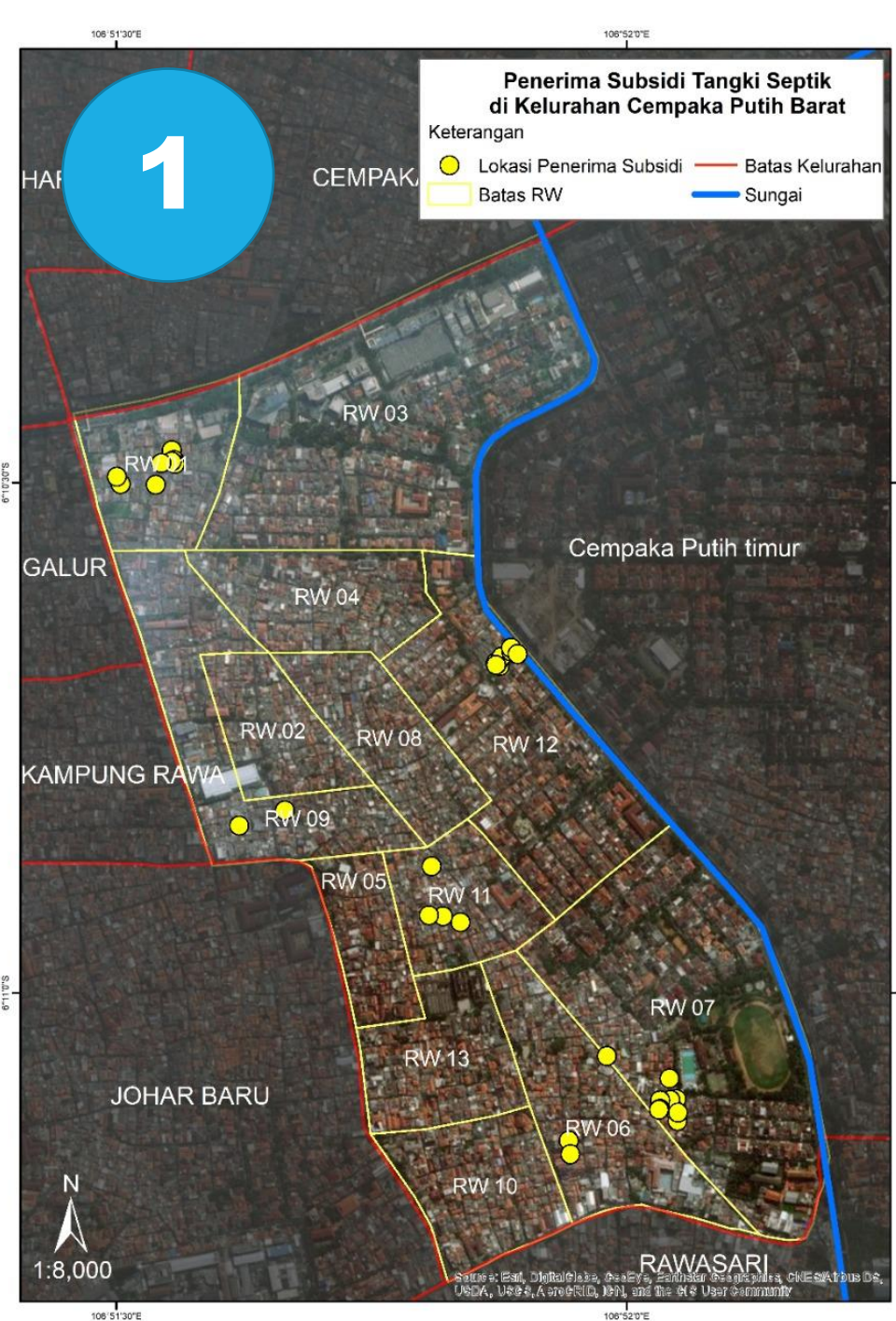
Data Establishment

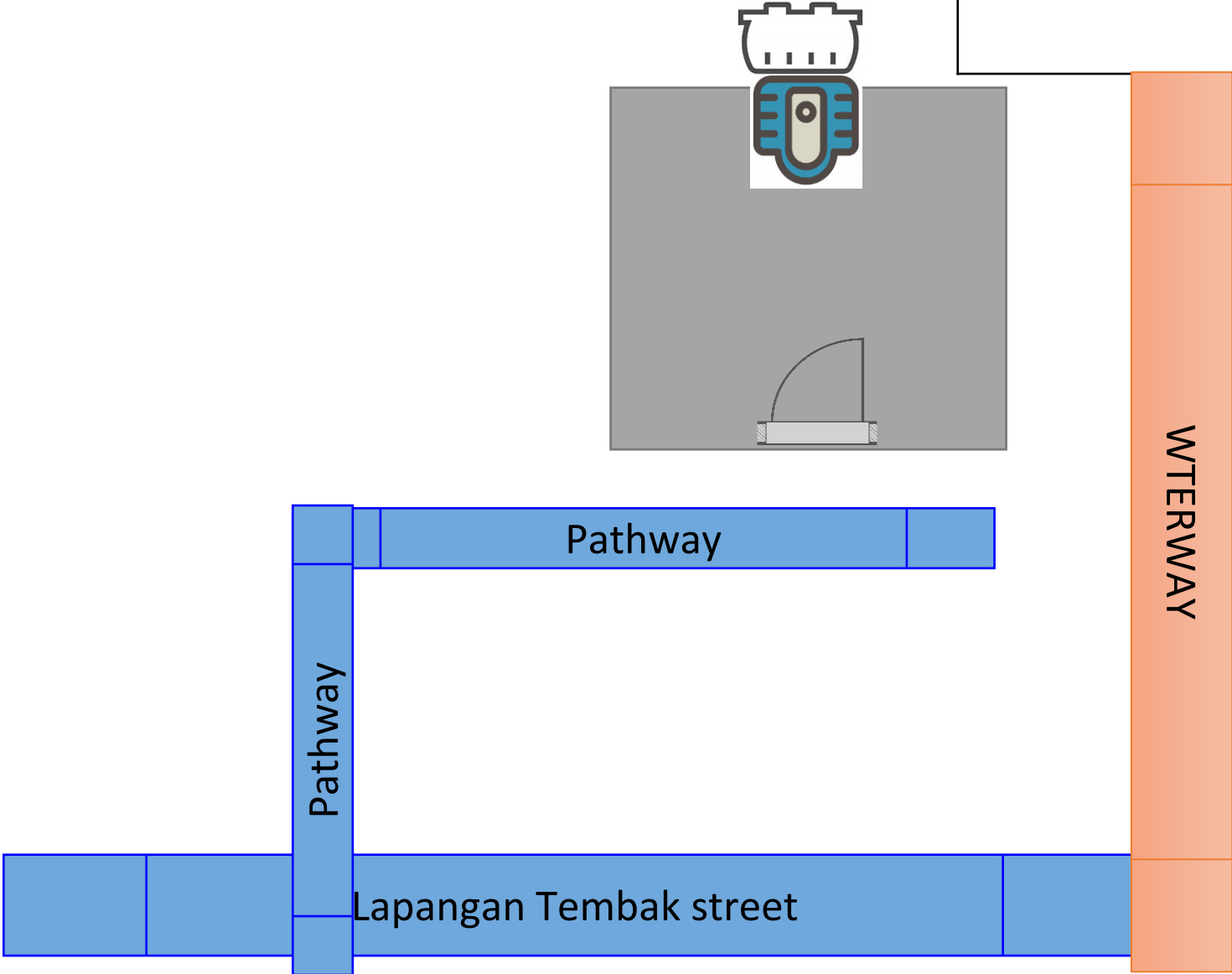
1. Socialization thru all layers in community
2. Interviews, questioners filling thru android application

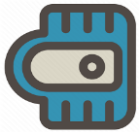
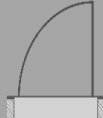
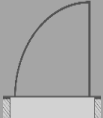
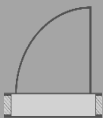


