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INDIAN CITIZENS' BASIC NEEDS

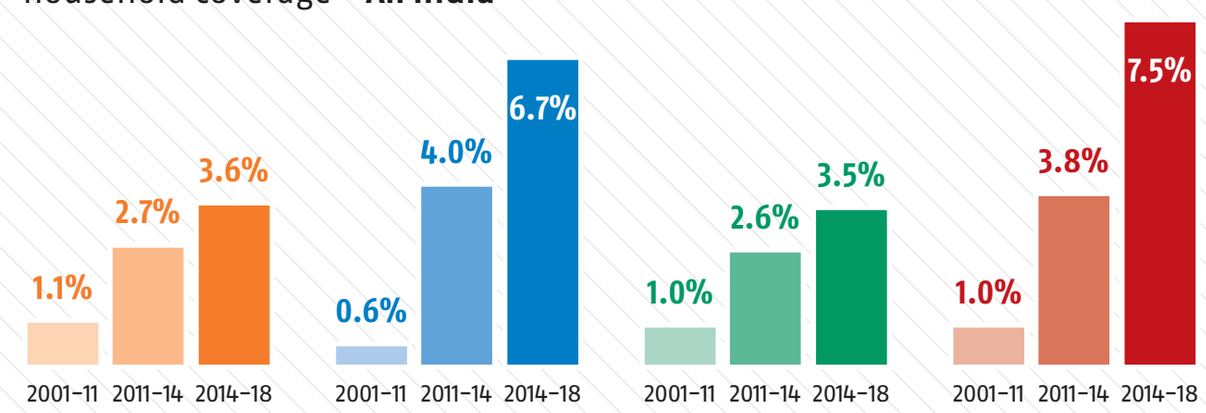
A PROGRESS REPORT

Submitted to

Economic Advisory Council to the Prime Minister (EAC-PM)

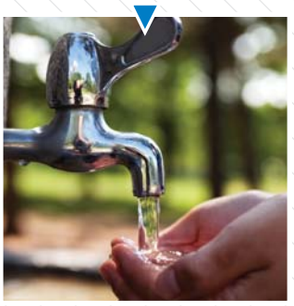
SEPTEMBER 2018

Annual average increase in household coverage – **All India**



Electricity

Tap Water



Toilet

LPG

RAJESH SHUKLA

People Research on India's Consumer Economy (PRICE)

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About PRICE

People Research on India's Consumer Economy (PRICE) is an independent, not-for-profit 'think tank' and 'facts tank' engaged in building and disseminating data based knowledge and insights about India's Consumer Economy and Citizen's Environment, for use in formulating public policy and in shaping business strategy.

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For further information, please contact: rajesh.shukla@ice360.in

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ECONOMIC ADVISORY COUNCIL TO THE PRIME MINISTER
GOVERNMENT OF INDIA

Foreword

The Census has detailed information on household amenities and assets. Unfortunately, by their very nature, Censuses occur at infrequent intervals. The last Census is from 2011 and one will have to wait till 2021 to ascertain improvements registered since 2011. If policy has to be formulated and schemes recalibrated, say in 2018, this does not help. Since Censuses cannot be held every year, surveys become necessary. PRICE (People Research on India's Consumer Economy) is an independent, not-for-profit 'think tank' and 'facts tank' that undertakes such surveys. Any survey is as good as the sampling frame and sample size and both are as good as the organization undertaking the survey. Because of the credibility established by PRICE through its ICE 360^0 surveys in 2014 and 2016, EAC-PM requested PRICE to produce this report and EAC-PM is grateful that PRICE readily agreed. I take this opportunity to thank the PRICE team, Rajesh Shukla in particular, for agreeing to produce this progress report on the extent to which citizens' basic needs are being satisfied.

Basic needs is a broad expression and needs to be pinned down. Census has a wide variety of information on household amenities and assets. Since the objective was to judge the efficacy of government schemes and not over-burden this report, EAC-PM requested PRICE to focus on four amenities - access to electricity, tap water, toilets and LPG. Since the objective was also to benchmark improvements over time, PRICE was requested to track the levels of access (measured in terms of coverage of households) at four points in time - 2001, 2011, 2014 and 2018. Of these, the first two are from the Census. Therefore, the 2014 and 2018 numbers were rendered comparable with the Census figures. Obvious ways to report these in terms of States or the rural/urban definition. However, there are considerable intra-State variations and villages/towns aren't homogeneous either. Hence, PRICE was also requested to report the findings in terms of districts, with districts divided into most developed, those in the middle and least developed. The details are given in Appendix 2. For purposes of these district findings, the indicators are broader than the four mentioned earlier. Finally, instead of a report that is heavy with tables, PRICE was requested to present the results through maps and graphs, attractive visually.

The incremental changes are all positive. Electrification has increased repeatedly, particularly in rural India. These data are for households, not electrification of villages. There are States that do not perform well, relatively, but the increment has been positive across the board. This incremental improvement is marked in the case of the least developed districts. Understandably, the objective now shifts to quality of power, since 24/7 power is still not in reach. The access to tap water also shows improvement and the improvement from 2014 and 2018, is far more than what would have occurred on the basis of linear extrapolation alone. As with electricity, rural households have benefited the most. However, Bihar and Jharkhand still lag. In general, for tap water connections, least developed districts haven't progressed as fast as they have for electricity connections. In such districts, the main source of drinking water continues to be hand pumps. Toilet coverage has also increased sharply in rural India. But this performance mirrors that of tap water connections. The least developed districts, or Jharkhand, don't do that well. With electricity, the focus shifts to quality of electricity. With toilets, the focus shifts to toilets with running water. That may be a reason why households with toilets still defecate in the open. Despite improvements in rural India, LPG connections still exhibit a rural/urban divide. Across those four heads, the other three heads do not record as much of progress as electricity does. The improvement in rural India, as a consequence of the rural sector focus, shows up. However, geographically, the concern areas are also evident, both in terms of States and the least developed districts.

Bibek Debroy

Chairman,
Economic Advisory Council to the Prime Minister,
New Delhi - 110 001

Preface

People Research on India's Consumer Economy (PRICE) is a fact-tank and a think tank set up to provide the 'people-level' 'single window' view on Consumer India and Citizen India. It focuses on how Indians earn, spend, borrow, save, live, think and access public goods.

Despite the good humoured jibes that came our way about the name "People Research", we stayed with it because we observed that in India macro-economic data and supply side data dominated almost all discussions on the country's well being and progress, and very little was based on what these numbers translated into in terms of impact on the lives of Indian citizens. Such data, we have seen in our work, has slayed a lot of beautiful hypotheses, in both the business and policy making arenas as well as in the polity, with ugly facts (to borrow the phrase from biologist Thomas Huxley).

We also decided to go the expensive route of being a fact tank that generates robust, pan Indian, people-level primary data that plugs existing data gaps, while also ensuring compatibility for it to be used in a complementary fashion with large government surveys like the NSS and the Census of India.

People-level data that is representative of all Indians is hard to come by. Critiques and debates around the soundness of policy and the performance of policy makers and governments are typically based on 'supply side' actions and supply side outcomes of policy (e.g. kilometres of road built, number of students finishing high school) rather than what 'people impact' they had (e.g. resultant changes in income earning methods and amount earned). For example we know from macro-economic data that the share of agriculture in India's GDP and even in India's rural economy is shrinking; but from this statistic alone, exactly what the extent and nature of financial dependency of rural households is on agriculture can only be conjectured - and often incorrectly is. This is far better understood from knowing how many households have what proportion of their income coming from farm and non-farm activity, how many households have exclusively non-farm income and is this non-farm income urban connected, agriculture connected or neither? Our data shows that there are 17% of rural households which exist solely on farm income and collectively have 18% share of all the income of rural Indian households; 39% of rural households have both farm and non farm sources of income and 40% share of income, and 40% of rural households have only non farm income (including labour that does not work in agriculture) and have 40% share of income. By our estimates, putting all this together, 35% of rural India's household income is from farm activity at an all India level, obviously varying from state to state.

There are of course the mega data bases of the Census and NSS that do provide the people-level view; but aside from their less than ideal frequency that does not permit a regular feedback loop to business and policy, they also do not have all the measures needed to provide a comprehensive and holistic understanding of what is happening to

'People India'. To do this, we need data on income, expenditure, occupation, education, borrowings, savings, living conditions and access to public goods data to reside in the same data base from the same (or exactly comparable) respondents, so that linkages between them can be understood and used for, say, business opportunity mapping or for policy design. For example in rural India, as a result of having an integrated data base, we see very different patterns of debt borrowing in households with different levels of farm and non farm income - intuitive perhaps, but still needing numbers attached to them to understand performance of the financial services sector more concretely in serving rural India. We also see how much more income is possible as a result of every additional year or additional level of educational attainment, in cities, small towns and villages. Is it any wonder that people drop out of school! We know from the Census of India how many female headed households there are and where they reside; what we additionally know from integrated data base analysis is how many they are by farm (by farm size) /non farm (by type occupation) source of household income.

Another example of basic and crucial information not available in a robust and rigorous fashion is data pertaining to how the country's household income is actually distributed among the almost 300 million households - at the most basic level, how much share of India's income accrues to the poorest 20% and how much to the richest 20% and how much to those in between. Standardised models based on analogous countries can be applied to provide such distribution, but our primary data is often at variance , and with good reason, with these estimates no matter how eminent the source of the estimation. According to our 2016 data, 45% of India's household income resides with the richest 20% of households, almost 8 percentage points down from 2004-05. The poorest 20% have a 7% share of India's household income, up a little less than 2 percentage points from 2004-05. What is even more interesting to see is how this income is spread over different states and rural and urban town classes, different occupational and educational groups, different levels of infrastructure development and so on; and to study these not one at a time, but taken together.

The census tells us that census towns are increasing in number and hence they harbour an increasing population. However what we do not know unless we have people-level information is what income people living in these towns have, and how they earn it. Business analysts talk of the increasing consumption importance of so called tier two and three towns but cannot say much about how much of India's income lives there or how it has grown or what the nature of occupation or living conditions is of people who live here, and whether it is changing over time. It is such data that we strive to generate so that we can go beyond supply side data of how many crores of potato chips and cell phones people in each town class buy, or even the rate of urbanization, which by itself is of limited utility for business planning or urban planning policy.

Finally, there is immense diversity in how the almost 300 million Indian families earn, spend, save, live, think and access public goods. God is found in the detail of the segmented sliced and diced analysis of all India data to uncover patterns and phenomena both known and new.

PRICE has been set up with the mission of providing such macro- consumer or people-level data and insights about Consumer India and Citizen India for use in business strategy and public policy. It is a not for profit company that is committed to putting more and more of its data in the public domain, as has already been done with the pan Indian ICE 360° Surveys of 2014 and 2016 (ICE stands for India's Consumer Economy).

Rigorously collected, all India representative data on multiple parameters, that enables disaggregated and insightful analysis is expensive. This is even more so when we seek to get robust estimates of income, collected using far more rigorous methodology than relying on claimed income by the respondents, as many income surveys do. The last ICE 360° survey we did on India's consumer economy and citizens environment was in 2016, the one prior to that was in 2014. The 2016 survey was made possible thanks to a grant from the Jamsetji Tata Trust, which we gratefully acknowledge. There are significant learnings we have had from mining this data about how India earns, spends, saves, lives, thinks and accesses public goods. We hope we can enthuse more people in worlds of business and public policy to join us and support us in our endeavour to generate more and more people-level, data- driven insights and put in the public domain. We also are seized of the fact that we need to do another round of the ICE 360° survey since a lot of changes have occurred in this period as our estimates for 2018 show in this report. Our spirit in very willing though our flesh is weak! We will however continue to strive to make it happen.

Our grateful thanks also to all the intellectuals who inspire and challenge us to do more, and provide us with opportunities to share our work for a larger good. Thank you Bibek Debroy for all this and for the foreword that sets the context for a data based report with clarity and simplicity.

Rama Bijapurkar

Chairperson,
People Research on India's Consumer Economy,
New Delhi - 110 028

Acronyms

D1 (LD)	Least Developed District Development Cluster
D20 (MD)	Most Developed District Development Cluster
DDC	District Development Cluster
EAC-PM	Economic Advisory Council to the Prime Minister
GOI	Government of India
ICE	Indian Consumer Economy
LPG	Liquefied Petroleum Gas
PCA	Principal Component Analysis
PRICE	People Research on India's Consumer Economy
UTs	Union Territories

Unit Conversion

1 Crore = 10 Million

1 Lakh = 0.1 Million

Contents

TOPICS

Indian Citizens' Basic Needs
A Snapshot

Over the years there has been a shift in the development discourse. Progress in development is no more defined on the basis of overall income growth of the economy, but rather on the quantum reduction in the share of population deprived of 'basic needs'. The present report makes an attempt to analyse the progress of India with regard to four important essential needs during 2001-2018. These are access to electricity, tap water, toilet facility and LPG. The report analyses the group disparity in all these amenities across states, between rural and urban areas and more importantly among twenty heterogeneous district clusters[1].

It needs to be kept in mind that the data pertaining to 2001 and 2011 are from the Census of India (2001 and 2011) and the data pertaining to 2014 and 2016 are from ICE 360° pan India household surveys[2]. The data pertaining to 2018 are estimated for rural and urban areas separately for each district development cluster and each state using data from Census 2011 and ICE 360° surveys.

Overall, the trends suggest a significant improvement in access to household amenities across the country during 2011-14 and further at much faster pace during 2014-18.

Electricity: The proportion of households with electricity connections has moved up 14 percentage points to reach an estimated total coverage of 89% over the past four years (2014-18) against 8% during 2011-14.

Tap water: Over the same period, the proportion of households with tap water in their homes has increased by 26 percentage points to achieve an estimated 65% total coverage during 2014-18 against 12 percentage points increase during 2011-14.

Toilet: The proportion of households with toilets has moved up by 14 percentage points during the last four years with total coverage reaching an estimated 68% compared to an increase of 7 percentage points during 2011-14.

LPG: Access to liquefied petroleum gas (LPG) connections has risen sharply, with an estimated 67% households reportedly using LPG as cooking fuel in 2018 as against 40% in 2014 and 28% in 2011.

1 A district cluster is a group of homogeneous districts identified based on composite principal component scores calculated for all 640 districts using a set of 19 district development indicators available from Census 2011. These indicators include urbanisation, female literacy, share of minority community, access to basic amenities (electricity, toilet, tap water and LPG), access of banking facilities and ownership of selected consumer goods. (for more detail refer **Appendices 2, 3 and 4**). District development clusters are labeled D1 to D20 in this report (D1 — Least developed district cluster and D20 — Most developed district cluster).

2 ICE 360° surveys' data is collected through stratified multi-stage probability sample design. For 2013-14 survey, the data was collected from 20,195 households - 5,997 in rural India and 14,198 in urban India, while in 2015-16, 61,000 households were surveyed- 25,000 in rural India and 36,000 in urban India. Both the surveys collect data on household characteristics, particularly about living facilities and amenities, socio-economic background of household, and the micro environment surrounding the dwelling unit. Details about the survey is given **Appendix 1** and also available at www.ice360.in.

The average annual growth in access of household amenities has been faster during 2014-18 compared to 2011-14 and 2001-11.

- The rate of growth of electrification of households has grown from 1.1% in the 2001-2011 period to 2.7% in 2011-14. Pace of annual growth during 2014-18 is 3.6% for all-India.
- At an all-India level the growth in tap water connections was 6.7% in 2014-18 compared to 4% in 2011-14 and hardly 0.6% in 2001-11.
- At an all-India level, the growth in penetration of households with toilets was 1% during 2001-2011, 2.6% in 2011-14 and 3.5% in 2014-18.
- Pace of growth in penetration of LPG has been 7.5% during 2014-18 at the all-India level compared to 3.8% in 2011-14 and hardly 1% in 2001-11.

A majority of the benefits have been accrued to rural households and this is not surprising as the period 2011-2018 has seen a significant boost to rural fortunes, particularly toilet ownership and LPG connections. For instance, estimated toilet coverage grew by a staggering 19 percentage points between 2014 and 2018 in rural areas as compared to 2 percentage points in urban areas. Similarly, LPG connections for rural India have jumped by 36 percentage points during the last four years whereas growth in urban India has been 16 percentage points.

On the flip side, the households that are still deprived in terms of access to these amenities also belong to rural India. There were about 3.3 crore off-the-grid Indian households, 10.2 crore households without access to tap water, 9.4 crore households lacking toilet facilities, and 9.7 crore households not having LPG connections. Majority of such households (84% to 97%) are located in the rural areas of poor district clusters of backward states.

Needless to say, a lack of basic needs has important implications on quality of life of ordinary citizens and their health. Dimension of every basic need has its own characteristics, challenges as well as opportunities. What is, therefore, needed is ***'focused priorities and customised interventions'*** particularly in the deprived geography with poor performance. Further, it is far more insightful and actionable to assess deprivation broken down by different dimensions rather than be in the quest of a single.

The mission to achieve universal access of "Basic Needs" — *electricity for all, sanitation for all, safe drinking water for all, and LPG for all* — is indeed an ambitious goal. We now have to look forward to seeing how quickly the most critical goal is accomplished.

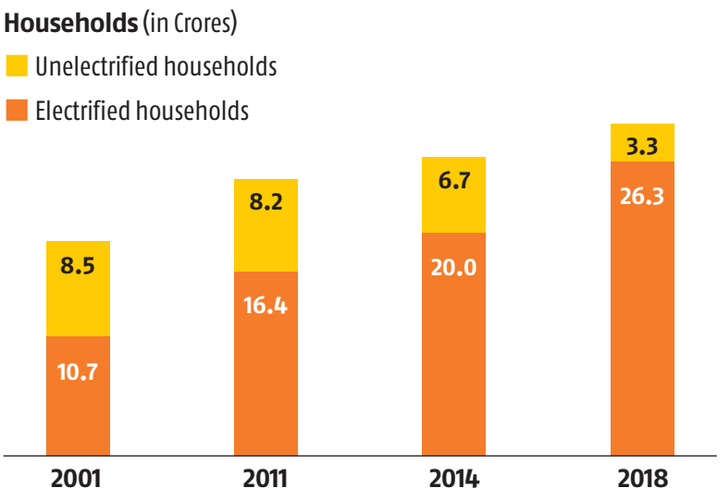
Electrifying India – The quest for 'power for all'

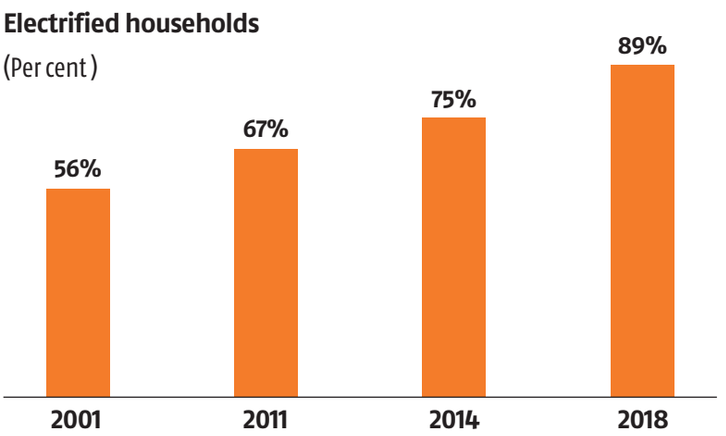
Powering Progress

India has achieved very high household penetration on electrification with nearly 89% (26.3 crores) of the country's households having access to electricity.

The pace of growth recorded is 14 percentage points during 2014–2018 against 8 percentage points during 2011–2014.

Progress in access to electricity– All India





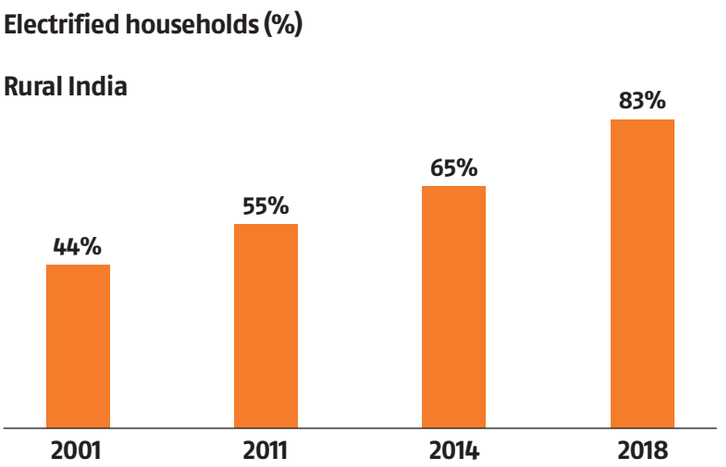
Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

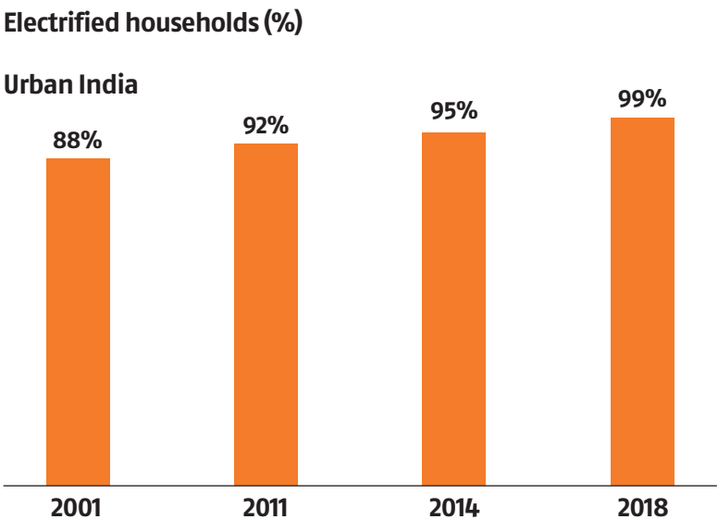
Rapid pace of rural electrification...

Electrification of rural households took a quantum leap of 18 percentage points during 2014–2018 period as against 10 percentage points during 2011–2014.

Urban India is headed towards universal access of electricity.

Progress in access to electricity: Rural vs. Urban





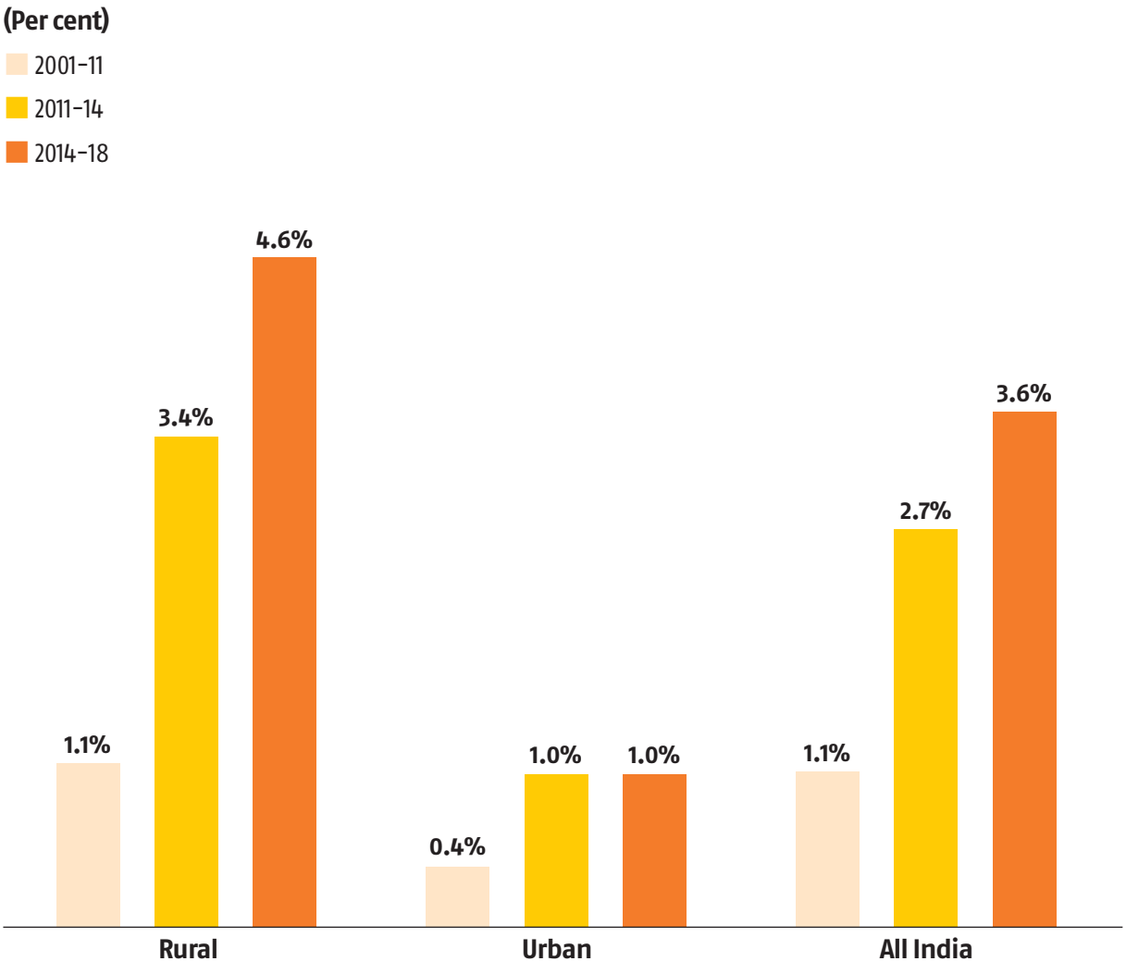
Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Rural electrification has significantly contributed to overall change...

Annual average rate of growth of rural electrification has grown from 1.1% in the 2001–2011 period to 3.4% in 2011–2014.

Pace of annual growth during 2014–2018 is estimated at 4.6% for rural India as compared to 1% for urban India and 3.6% for all-India.

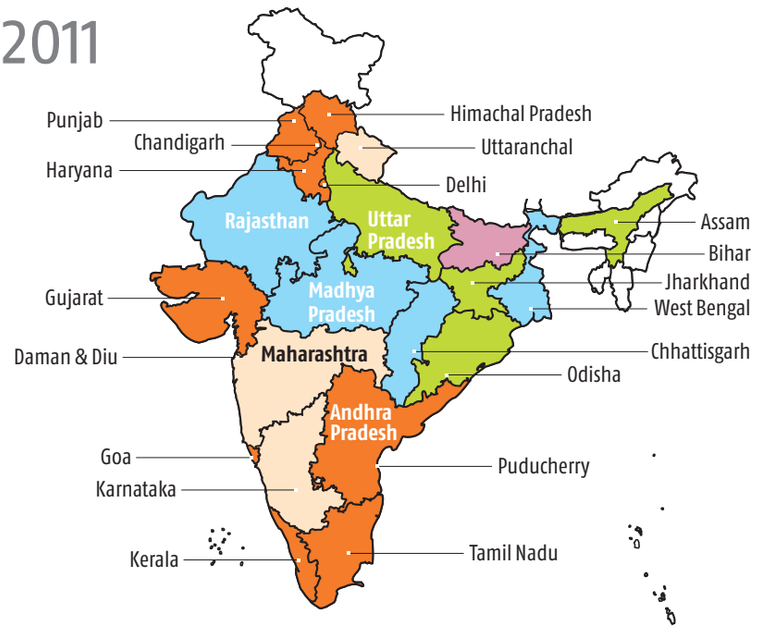
Average annual increase in households' access to electricity



Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

India's Power-Haves & Have-Nots

2011



2018

Progress of states & UTs in access to electricity – All India

Level of access to electricity
(% of households)

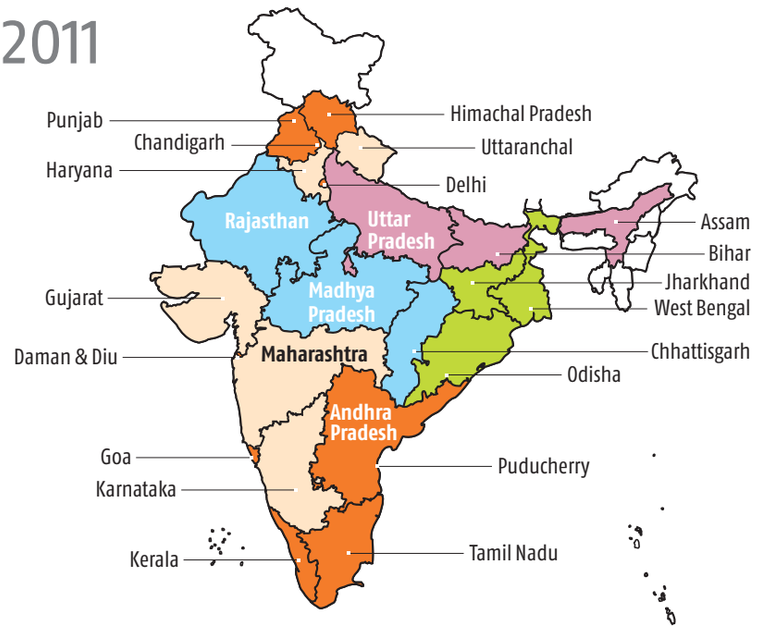
	Number of states & UTs	
	2011	2018
Over 90%	12	17
70–90%	3	5
50–70%	4	2
30–50%	4	–
< 30%	1	–

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Powering Up Progress in Rural India

2011



2018

Progress of states & UTs in access to electricity – Rural India

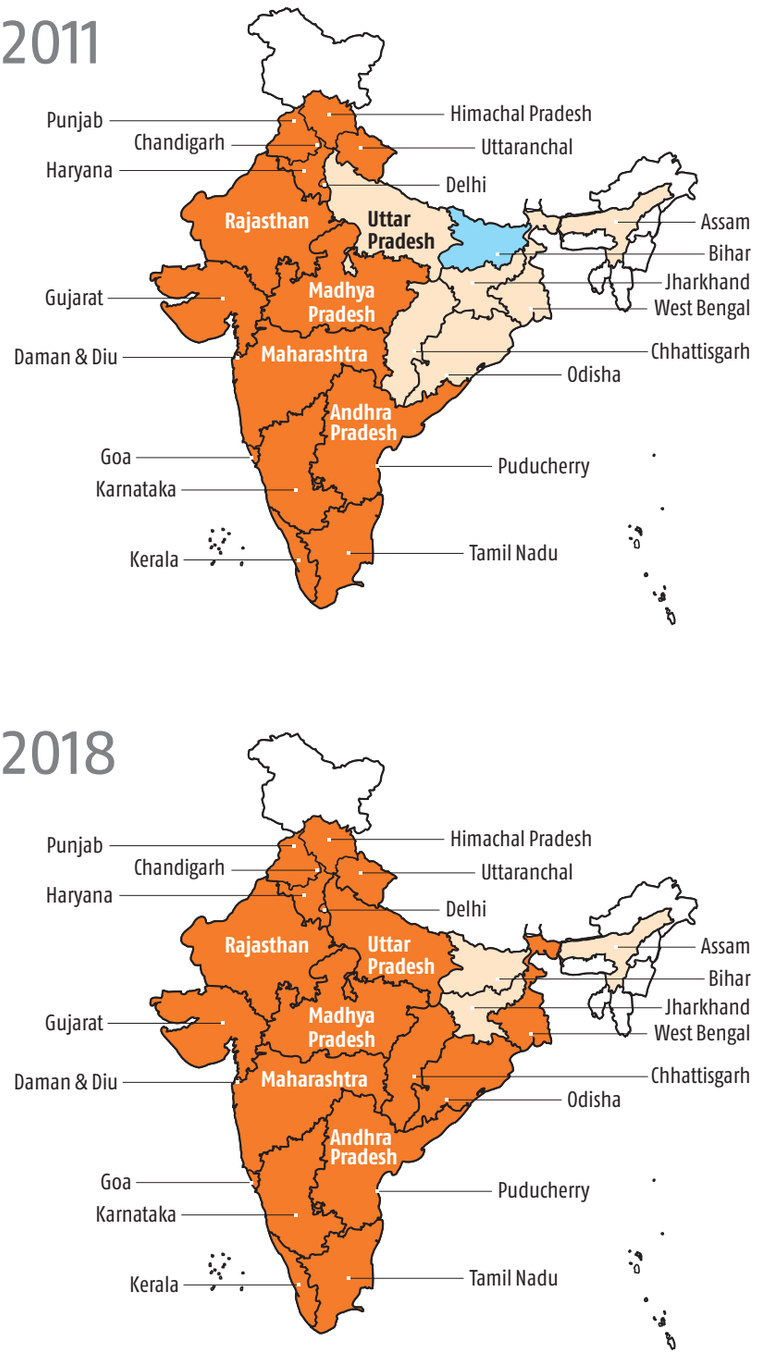
Level of access to electricity
(% of rural households)

	Number of states & UTs	
	2011	2018
Over 90%	10	16
70–90%	5	6
50–70%	3	2
30–50%	3	–
< 30%	3	–

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Urban India moving towards Universal access to Power



Progress of states & UTs in access to electricity – Urban India

Level of access to electricity
(% of urban households)

	Number of states & UTs	
	2011	2018
Over 90%	17	21
70–90%	6	3
50–70%	1	–

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

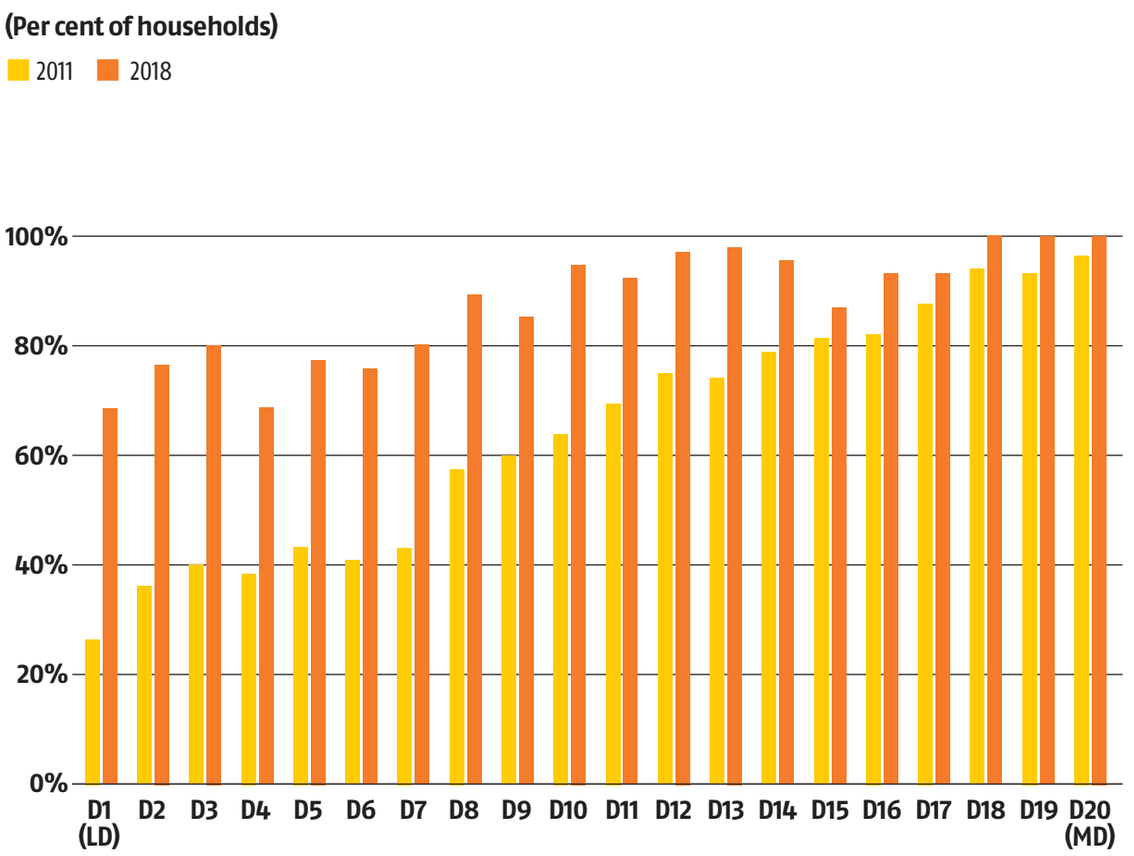
Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Uniformly explosive growth in access to electricity

Across India, all district clusters – ranging from least developed (a group of bottom 32 districts) to most developed (top 32 districts) – have made huge strides during the 2011–2018 period.