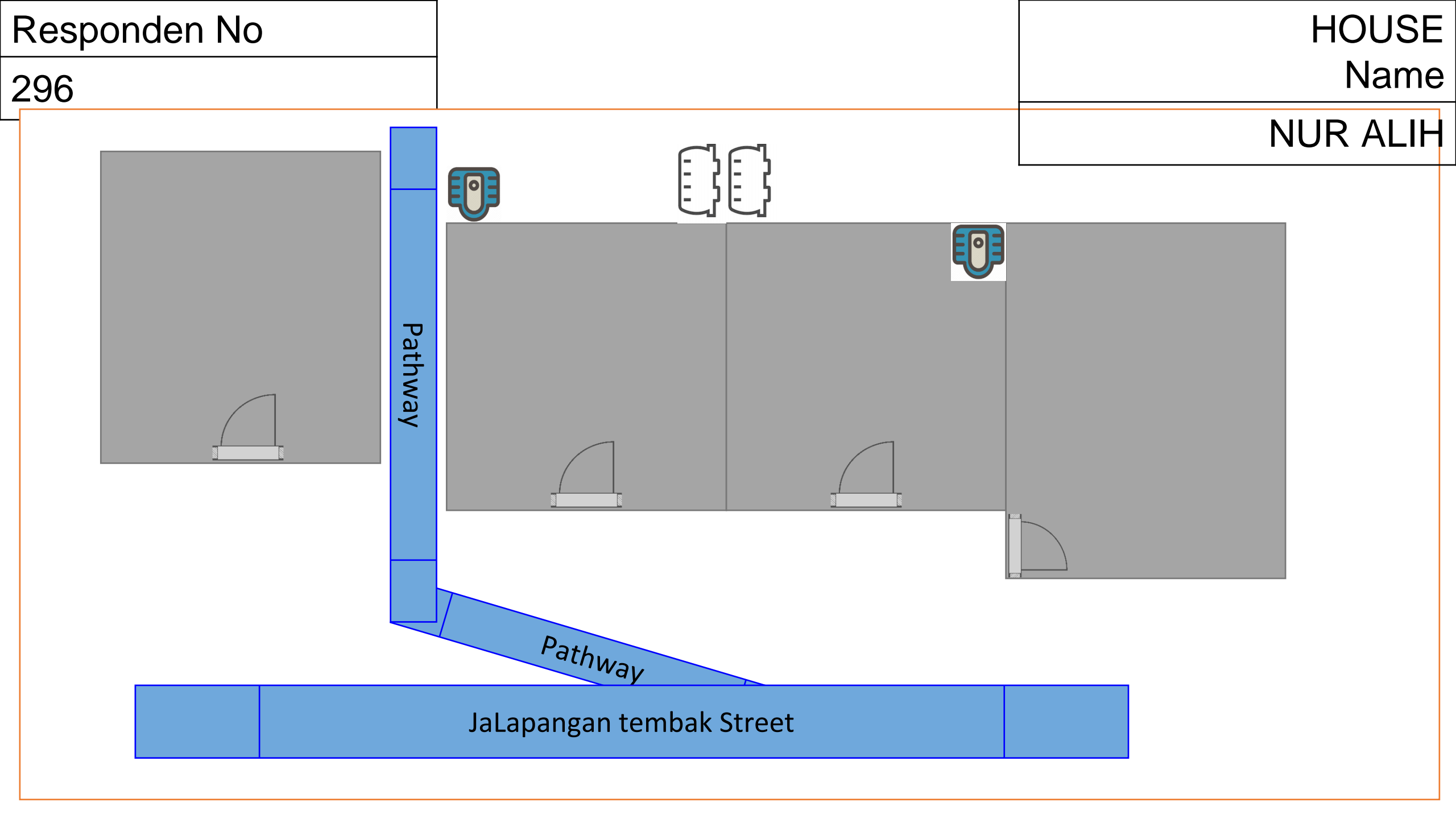
Survey Result





Responden No		HOUSE Name
287		RONI
 <p>The diagram is a site plan enclosed in an orange border. At the top center is a building footprint with a blue door icon. Below it is a grey rectangular area containing a quarter-circle arc and a small grey rectangle. To the left of the building is a blue L-shaped pathway, with the word 'Pathway' written vertically on its vertical segment and horizontally on its horizontal segment. To the right of the building is a vertical orange strip labeled 'WTERWAY' (likely 'Waterway') written vertically. At the bottom is a horizontal blue strip labeled 'Lapangan Tembak street'. The entire plan is set against a white background.</p>		

Responden No.		SMALL HOUSE
293		Name
		JIBRAN
<div><div></div><div></div><div></div></div>		Pathway



The budget of Improved Sanitation Program consists of the cost of procurement Individual Septic Tanks with all the completeness so that Ready-to-use.

Individual Septic Tank is a domestic waste containment and treatment for 1 family

Communal Septic Tank is a domestic waste containment and treatment that serves up to 5 families

Individual Septic Tank (Certified)



Delivery

1. To deliver several septic tanks, use trucks and in the night time to avoid traffic congestion.
2. To deliver less septic tanks, use pickup and it is more useful on narrow streets.
3. Local authority should witness the delivery activities.
4. By schedule, septic tank will hand-carry by the masons to the construction site.



CONSTRUCTION

Preparing septic tank' hole in the ground of beneficiary house



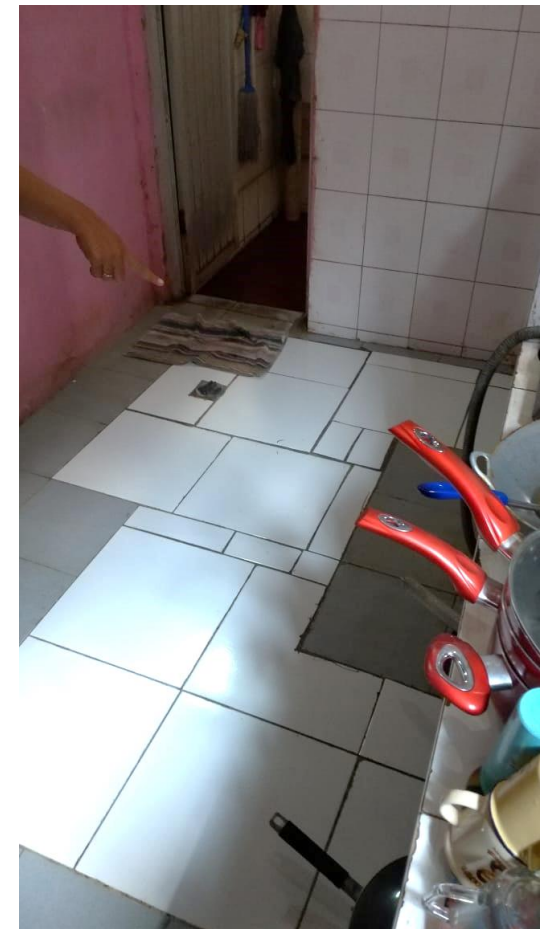
Bringing septic tank inside the house or hole location



Incase the septic tank is wider than the front door, the frame need to be adjust a little.



After construction finished, the tile floor fixed back with the new ones



SURAKARTA

- **What works**
 - Pilot
 - Regulation
 - Private sector
 - IT based operation
 - Upsize of private sector
- **What doesn't work (yet)**
 - How to limit increasing number of provate sector in one city