The top three district clusters (top 96 districts) have already achieved universal access to electricity.

Progress of DDCs* in access to electricity – All India



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

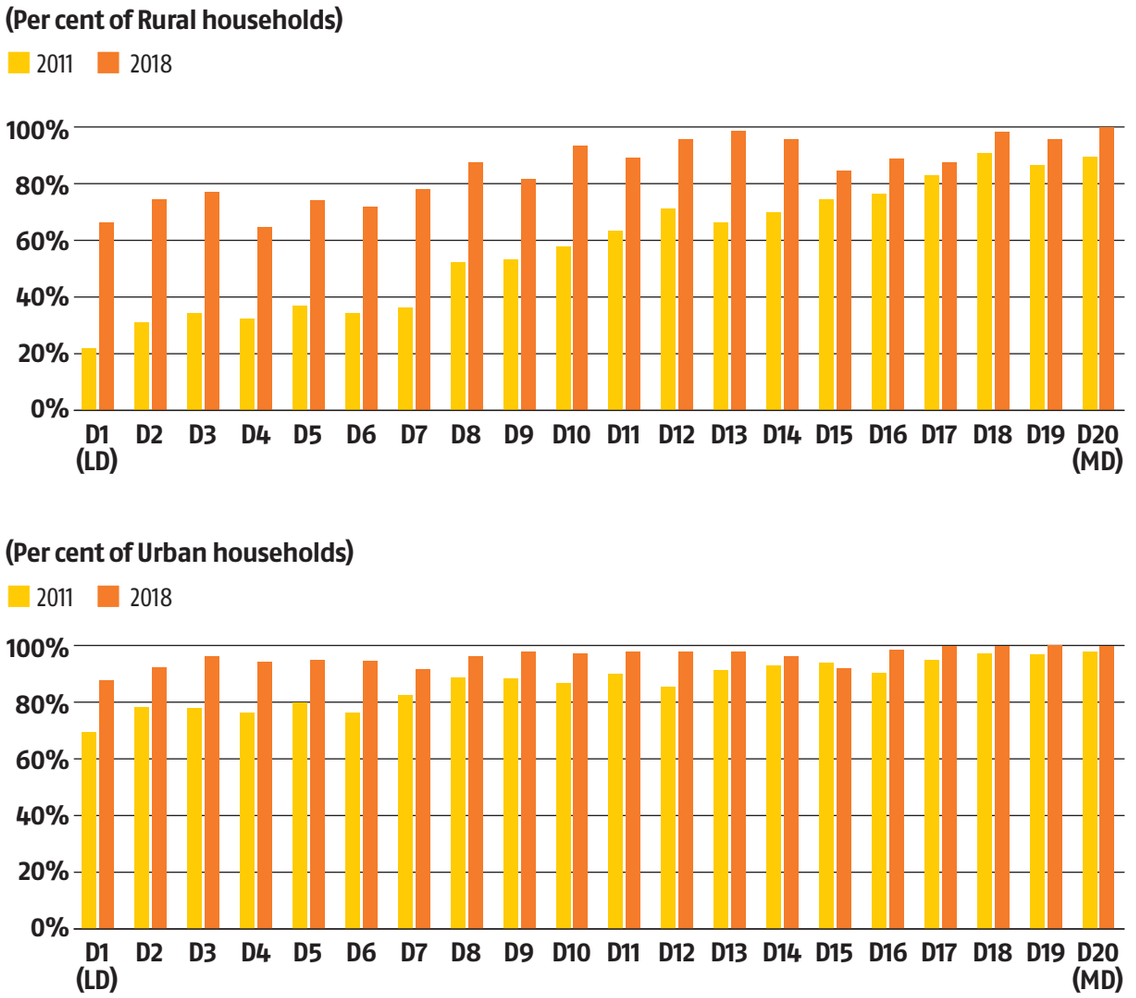
Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Powering Up Progress in Rural District Clusters

The most impact has been felt in Rural India – Electricity coverage jumped by more than 30–45% even in the bottom four least developed district clusters (D1–D4).

Urban India is heading towards universal access of electricity coverage.

Progress of DDCs* in access to electricity: Rural vs. Urban



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

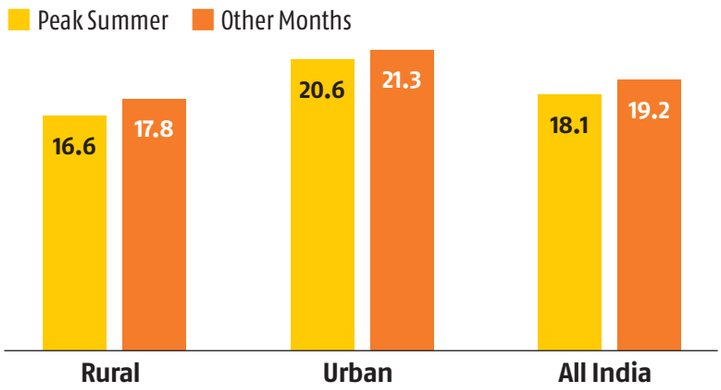
24/7 power is still not within reach

During peak summer power availability is restricted to about 18.1 hours and in non-summer months it is slightly more at 19.2 hours.

The least developed rural district (D1) gets just 14.7 hours of electricity during peak summer months compared to 17.9 hours for its urban cousin.

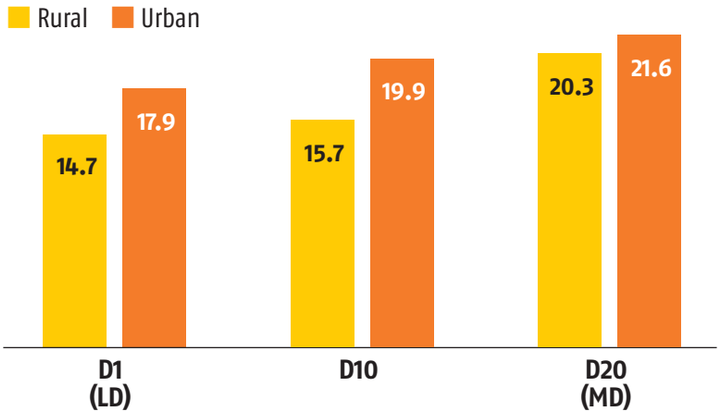
Electricity supply

(Hours per day)



Electricity supply in peak summer

(Hours per day)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

Source: ICE 360° Survey (2016)

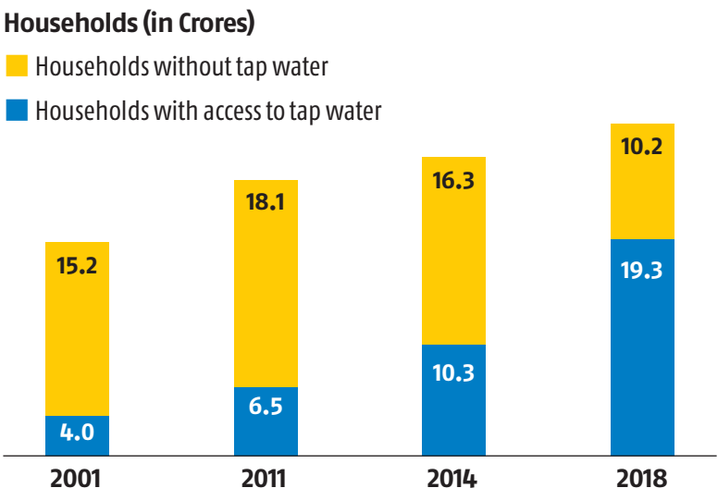
Access to piped and safe drinking water in India

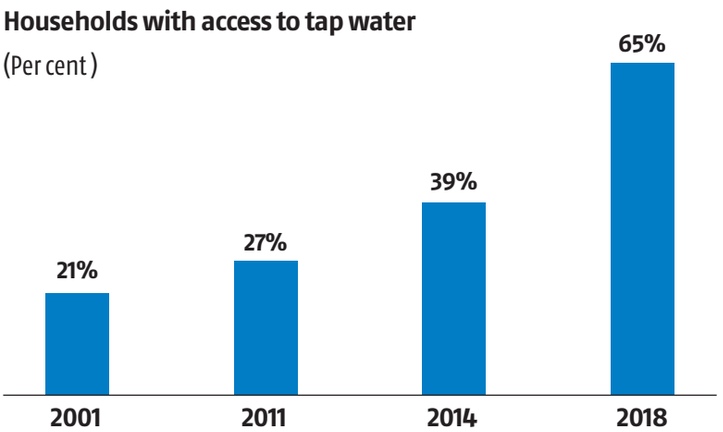
Access to tap water has grown rapidly

4 crore Indian households in 2001 had tap water compared to 19.3 crore households in 2018.

Over last 4 years, the growth has been a remarkable 26 percentage points against 12 percentage points during 2011–2014.

Progress in access to tap water– All India





Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

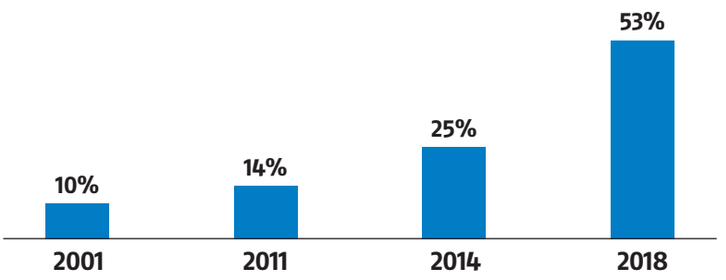
Both Rural and Urban India registered impressive growth...

Growth of households with water connections increased at a much faster pace in rural India (28 percentage points) as compared to urban India (22 percentage points) during 2014–2018.

Progress in access to tap water: Rural vs. Urban

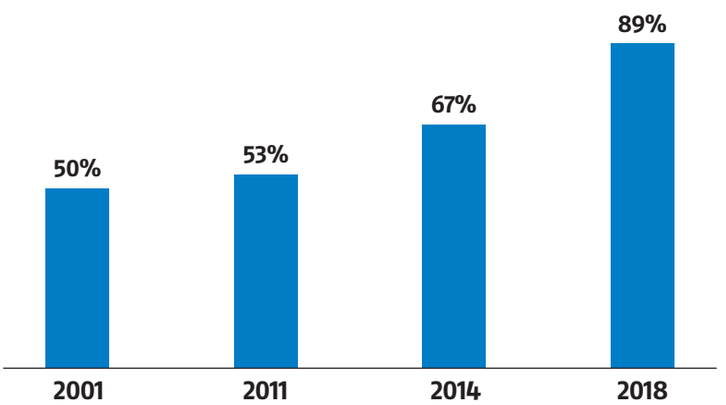
Households with access to tap water (%)

Rural India



Households with access to tap water (%)

Urban India



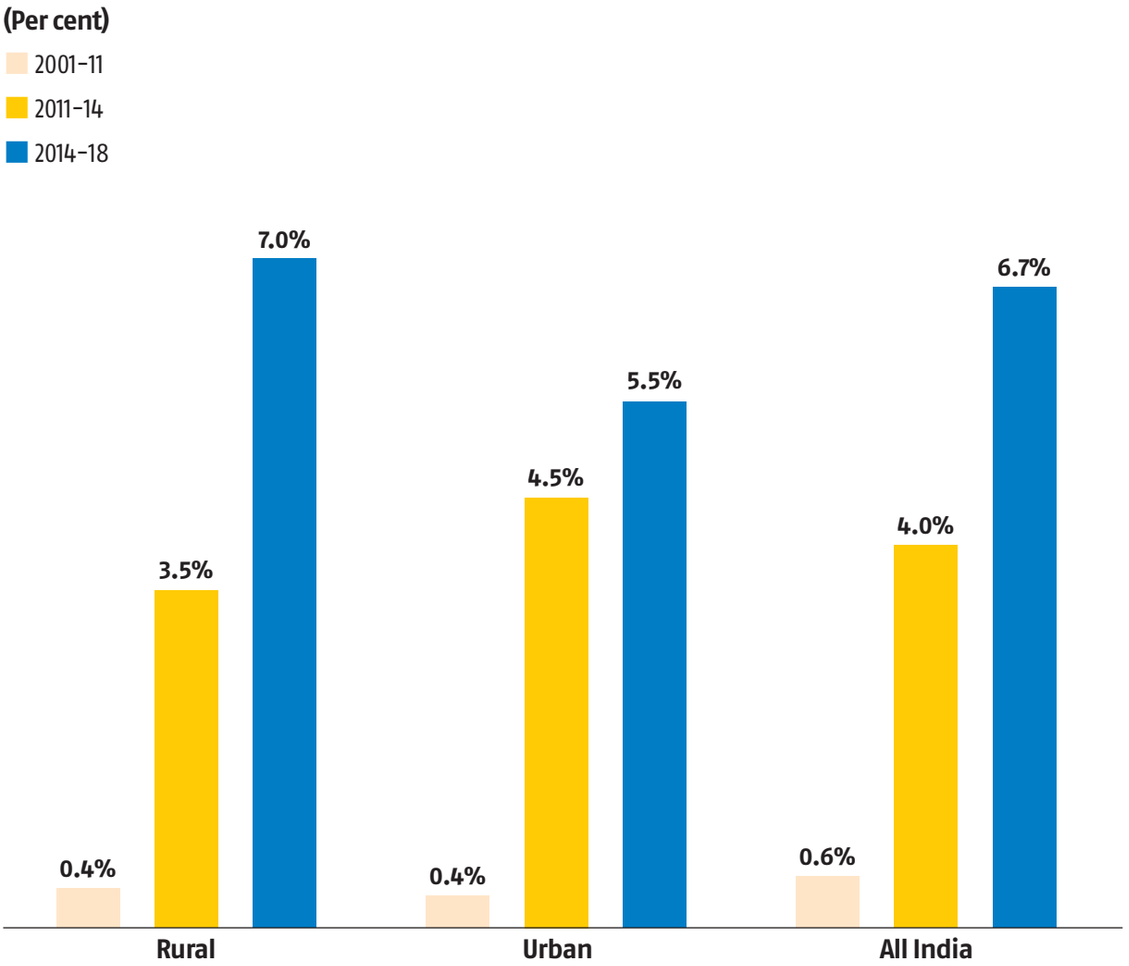
Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Rural households have benefited the most

At an all-India level the annual average increase in water connections was 6.7% in 2014-2018 compared to 4% in 2011-14 and 0.6% in 2001-11.

The pace of annual average growth in rural water connections jumped from 3.5% during 2011-14 to 7% in 2014-18

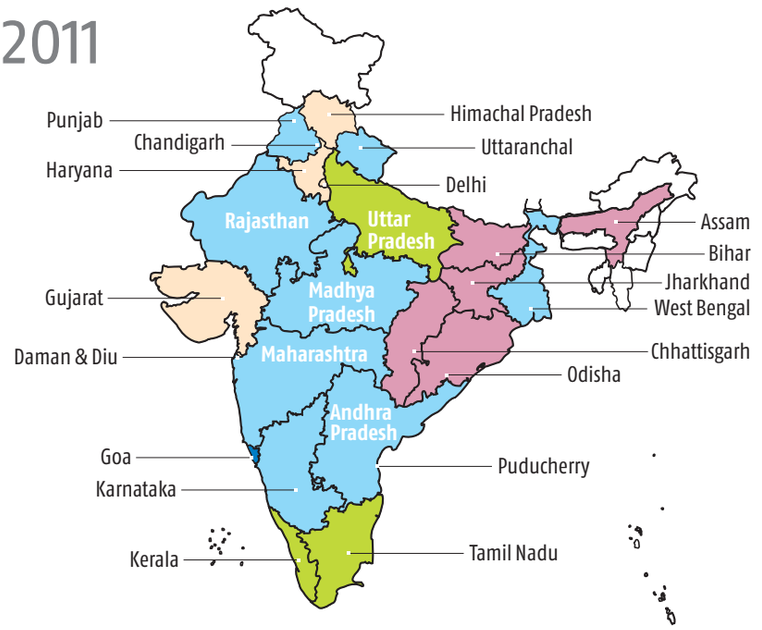
Annual average increase in households' access to tap water



Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Water access is a priority for most states

2011



2018

Progress of states & UTs accessing tap water – All India

Level of access to tap water
(% of households)

	Number of states & UTs	
	2011	2018
Above 70%	3*	15
50–70%	5	1
30–50%	6	3
10–30%	5	4
Below 10%	5	1