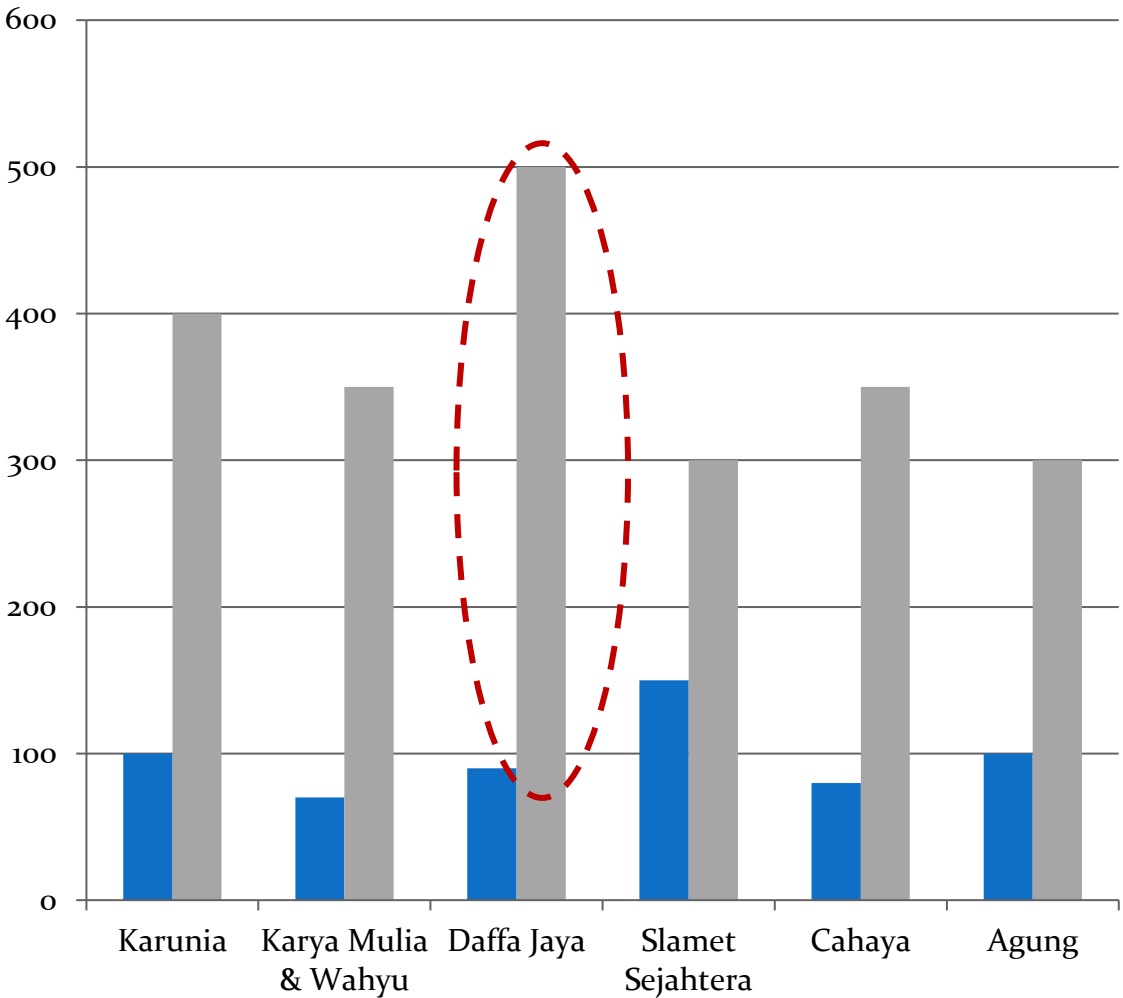
Data
collection of
all private
sector in the
city

Emptying Business	Karunia	Karya Mulia & Wahyu	Daffa Jaya	Slamet Sejahtera	Cahaya
	0271 621624	0271 9135050	0271 7928000	0271 717514	0271 9135050
Owner's name	Sri Tandari	Joko	Dani	Jend Widodo Dina	Ade
Established	2006	2006	2012	1982	2008
Type	Truck	Truck	Truck	Truck	Truck
Number	1	1	2	2	1
Year	1990	1990	1998	1982	1989
Capacity	2,5 m3	3 m3	3 m3	2 m3	2.7 m3
Year of purchase	2006	2006	2012	1982	2007
Price when purchased		Rp 70 millions	Rp. 90 millions	Rp. 150 millions	Rp. 80 millions
Cash/credit	Cash	Cash	Cash	Cash	Cash
Equip cost					
Number of emply	2	2	2 x 2 + 1	2+1	2
Other businesses			Batik trading	Notary	
Number of trips / month	50 - 70	35	60	20	60
Working days	30	25	30	25	30
Customers	Household	Household, Hosp, Hotel	Household	Household, Manuf, Hotel	Household, Factory, Hotel
Areas	Kota Solo Sukoharjo Gemolang Kartosuro	Kota Solo Wonogiri Purwodadi Boyolali	Kota Solo Wonogiri Kartosuro	Kota Solo Pacitan Salatiga	Kota Solo Wonogiri Salatiga Boyolali Sragen, Tw Mangu

Business Performance

From some private sector those operate in the city of Surakarta, comparison between Investment and Income monthly.

Private Sector Business Performance Table



Slamet Sejahtera



Agung



Daffa Jaya



Pilot Activity

Collaboration of 2 (two) Private Sectors

- *20 HOUSEHOLDS TRIAL*
- *DETAILED ACTUAL COST*
- *1 TRIP FOR 2 OR MORE HOUSEHOLDS*
- *1 DAY FOR 3 OR MORE TRIPS*
- *REG-DESLUDGING PAYMENT ARRANGEMENT*
- *EXTRA JOBS PAYMENT ARRANGEMENT*
- *MANUAL TO E-MONITORING*



REGULATION

HOUSEHOLD WASTEWATER MANAGEMENT

SURAKARTA CITY WATER WORKS

MAJORS Decree

- Decree of the Mayor of the Head of District Level II Surakarta Number: 800 / 646 Date : June 10, 1998.
- Regional Regulation of Surakarta Regional Municipality Level II Number : 3 Years 1999 Date : May 27, 1999 on Liquid Waste Management.

Local Government Regulation

- Decree of the LHR Kota Surakarta Number: 29/DPRD/XI/2002 Date : November 29 2002 on: Approval of Determination of Waste Management And Customer Group.
- Decree of the Mayor of Surakarta Number: 15 Year 2002 Date : November 29, 2002 About : Determination of Waste Management And Customer Group.

Local House of Rep

- Decree of the LHR Kota Surakarta Number: 10/DPRD/VI/2004 on Approval Amendment to the Decree of the Mayor of Surakarta No. 15 of 2002 concerning Determination of Waste Management Rates and Waste Customer Group.
- Decree of the Mayor of Surakarta No. 5 of 2004 concerning Amendments to : Decree of the Mayor of Surakarta Number 15 of 2002 concerning Tariff Determination Waste Management and Customer Group.
- Regulation of the mayor of Surakarta number 16 A Year 2014 on Management Stool Mud, August 13, 2014.

ICT Frame Work

Data
process
at UPT
office



Arrive at
location HH
to be desludge

Working and
finished



Start from
PS office



Back to
Private Sector office

Payment to Private Sector



Dumping at
IPLT



FINDING ADDRESS AND SIGNED WO

Finding the address



Introduction self and the program



Q n A, and check the existing septic tank location



Agree on the desludging schedule.
Signed



The Difficult Case

1. After finding the address, introduction the program
2. Checking the black water pipe
3. The septic tank buried under 40cm thick concrete





The Impossible

1. Finding the address
2. Checking the septic tank location
3. End of discussion



DESLUDGING

1. At the date date and time agreed, desludger comes to the house and prepare
2. Put the QR Code sticker on the window and scanned before start the work
3. Desludging
4. After finishing work, the desludger performs another scan as a mark that he has finished working



Paper work of desludging activity

[illegible]

*Work Order from author

SURAT PERINTAH KERJA

Diperintahkan kepada CV. Agung untuk segera melakukan penyedotan septictank
untuk nama-nama pelanggan L2T2 PDAM Kota Surakarta dibawah ini :

NO.	NAMA PELANGGAN	ALAMAT	KETERANGAN
1.	Bagus Teguh Wiyono	Merak IV 10 B RT 01/01	49242
2.	Sulistyo	Merak IV/08 RT 01/01	
3.	Indra Gunawan	Sugiyono 69 RT 03/12	
4.	Salamun	Joglo RT 01/10	