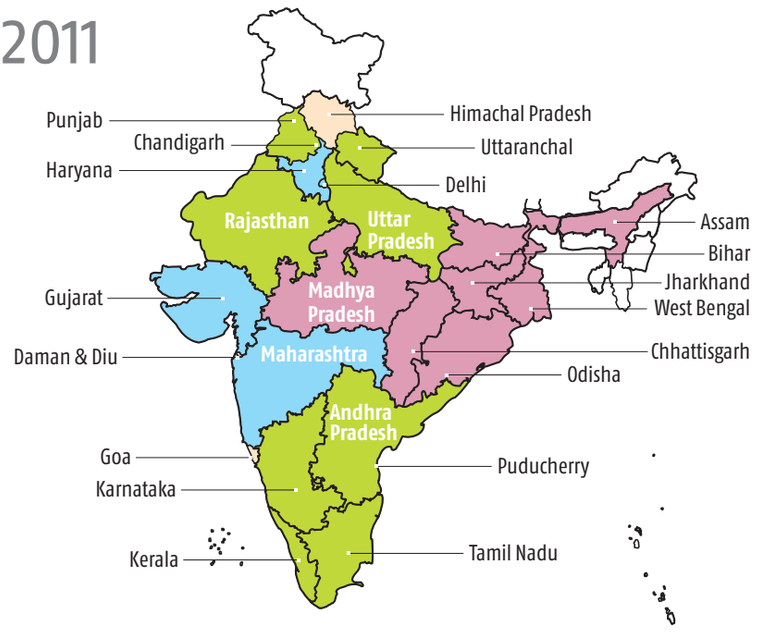
Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Includes Chandigarh, Goa and Puducherry

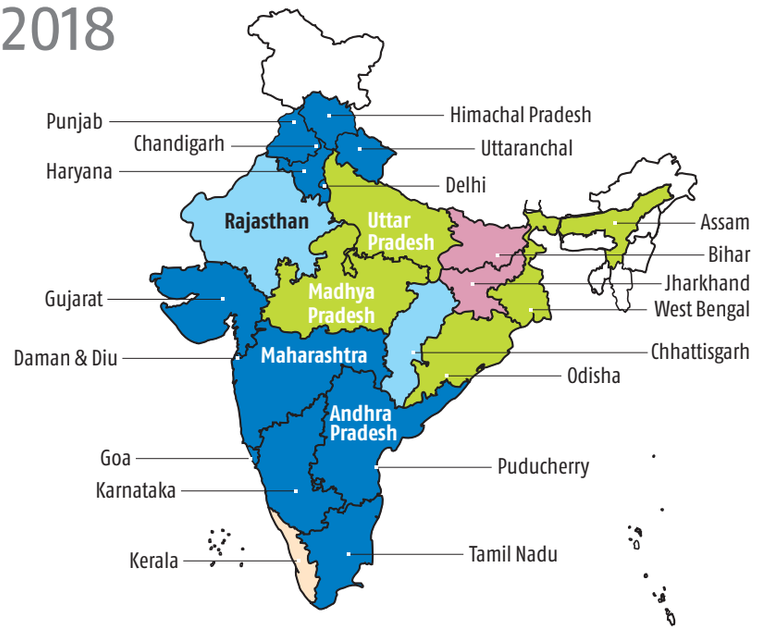
Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Tap water situation has improved dramatically in Rural India

2011



2018



Progress of states & UTs accessing tap water – Rural India

Level of access to tap water
(% of rural households)

	Number of states & UTs	
	2011	2018
Above 70%	1*	14
50–70%	4	1
30–50%	4	2
10–30%	8	5
Below 10%	7	2

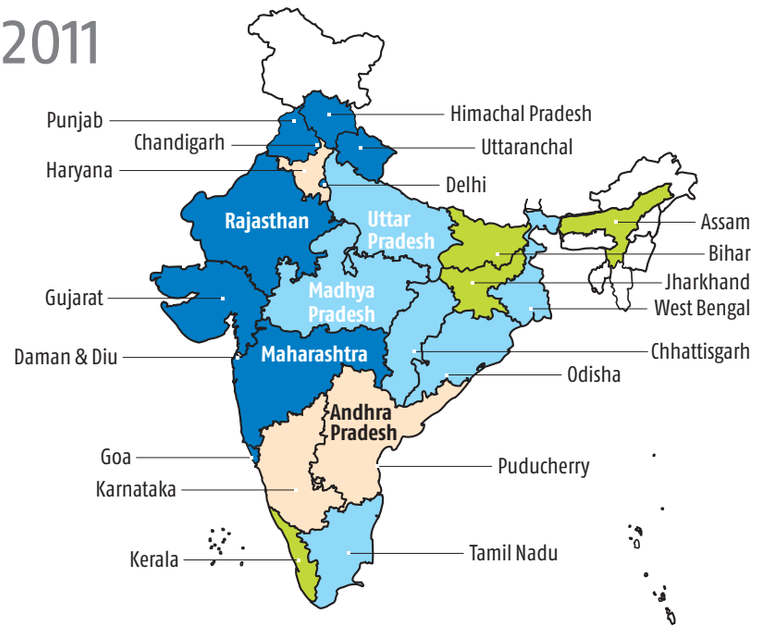
Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Chandigarh

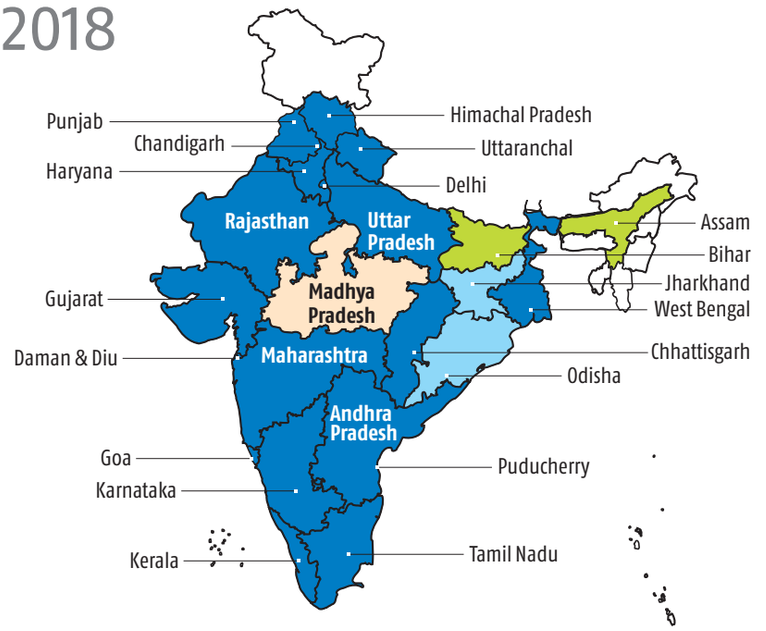
Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Tap water connections have been more prevalent in urban India

2011



2018



Progress of states & UTs accessing tap water – Urban India

Level of access to tap water
(% of urban households)

	Number of states & UTs	
	2011	2018
Above 70%	10	19
50–70%	4	1
30–50%	6	2
10–30%	4	2

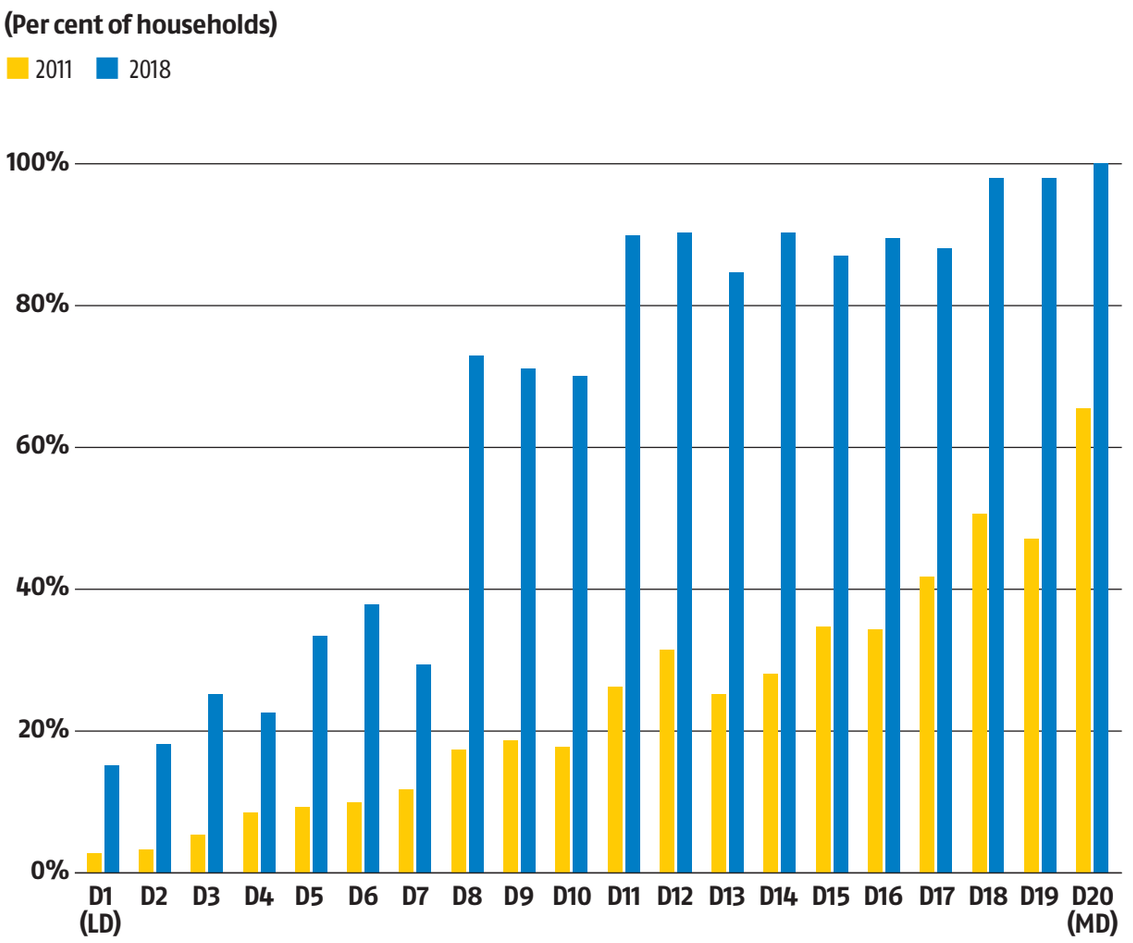
Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Access to tap water is lowest for least developed district clusters

At the all-India level, only about 15%-38% households in the least developed district clusters (D1- D7) have access to tap water compared to D8-D20 clusters where 70%+ households have tap water.

Progress of DDCs* in access to tap water – All India



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

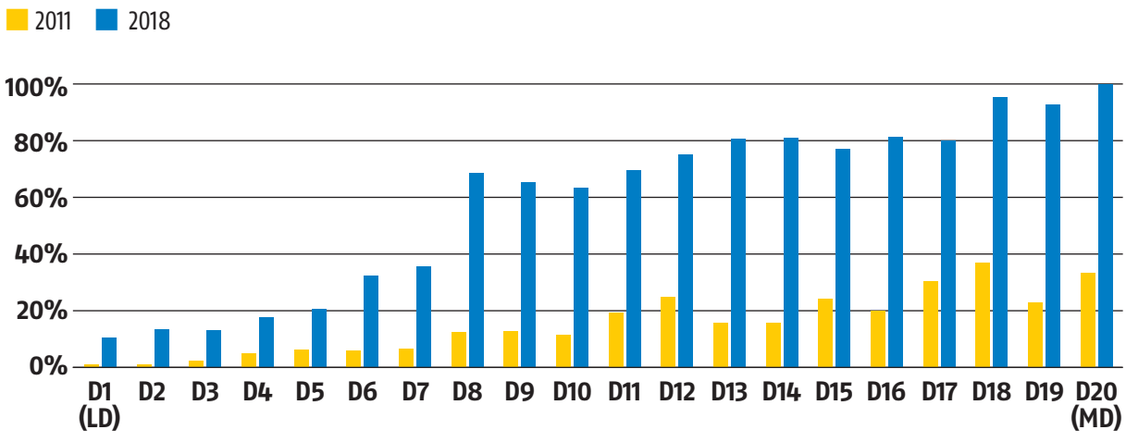
Bottom rural district clusters are most deprived to tap water connection

Rural clusters (D1–D5, 160 districts) are the most deprived when it comes to tap water. Just about 11%–21% households in these clusters get tap water.

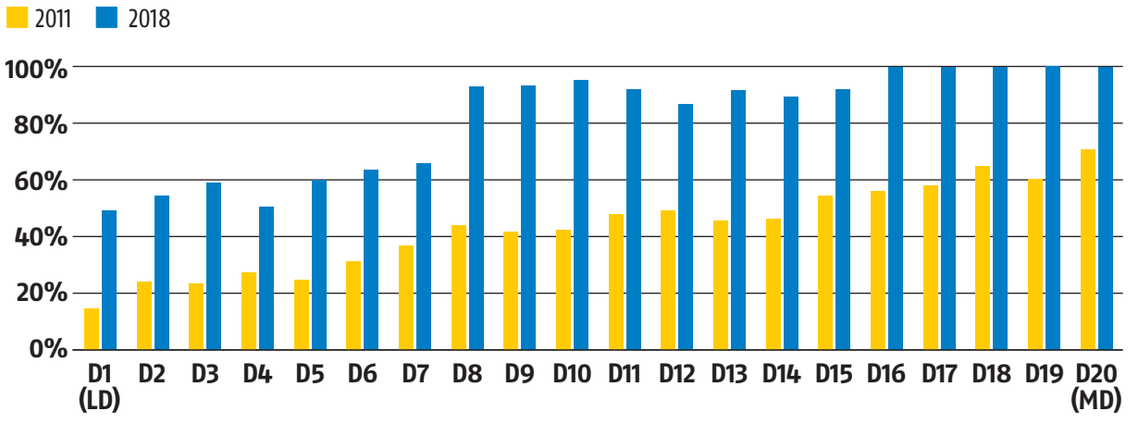
Urban clusters are more privileged and even the least developed 0(D1–D4) have 49%–59% households with water connections.

Progress of DDCs* in access to tap water – Rural vs. Urban

(Per cent of Rural households)



(Per cent of Urban households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

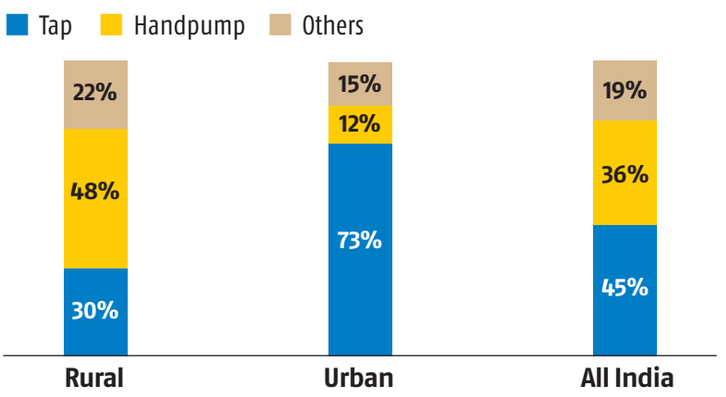
Tap water is for the better off while handpump is for the underprivileged

For majority of urban households (73%), tap water is the main source of drinking water while for rural households (48%), it is the hand pump.

79% of households in least developed district cluster use handpumps for drinking water purposes while 84% households in the most developed districts access water from taps.

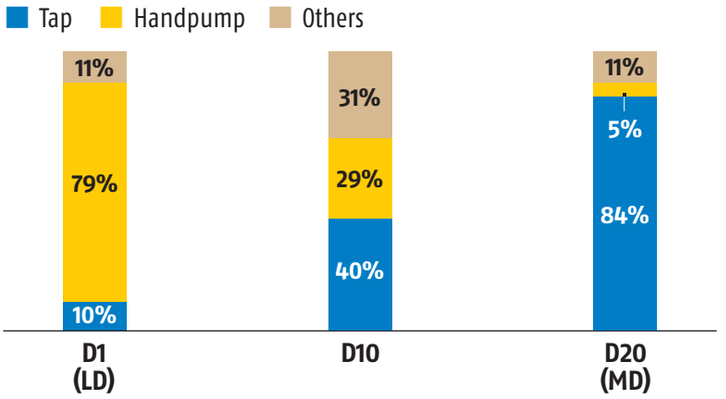
Major source of drinking water by location

(Per cent of households)



Major source of drinking water by DDCs*

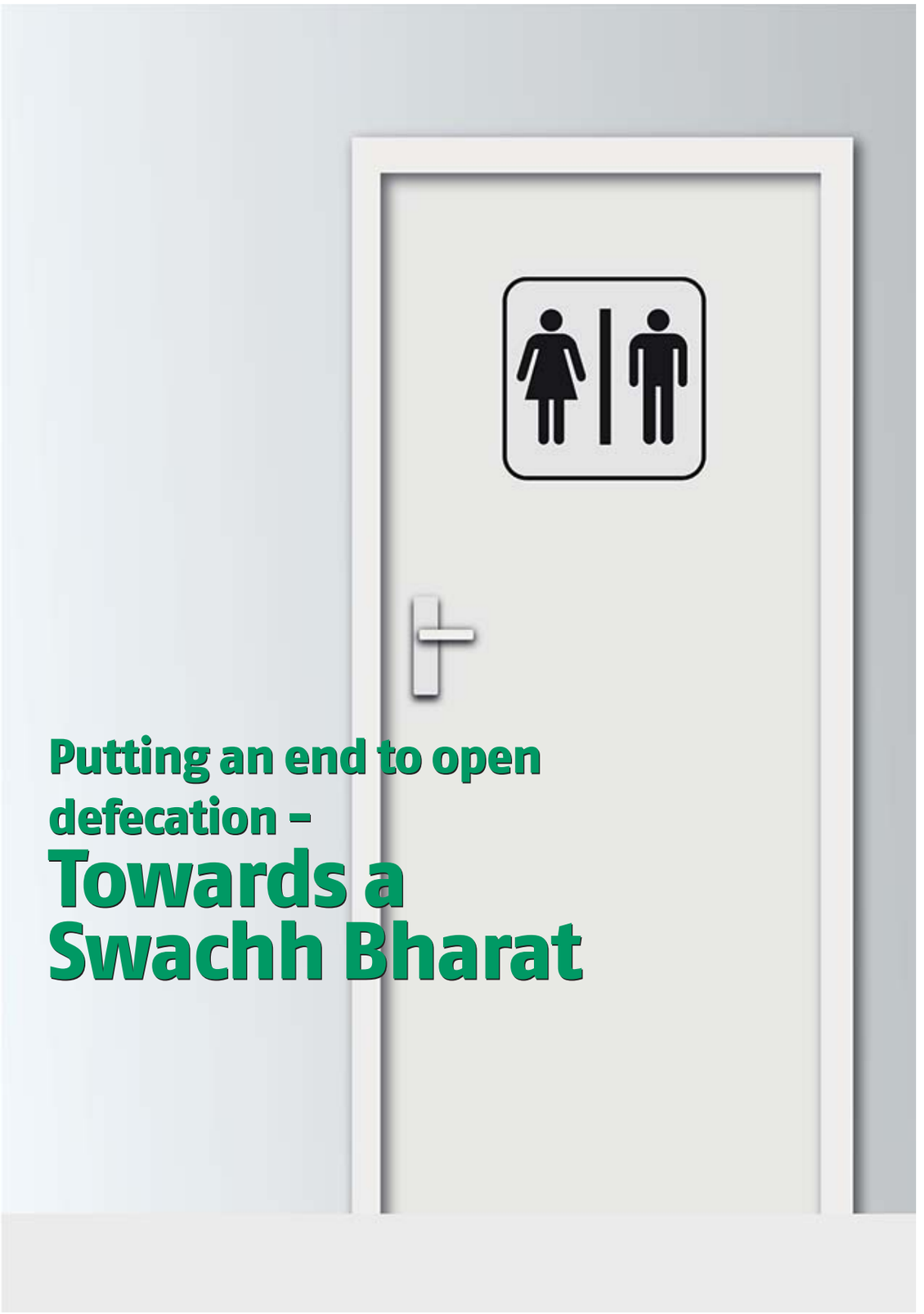
(Per cent of households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: ICE 360° Survey (2016)



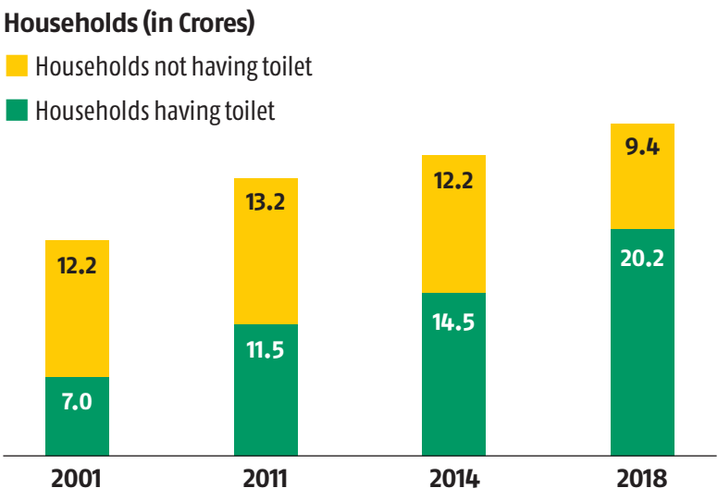
Putting an end to open defecation – Towards a Swachh Bharat

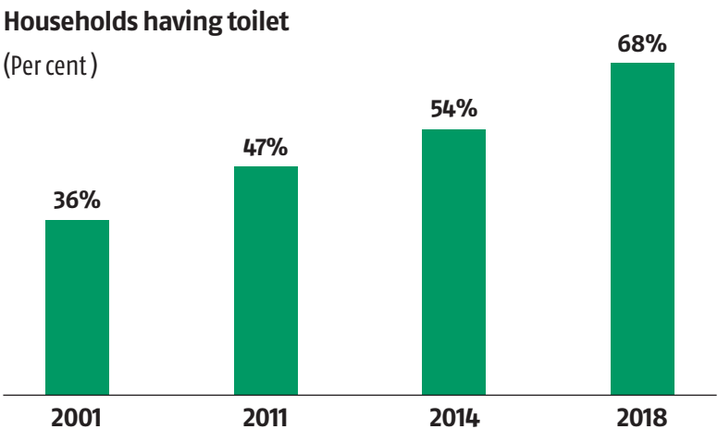
Relieving behind closed doors: Towards a Swachh Bharat

Construction of toilets has risen dramatically...

14.5 crore households in 2014 to 20.2 crore in 2018. Only 7 crore households had toilets in 2001 but the number has grown three times over 18 years.

Progress on toilet coverage – All India





Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

The most dramatic change has taken place in rural India

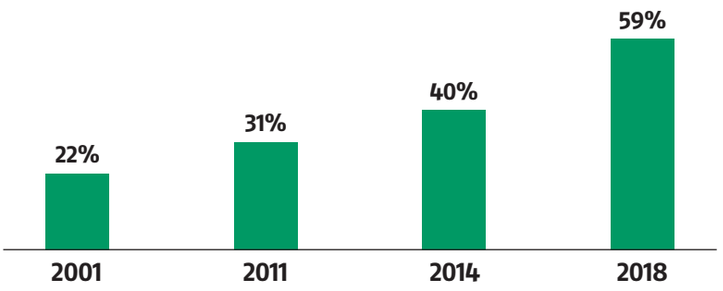
Rural households with toilets in the premises increased by 9 percentage points during 2001–11 and 2011–2014.

Toilet coverage grew by 19 percentage points between 2014 and 2018 in rural as compared to 2 percentage points in urban areas.

Household having toilets within premises– Rural vs. Urban

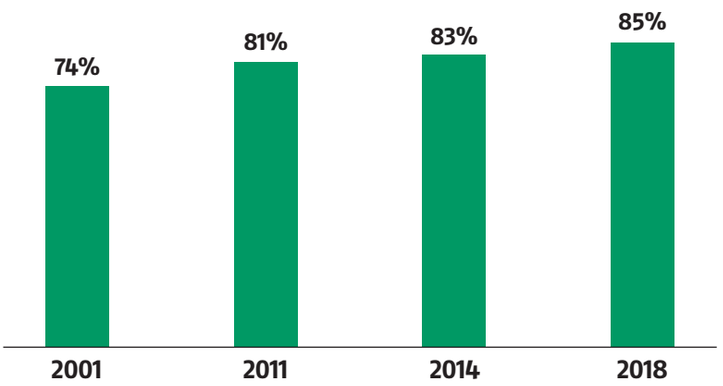
Households having toilets (%)

Rural India



Households having toilets (%)

Urban India



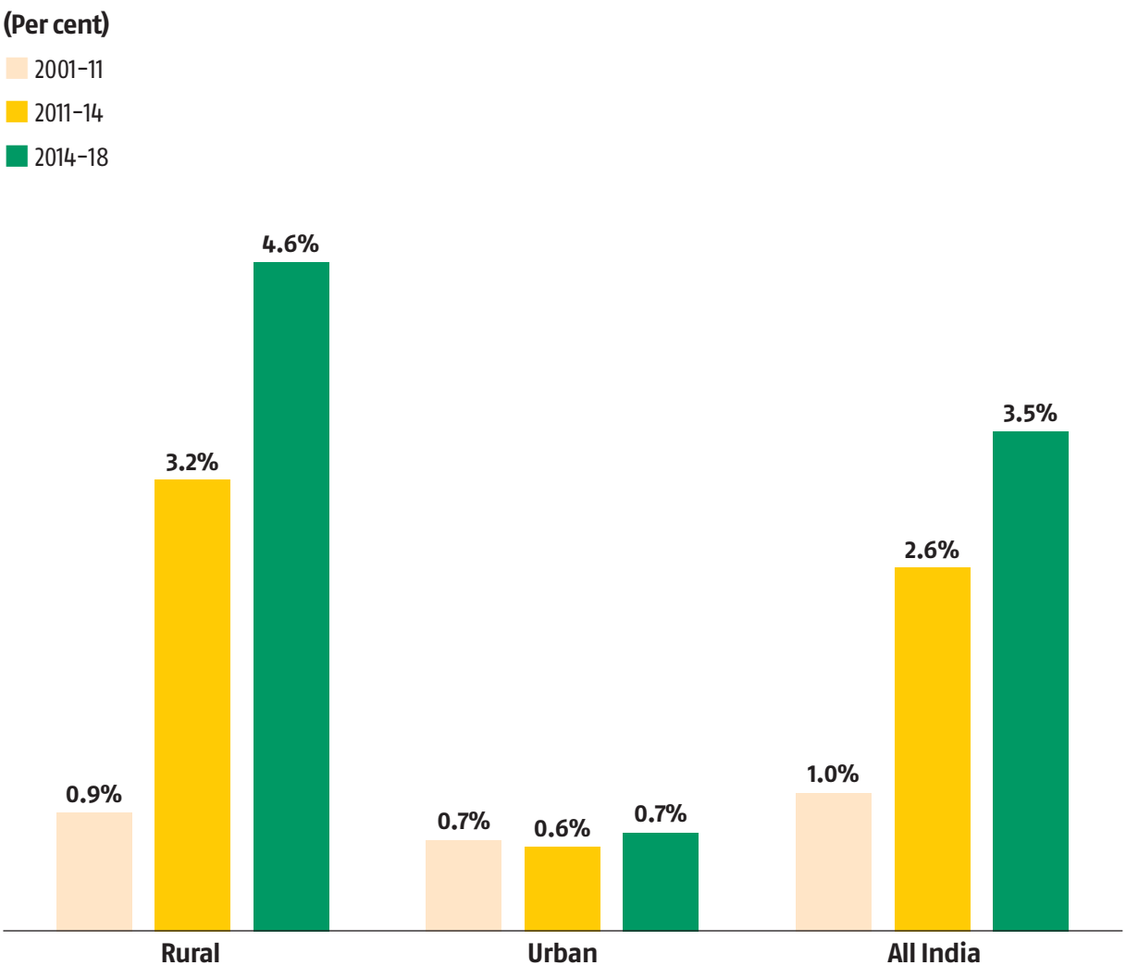
Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Rapid growth in rural toilet construction

Toilet coverage has increased at an average rate of 3.5% during the last four years as against a mere 1% during decade 2001–11.

In Rural India, growth has been much higher (4.6% vs 0.9%)

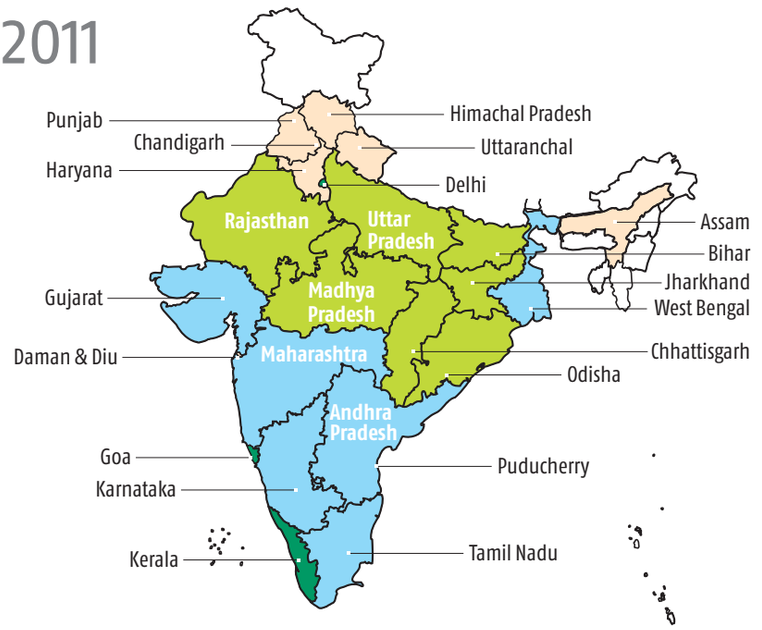
Average annual increase in households having toilets



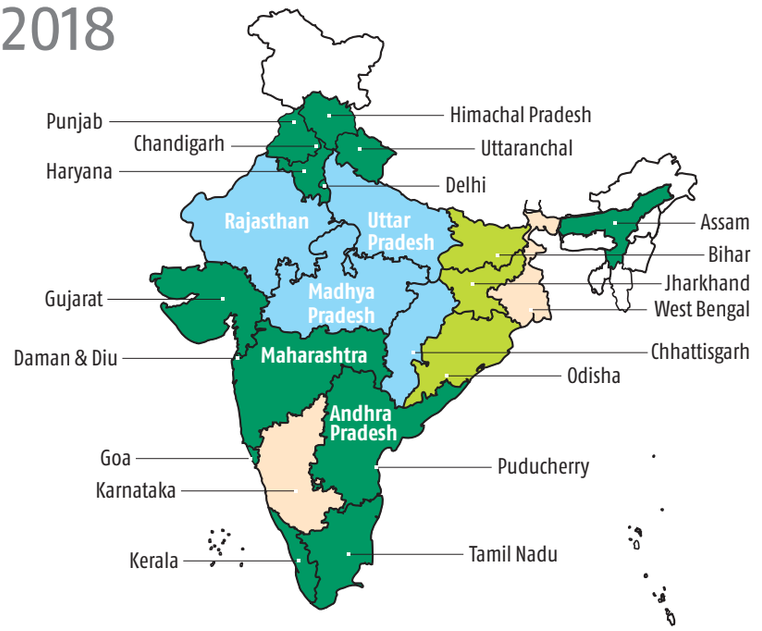
Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Sanitation has made the highest progress in all states

2011



2018



Progress of states & UTs in constructing toilets – All India

Level of penetration of toilet
(% of households)

	Number of states & UTs	
	2011	2018
Above 80%	4*	15
60–80%	7	2
40–60%	6	4
20–40%	7	3

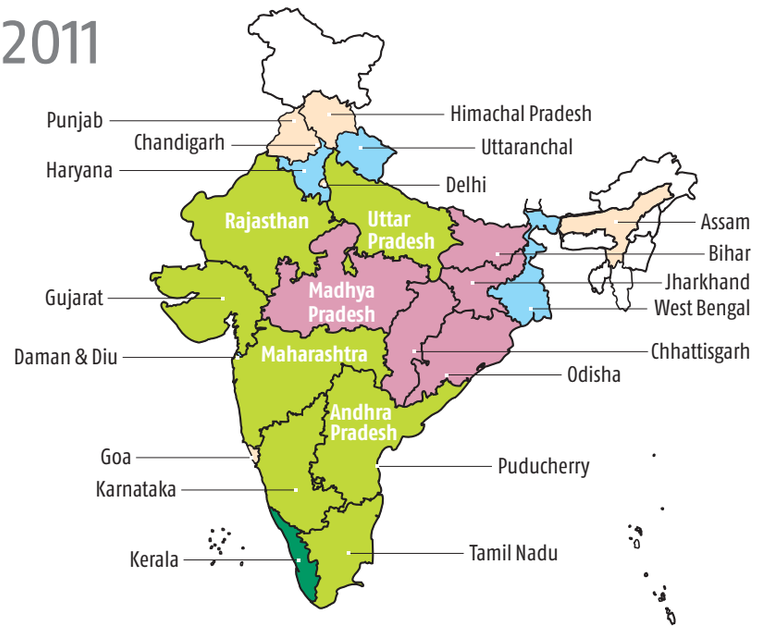
Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Includes Chandigarh, Delhi, Goa and Kerala

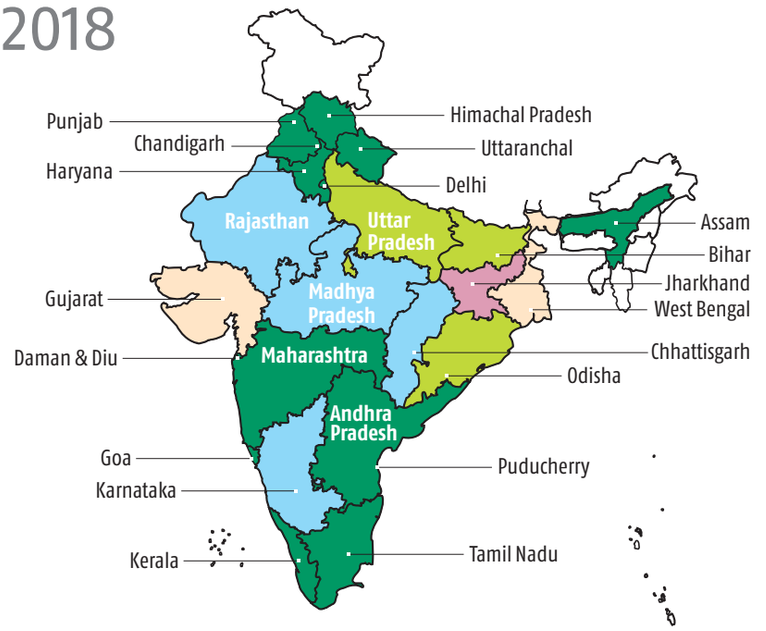
Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Rural part of poor states are below-par performers

2011



2018



Progress of states & UTs in constructing toilets – Rural India

Level of penetration of toilet
(% of rural households)