***Customer QR Code stickers**





Closing the loop

1. Arrive at the treatment facility
2. Dumping the sludge
3. Scan the truck's QR Code as a mark of finishing the job

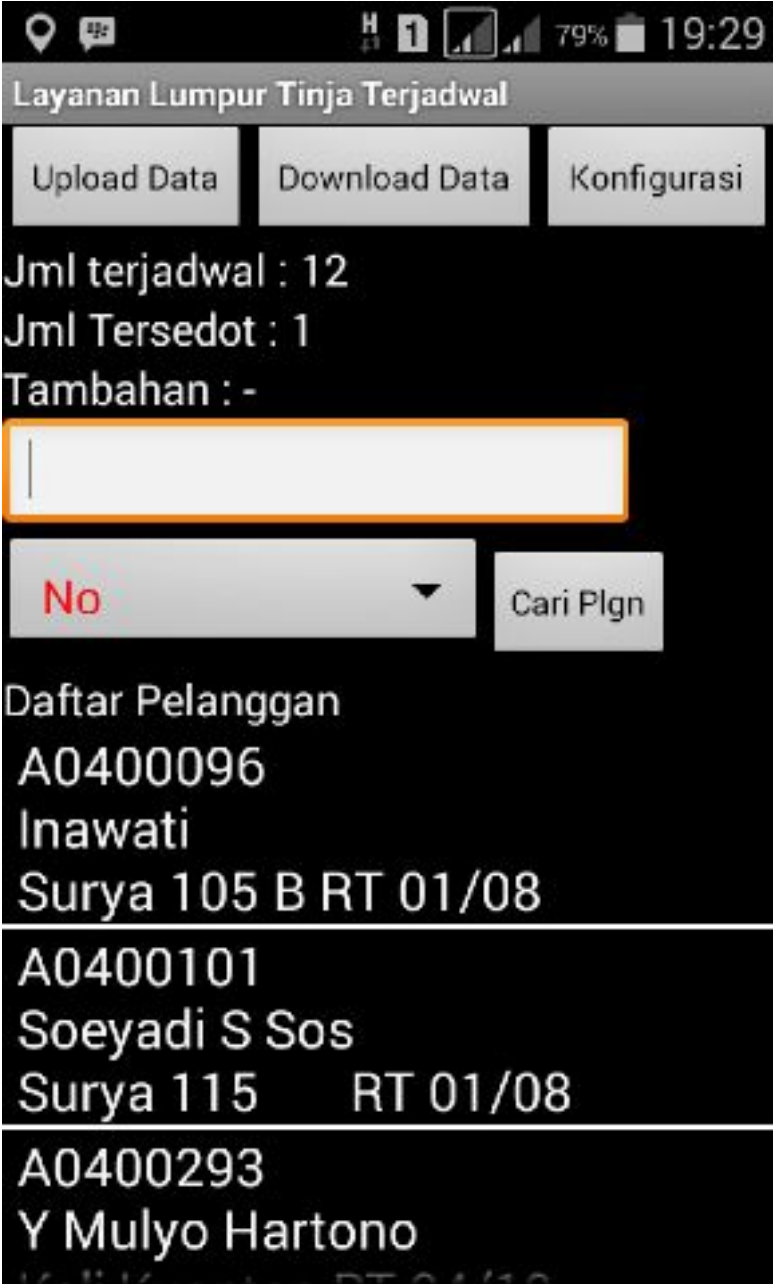


How to manage manual database to digital

- 1. Existing customer data
- 2. Organize by excel database
- 3. Development of assigned customer database on android application
- 4. Generate QR Code stickers

DAFTAR 200 PELANGGAN UJICOBAL2T2
PDAM KOTA SURAKARTA

KECAMATAN	KELURAHAN	NO_PEL_AIR_BERSIH	NO_PEL_L2T2	NAMA	ALAMAT	RAYON	NO_TELP
BANJARSAARI (GUNG)	Banyu Anyar	00038192	B1100001	Sumardi D	Bone II RT 03/02	14020	NULL
	Banyu Anyar	00025141	B1100002	Drs Ramelan Basuki	Matarani VII 7 RT 01/11	14020	716497
	Banyu Anyar	00003686	B1100004	Soejadi	Matarani VIII 1 RT 03/10	14020	733210
	Banyu Anyar	00047505	B1100005	Heru Rustiati	Griya Melati 8 RT 01/12	14020	8138210103
	Banyu Anyar	00030271	B1100006	Sutardiyo	Bone Timur III 15 RT 02/01	14020	271716540
	Banyu Anyar	00024363	B1100007	S.B.Soebroto	Pleret Dlm 3 RT 03/11	14020	271712600
	Banyu Anyar	00026433	B1100008	The Po Hien	Matarani X 2 RT 02/10	14020	737048
	Gilingan	00057955	B1100001	Paryanto	Cinderejo Lor RT 01/04	14039	271711641
	Gilingan	00049242	B1100002	Bagus Teguh Wiyono	Merak IV 10 B RT 01/01	14039	83865396114
	Gilingan	00048502	B1100003	Sri Lestari T	Merak IV 10 RT 01/01	14039	85866396254
	Gilingan	00055601	B1100004	Sulistyo	Merak IV 08 RT 01/01	14039	81393194604
	Gilingan	00049862	B1100005	Kuwat Waliyo Djati	Merak IV 10 RT 01/01	14039	85866398254
	Gilingan	00021511	B1100006	Yoso Sabaroto	Merak III 6	14039	NULL
	Gilingan	00056104	B1100007	Abednego Daliman	Merak IV 28 RT 01/01	14039	8812817881
	Kadipiro	00082475	B0700001	Susiyani Soeroso	Kr Asem RT 05/16 Kadipiro	14001	85725547947
	Kadipiro	00040210	B0700002	Kendosuyanto	Sugiyono 103 RT 01/10	14001	NULL
	Kadipiro	00043972	B0700003	Rudiyanto	Sumber Naya RT 01/12	14001	8156758139
	Kadipiro	00081590	B0700005	Ir Holly Purwanto	Sambirejo RT 01/05	14001	NULL
	Kadipiro	00031933	B0700006	Indra Gunawan	Sugiyono 69 RT 03/12	14001	NULL
	Kadipiro	00041267	B0700007	Salamun	Joglo RT 01/10	14001	271855074
Keprabon	Keprabon	00024446	B0500001	S.Budhiono	Saharjo SH 59 RT 03/05	14012	NULL
	Keprabon	00025777	B0500002	Hadi Soenarto	Saharjo SH 75 RT 05/05	14012	NULL
	Keprabon	00026295	B0500003	Stefanus Sukardi	Ks Diringratan II 1 RT 02/05	14012	630283
	Keprabon	00001940	B0500004	Rmh Suryo Surarjo	Sugiyopranoto 30 RT 02/05	14011	NULL
	Keprabon	00002547	B0500005	J Goenawan	Saharjo SH 81 RT 05/05	14012	NULL
	Keprabon	00001950	B0500006	Tan Tijen Bun	Sugiyopranoto 66 RT 01/05	14011	NULL
	Keprabon	00001955	B0500007	Sumartono	Saharjo SH 69 RT 04/05	14012	NULL
	Keprabon	00053470	B0500008	Dahlia	Panda IV 2 RT 04/03	14007	NULL
	Kestalan	00054085	B0800001	Ny Hj Tumitah	Kestalan 80 RT 01/03	14068	NULL
	Kestalan	00009313	B0800002	Handoyo Tjokro Setio	Monginsidi 115 RT 01/06	14069	NULL
Kestalan	Kestalan	00009314	B0800003	Gunawan Tjokrosetio	Monginsidi 113 RT 01/06	14069	NULL
	Kestalan	00009299	B0800004	Sutiyani BSc	Kestalan 17 RT 01/06	14068	NULL
	Kestalan	00009271	B0800005	Marito Semito	Kestalan IX 3 RT 01/03	14068	NULL
	Kestalan						



Life transformation 2012 - 2021

1. Graduate from Chemical High School
2. 1st Desludging Truck
3. ID Card of registered Private Sector Deslugger
4. 3 trucks and 5 crews



Terima kasih
Thank you