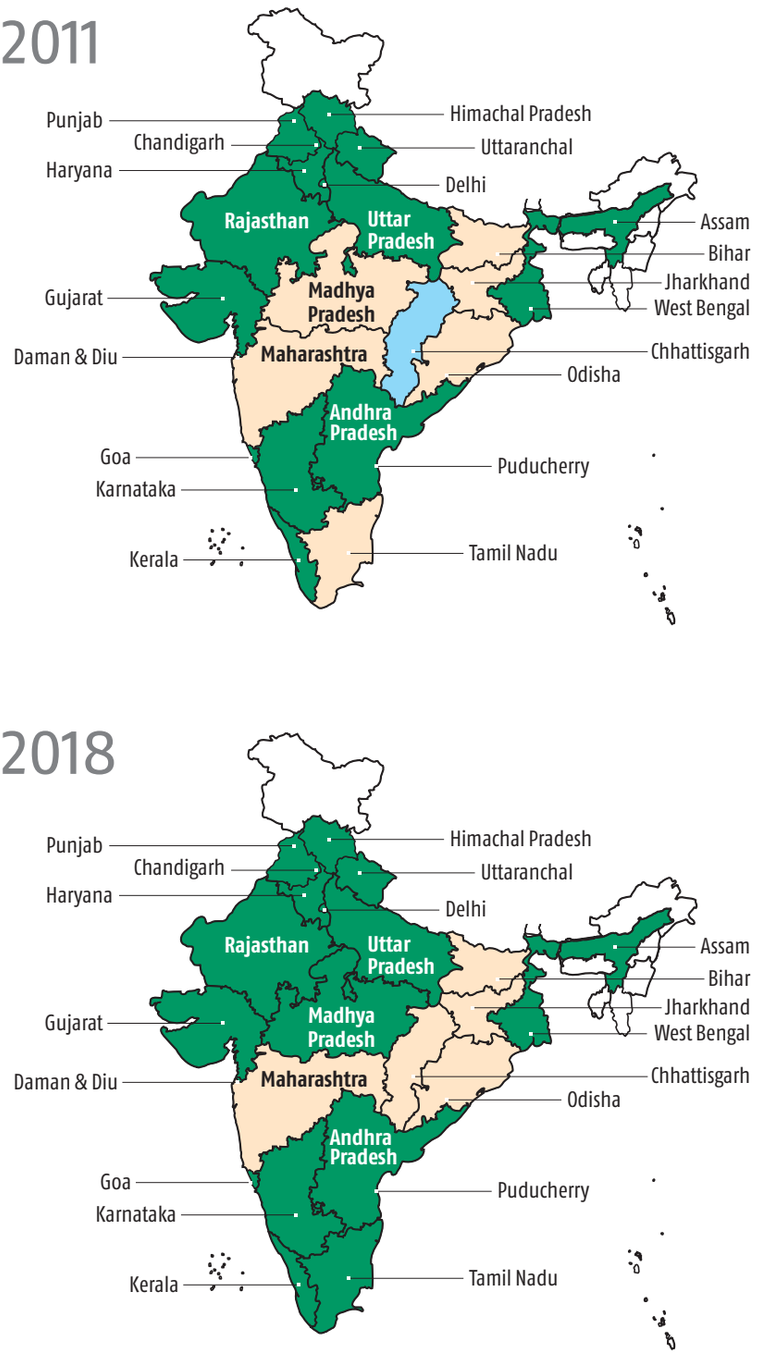
	Number of states & UTs	
	2011	2018
Above 80%	2*	14
60–80%	5	2
40–60%	4	4
20–40%	8	3
Below 20%	5	1

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Includes Chandigarh and Kerala

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Urban India is doing relatively better than rural India even in poor states



Progress of states & UTs in constructing toilets – Urban India

Level of penetration of toilet
(% of urban households)

	Number of states & UTs	
	2011	2018
Above 80%	17	19
60–80%	6	5
40–60%	1	–

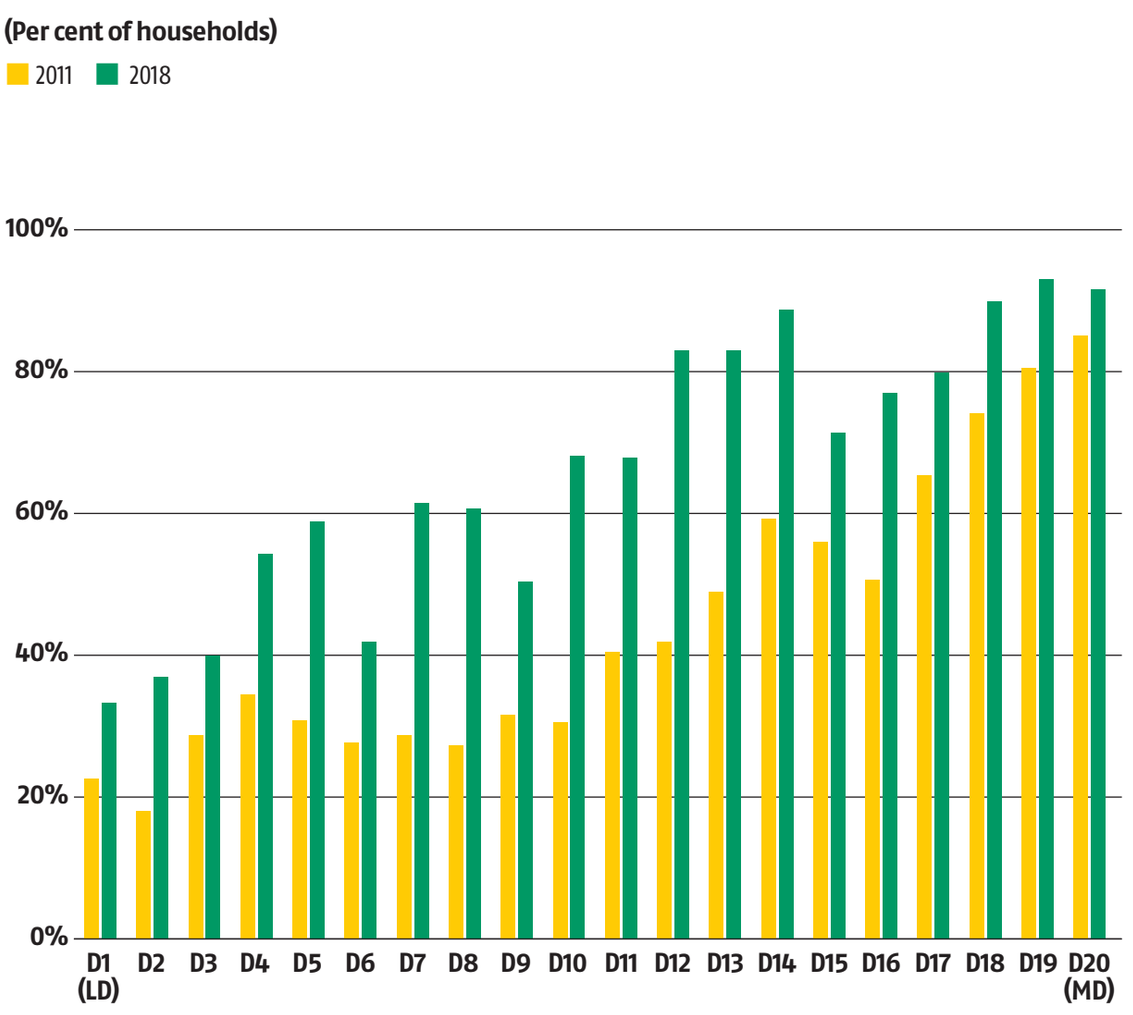
Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Pace of toilet construction slower in least developed district clusters

The top 8 district clusters (D12–D20) across India have achieved higher penetration whereas the least developed clusters (D1–D11) are lagging behind in toilet penetration.

Progress of DDCs* having toilets within household premises – All India



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

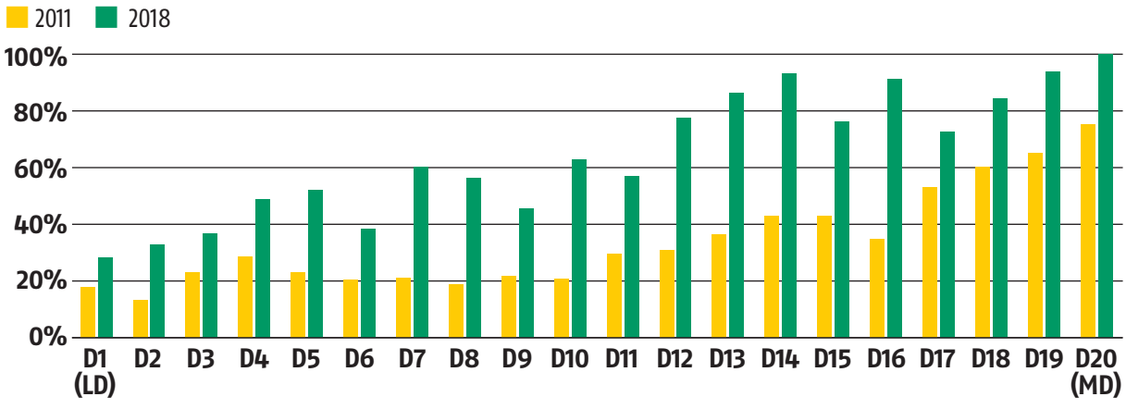
Rural India still has a long way to go...

Despite significant strides in toilet construction in rural areas, the D1–D11 district clusters have a long way to go before achieving 90%–plus toilet penetration.

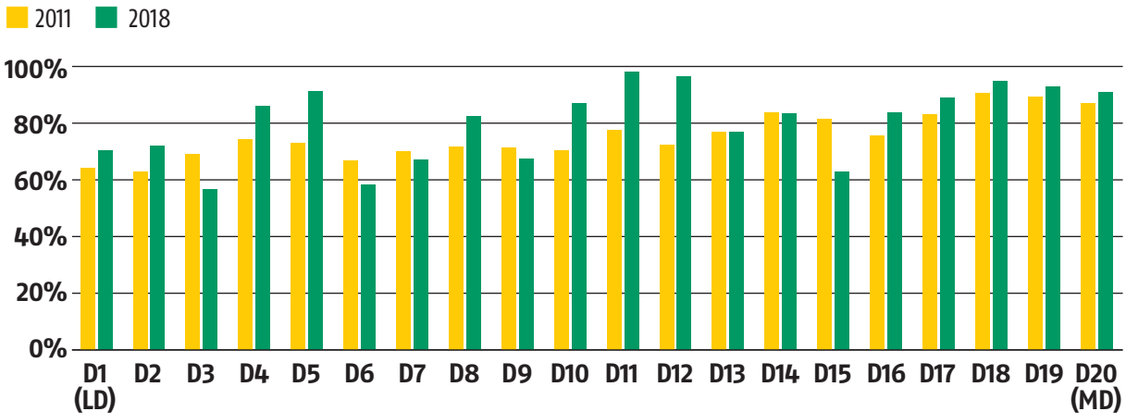
While urban districts are better off in terms of toilet penetration, the least developed districts (D1–D7) have significantly lower penetration levels.

Progress of DDCs* having toilets within household premises – Rural vs. Urban

(Per cent of Rural households)



(Per cent of Urban households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

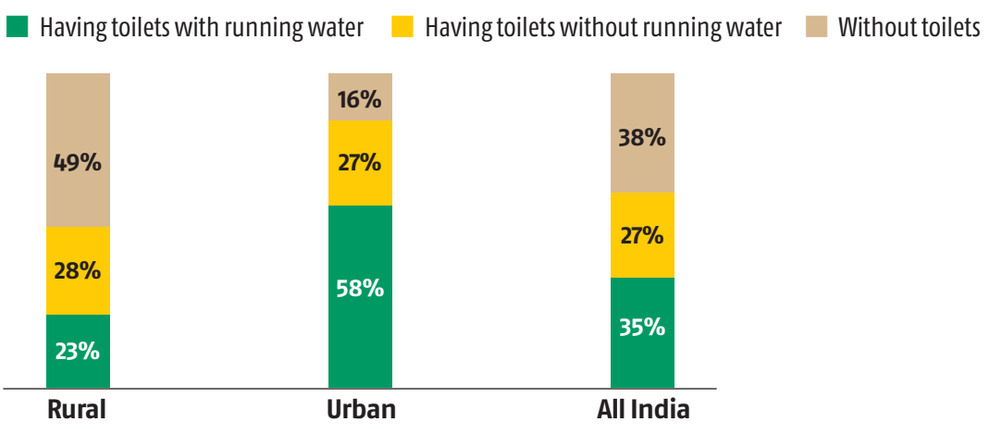
Toilets with running water is a luxury

38% of Indian households have no toilets, 27% have toilets without running water and only 35% have both.

71% of households in least developed district cluster (D1) have no toilets and hardly 6% have toilets with running water

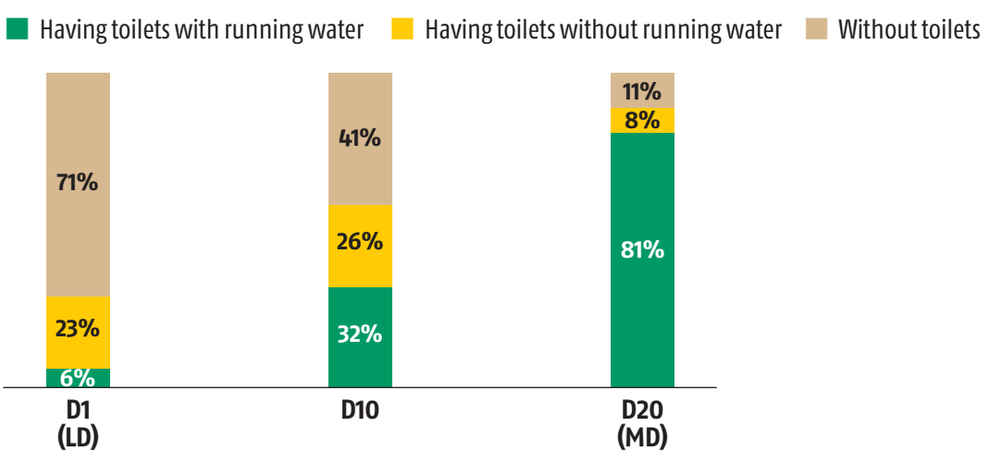
Toilet with running water by location

(Per cent of households)



Toilet with running water by DDCs*

(Per cent of households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: ICE 360° Survey (2016)

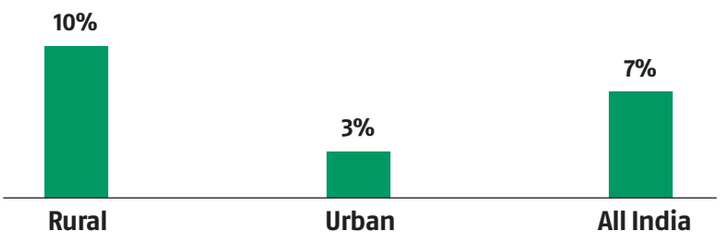
Open defecation is still an area of concern

At an all-India level, members of 7% households with toilets continue to defecate in the open. In rural India, this accounts for 10% households.

The percentage shoots up to 25% for least developed rural district households (D1) compared to just 1% for most developed rural district households (D20)

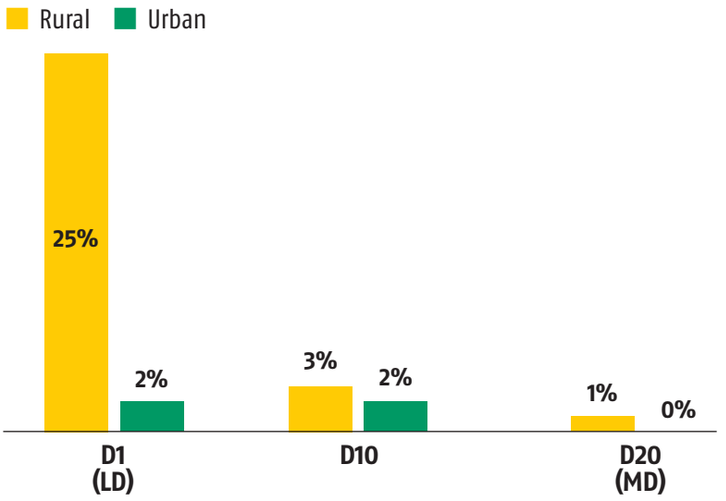
Households having toilets but still defecating in open by location

(Per cent of households)



Households having toilets but still deficating in open by DDCs*

(Per cent of households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: ICE 360° Survey (2016)

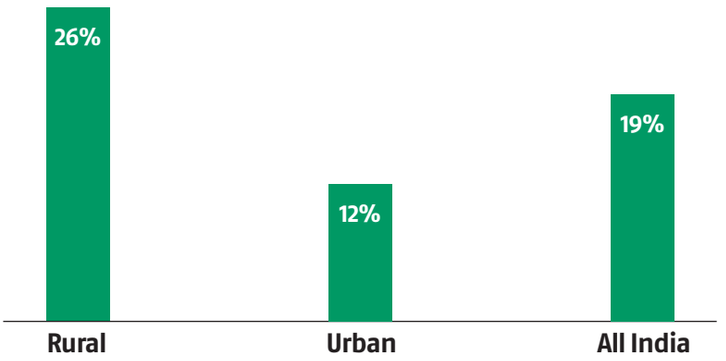
Financial incentives make a difference

About one-fifth households claimed to have received some form of government aid to build a toilet irrespective of year of construction. Benefits are not limited to poor households only.

The share of such households is about 26% in the rural India as against 12% in urban India.

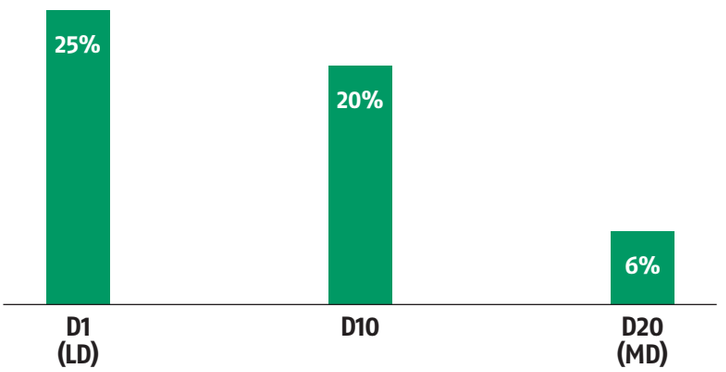
Households received financial assistance in construction of toilet by location

(Per cent of households)



Households received financial assistance in construction of toilet by DDCs*

(Per cent of households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: ICE 360° Survey (2016)

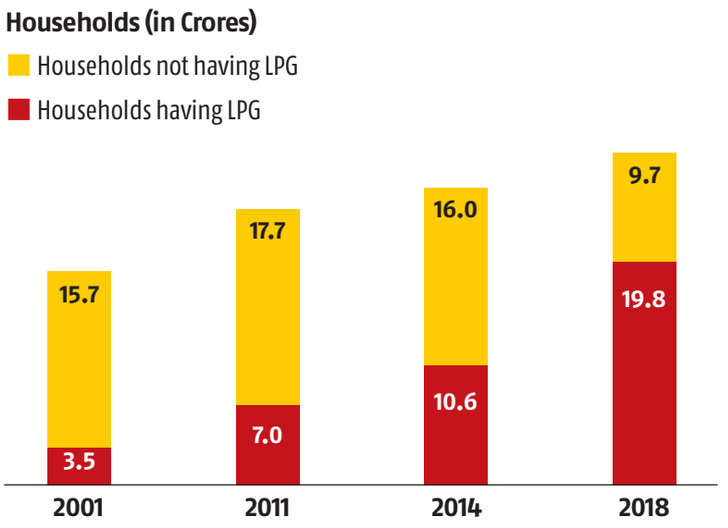
Cooking fuel – Improving air quality & women's health

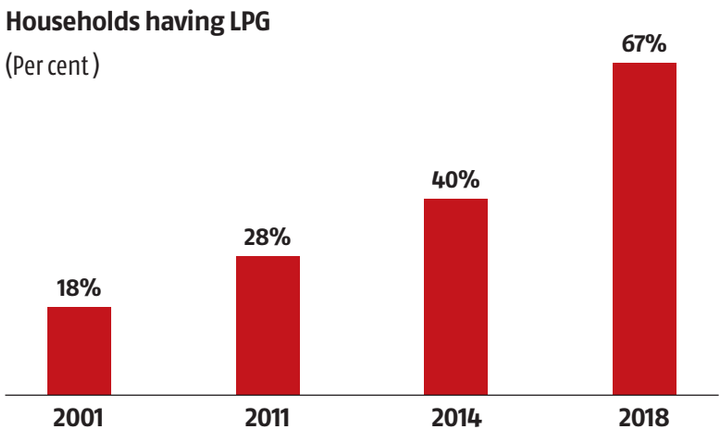
Fueling a shift towards LPG connections

3.5 crore households in India had LPG connections in 2001 vs 19.8 crore in 2018.

Nearly 67% of all Indian households in 2018 are estimated to have cooking gas while in 2014 this percentage was 40%, in 2011, 28% and in 2001, 18%.

Progress on LPG coverage – All India





Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

A rural–urban divide exists for LPG connections

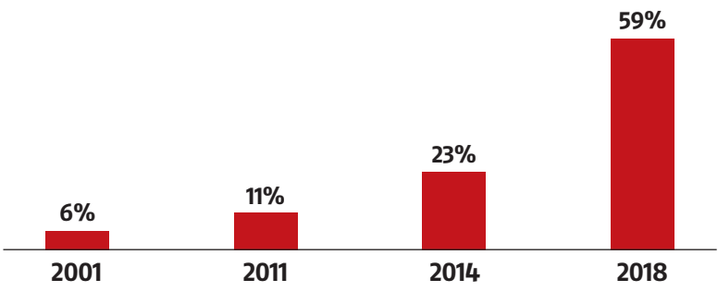
Nearly 59% rural households have gas connections compared to 90% in urban India.

Gas connections for rural India have jumped by 36 percentage points during the last four years while the growth in urban India has been 16 percentage points.

Progress in LPG connection – Rural vs. Urban

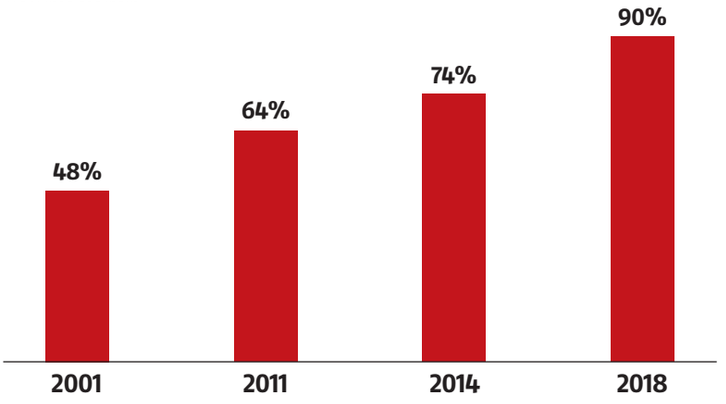
Households having LPG (%)

Rural India



Households having LPG (%)

Urban India

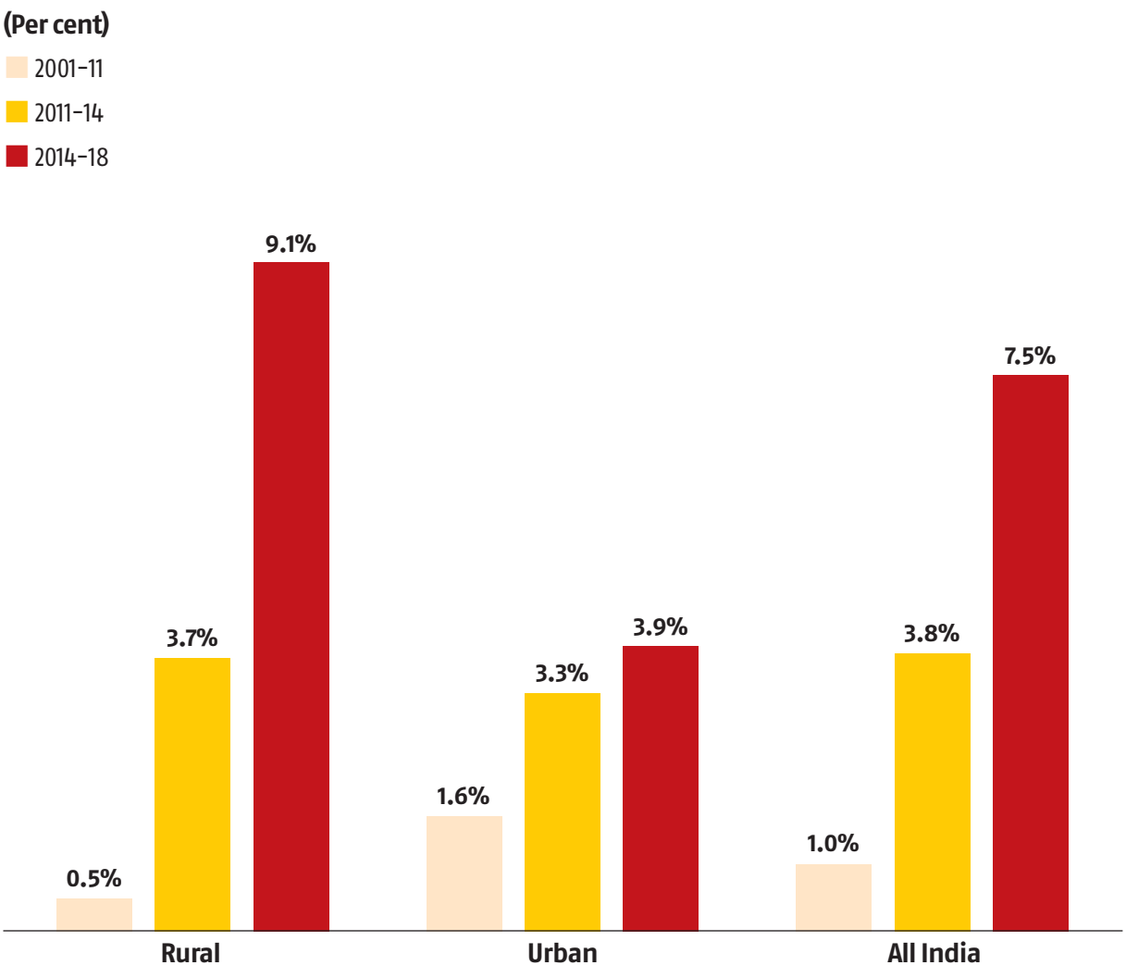


Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Remarkable pace of growth in gas connections in rural India

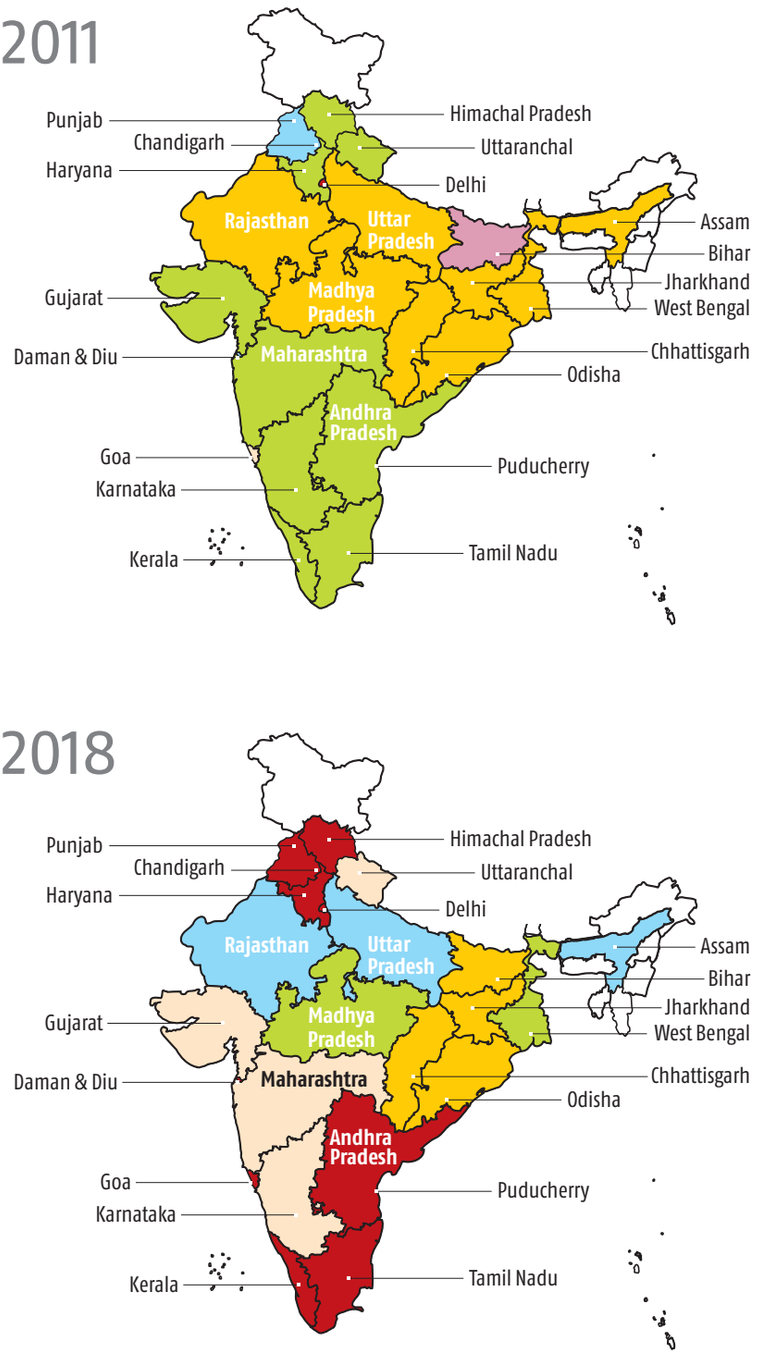
Pace of annual growth in penetration of LPG has been 7.5% during 2014–2018 at the all-India level compared to 3.9% for urban India and 9.1% for rural India.

Annual average increase in households' access to LPG



Source: Census (2001 & 2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

States are progressing towards smoke free kitchens...



Progress of states & UTs towards smoke free kitchen – All India

Level of LPG penetration
(% of households)

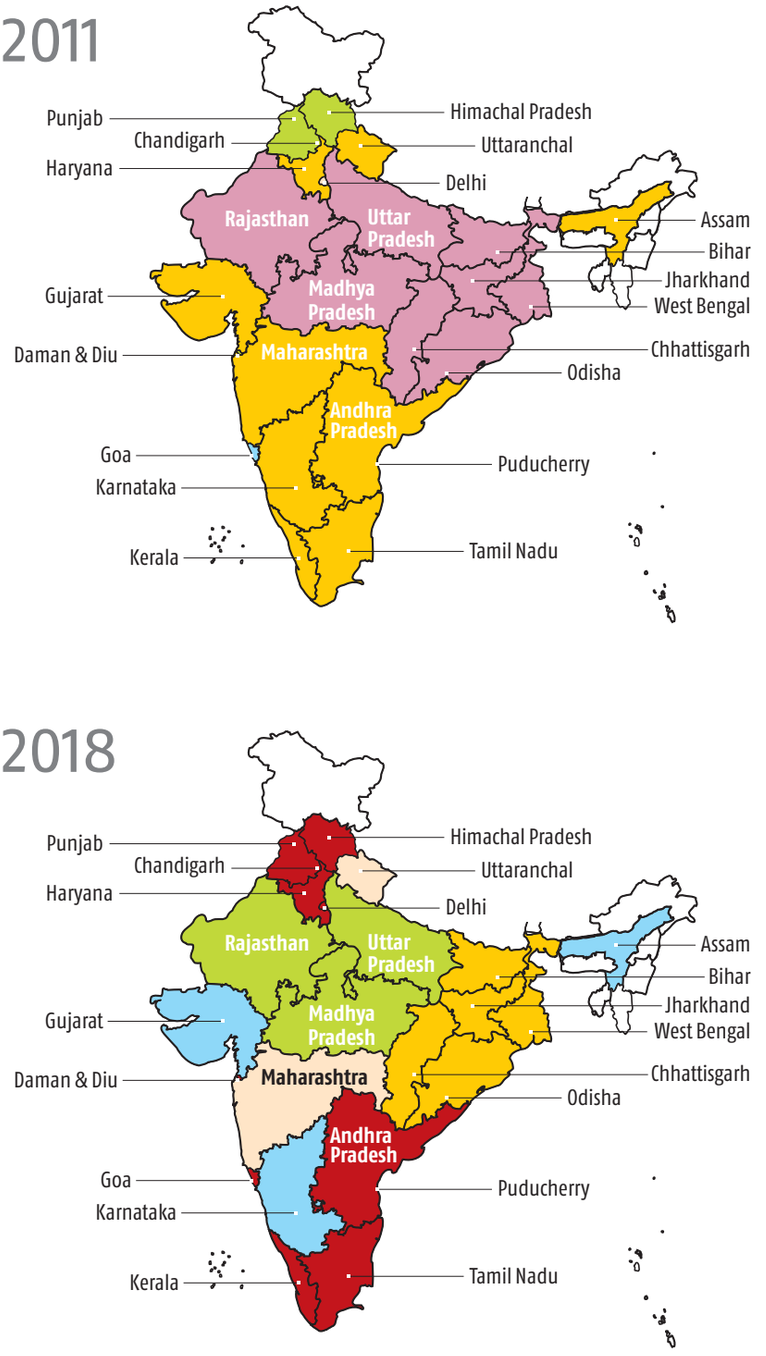
	Number of states & UTs	
	2011	2018
Above 90%	1*	11
70–90%	3	4
50–70%	2	3
30–50%	9	2
10–30%	8	4
Below 10%	1	–

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Delhi

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

LPG connections growth lag behind in rural areas of backward states



Progress of states & UTs towards smoke free kitchen – Rural India

Level of LPG penetration
(% of rural households)

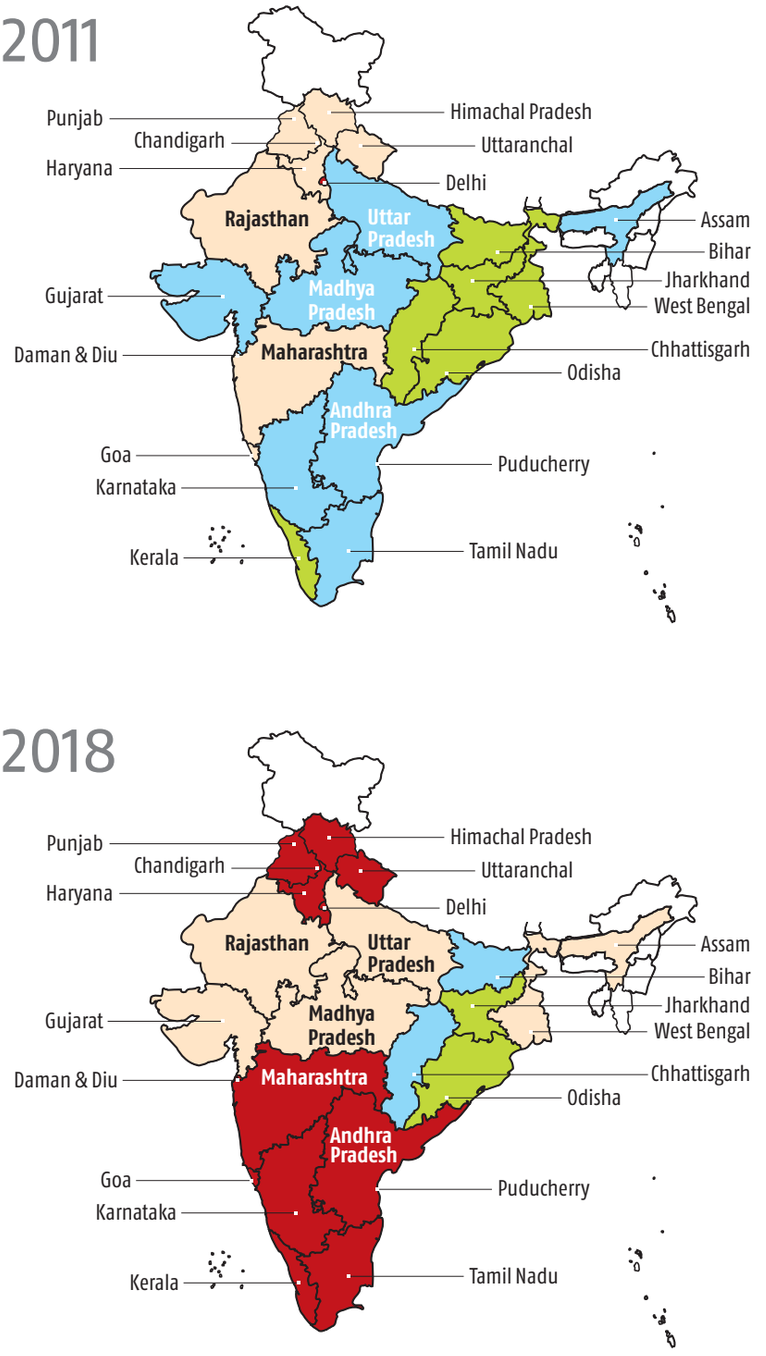
	Number of states & UTs	
	2011	2018
Above 90%	–	11
70–90%	1*	2
50–70%	3	3
30–50%	3	3
10–30%	9	5
Below 10%	8	–

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

* Delhi

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Progress towards smoke free kitchens better in urban compared to rural India



Progress of states & UTs towards smoke free kitchen – Urban India

Levels of LPG penetration
(% of urban households)

	Number of states & UTs	
	2011	2018
Above 90%	1*	14
70–90%	9	6
50–70%	8	2
30–50%	6	2

Notes: 1. Andhra Pradesh includes Telangana
2. ICE 360° Survey (2016) covered 24 major states & UTs

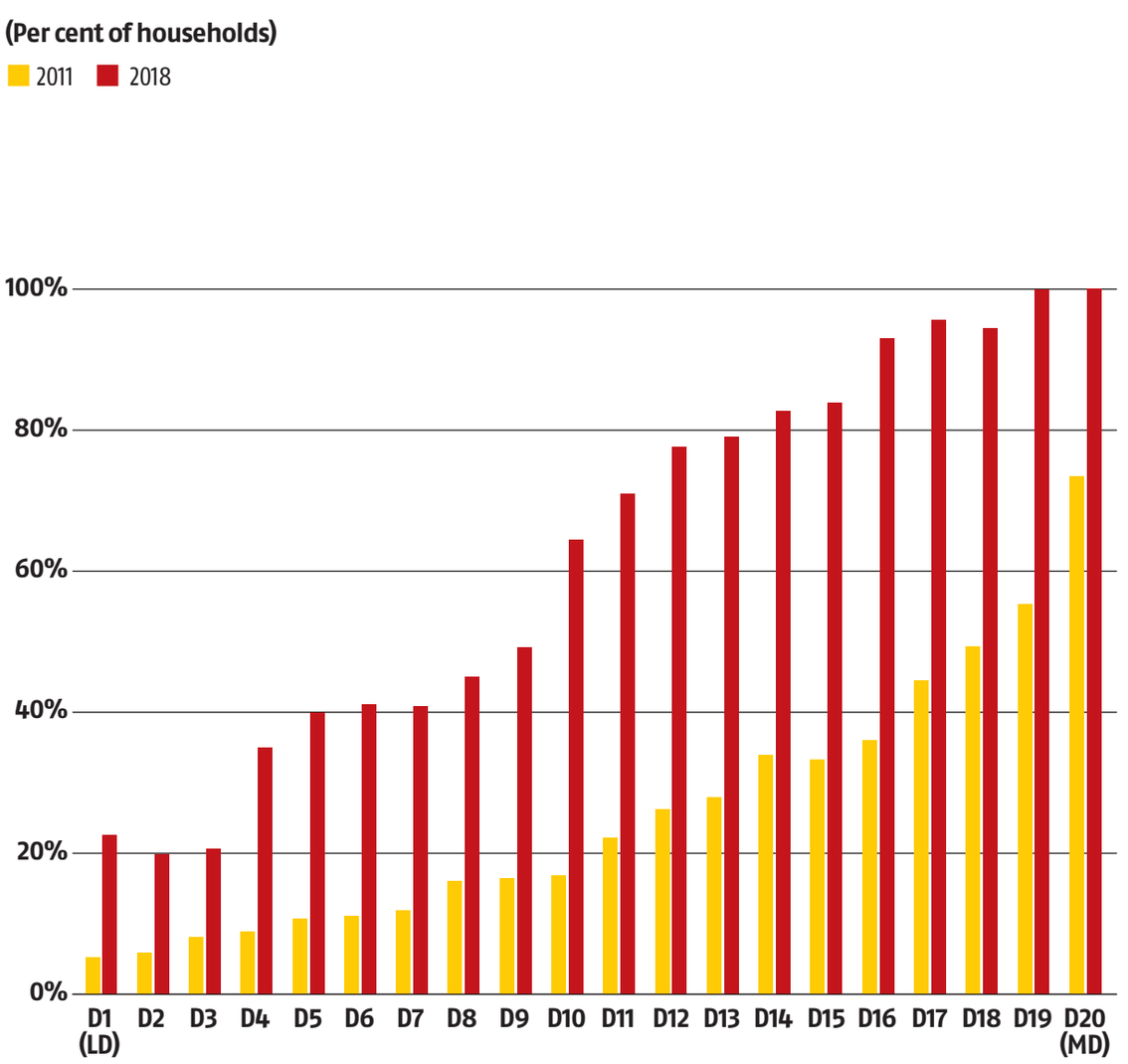
* Delhi

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

Need to focus on least developed rural district clusters

Gas connection coverage in 2014–2018 was highest for district clusters between D10–D20 at the all-India level

Progress of DDCs* in LPG connection – All India



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

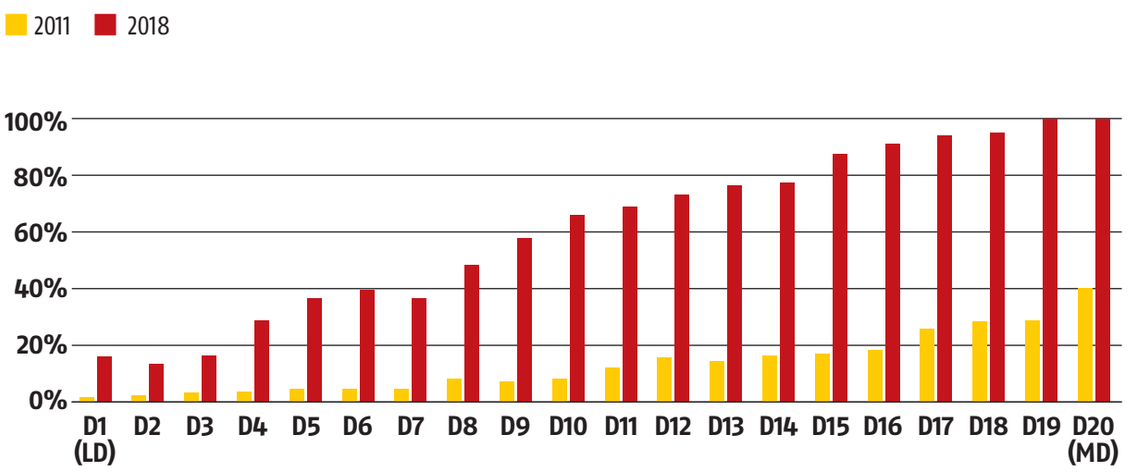
Smoke free rural kitchens in poor district clusters is a huge task...

Rural coverage of gas connections lagged behind for the least developed districts (D1–D9).

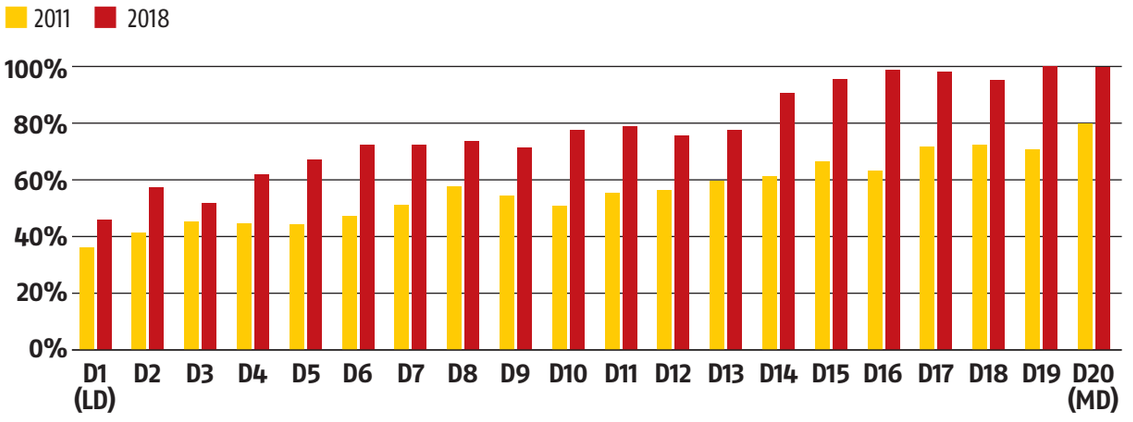
Urban India scored well on coverage of gas connections across all districts.

Level of LPG penetration in DDCs* – Rural vs. Urban

(Per cent of Rural households)



(Per cent of Urban households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster *District Development Cluster

Source: Census (2011) and ICE 360° Surveys (2014 & 2016); PRICE estimates (2018)

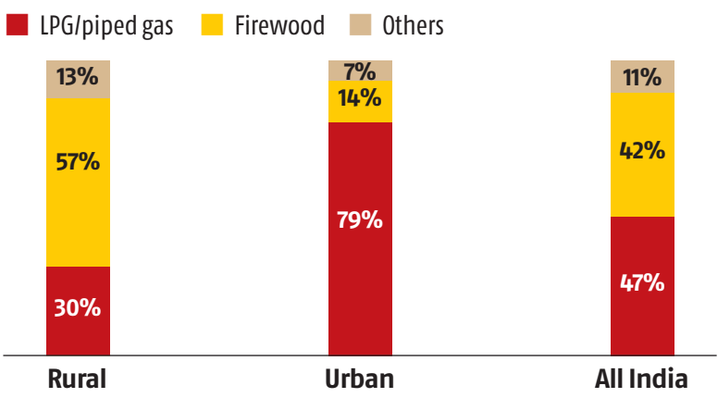
The lower the development, the higher the use of firewood

For urban households' LPG is the major source of cooking fuel (79%) while for rural households, it is firewood (57%). At an all-India level, the split between gas and firewood is 47% vs 42%

A majority (66%) of the least developed district cluster households (D1) still use firewood while an overwhelming 92% households in the most developed districts use piped gas/LPG

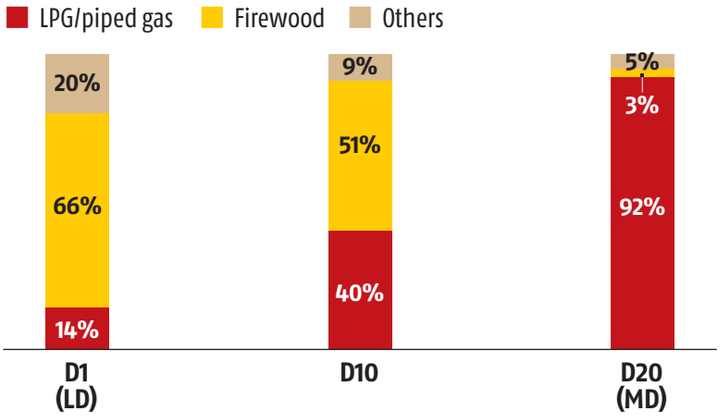
Type of cooking fuel by location

(Per cent of households)



Type of cooking fuel by DDCs*

(Per cent of households)



LD: Least Developed District Cluster **MD:** Most Developed District Cluster

*District Development Cluster

Source: ICE 360° Survey (2016)

Appendix 1
ICE 360° SURVEY, 2016
(Household Survey on India's Citizen Environment and Consumer Economy)

About the Survey

ICE 360° survey, 2016 covered 300,000+ households through a household listing exercise, followed by a more detailed survey of 61,000 households - 25,000 in rural India and 36,000 in urban India. Geographically, the sample has been drawn from across 216 districts, 1217 villages and 487 towns spread across 25 major states. The survey is designed to be multi-dimensional and goes beyond incomes and savings. It also takes a deeper look at the economic and social well-being of Indian households, provides normative measures of social and financial inclusion, degree of access to public goods and infrastructure and welfare measures of the government.

Objectives

- To put more and more reliable and insightful people-level information into the public domain that helps in better policy formulation, regulatory response and business strategy development.
- Play a leading role in shining the light on issues that are unknown or blind spots.
- To bring the "human face" or people-centricity into India's public policy debate and discourse, which today is mostly focused on outlays not outcomes and on macro-economic or supply side variables.
- To make both economic and social well-being of Indian citizens the end goal of policy and business by encouraging government and corporate India to take note of people level data.
- To synchronise Indian Citizen engagement with public policy.

Content

The following themes will be explored by the survey:

Household Characteristics: Type of dwelling unit and availability and access to basic amenities, ownership of durables, intention to purchase in near future, livelihood linked seasonal migration trends, remittance behaviour, etc.

Social and Political Inclusion: Social discrimination, feeling of security within neighbourhood, areas of concern, food security, participation in social activities and political participation, membership in trade bodies, presence and usage of in trade and social networks, etc.

Access to welfare: Awareness of and participation in flagship government programs, method use to access information on current trade/occupation and schemes and benefits, degree of dependency on PDS, life cover, employment guarantee, etc.

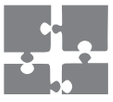
Income and consumption: Volume of earned and unearned income in households from all sources, itemised consumption expenditure covering food and non-food items, utilities, debt servicing, non-routine expenses, etc.

Debt Situation of Households: Penetration of formal debt, purpose of debt (including consumption, production, for business expansion/seed capital), preferred source of credit, future intention and purpose for taking loan from formal and informal sources, current debt servicing costs, etc.

Financial Optimism: Perception about stability in major source of household income, level of satisfaction regarding financial situation of household, perceived economic class, expected change in household's economic situation in next 3 years, etc.

Saving and Investment Behaviour: Cross market savings portfolios, market penetration (household) of broad investment modes, share of wallet - percentage share of total savings/investments by instruments, short and long term savings motivations, savings/investment plans for 2016-17, retirement outlook, remittances, awareness, understanding, and trust in financial instruments linked to capital markets, etc.

Labour market participation: Occupations of all members, sector of employment, job security and nature of contracting, social security and labour rights, disguised employment, etc.



Financial inclusion measure: Access to formal finance, sourcing of debt by purpose, debt servicing costs, bank account ownership, life insurance coverage, eligibility for accessing formal loan (proof of address, identity proof, availability of collateral for mortgage - real estate, gold, investments), awareness of prospect of leveraging owned assets for credit from FIs, etc.

Digital connectivity: Penetration of smart phones, degree of comfort with using VAS, access to internet and usage of internet to perform basic functions.

Access to public infrastructure: Availability and ease of access to public infrastructure, including health, education, judiciary, markets, essential commodities etc.

Citizen's Report Card: Public opinion on direction of change of state of the nation, performance of the economy, governance, corruption, law and order, and other contemporary issues of national interest, and priority expectation from current government going forward.

Demographic Profile of all earners: Age, gender, education level, occupation of CWE, primary and secondary sources of income, unemployment by duration and profile of unemployed, etc.

Survey Features

Feature	ICE 360° Survey, 2014	ICE 360° Survey, 2016
Survey type	Cross section	Best mix of Baseline-Panel-Longitudinal and Cross-sectional
Sample design (common in both round)	Three-stage stratified random sampling Rural: District-Villages- Households Urban: Towns-UFS blocks-Households	
Coverage	21 Indian states	25 major states
Unit of selection and data collection	Households	Households
Sampling frame	101,534 households	300,000 households
Sample size (Main)	20,195 households	61,000 (10,000 panel)
Method of data collection	Face-to-face interview	Face-to-face interview and focus groups
Respondents (both rounds)	Chief Wage Earner (CWE)/ Households' head and House wife	
Reference period	Financial year 2013-14	Financial year 2015-16
Collection of primary data	September-November , 2014	March-August, 2016

Sample size and allocation

Location	Sampling Units	ICE 360° Survey, 2014	ICE 360° Survey, 2016
Rural	Districts	72	165
	Villages	300	1,217
	Sampling Frame -Households	30,048	120,000
	Main Survey -Households	5,997	25,000
Urban	Districts	81	487
	Urban Blocks	710	1,801
	Sampling Frame -Households	71,486	1,80,000
	Main Survey -Households	14,198	36,000
ALL INDIA	Districts	110	216
	Villages/ Urban Blocks	1,010	3,018
	Sampling Frame -Households	10,1534	300,000
	Main Survey -Households	20,195	61,000

Representativeness of sample and analysis on the national macro-economic scenario:

The data is weighted to allow reporting at the following levels of disaggregation:

- State-wise, rural/urban, independent estimates for 25 clusters (group of homogeneous districts) separately for rural & urban
- Independent estimates for over 50 major cities.
- Independent estimates for 5 sizes of town categories within each state.
- Independent estimates for by size of villages within each state and clusters.
- Many more...

Households, population and household size

	Census, 2011	NSS, 2011-12	ICE 360° Survey, 2014	ICE 360° Survey, 2016
Rural India				
Estimated households (Million)	168.60	172.10	179.50	184.30
Estimated population (Million)	833.70	792.10	845.00	889.50
Household size	4.94	4.60	4.71	4.83
Urban India				
Estimated households (Million)	80.90	78.20	90.60	96.20
Estimated population (Million)	377.10	316.90	419.90	440.30
Household size	4.66	4.05	4.63	4.58
All India				
Estimated households (Million)	249.50	250.30	270.10	280.60
Estimated population (Million)	1210.80	1109.00	1264.90	1329.80
Household size	4.85	4.43	4.68	4.74

Source: Census (2011), NSS 68th round schedule 1.0 data and ICE 360° Surveys (2014 & 2016)

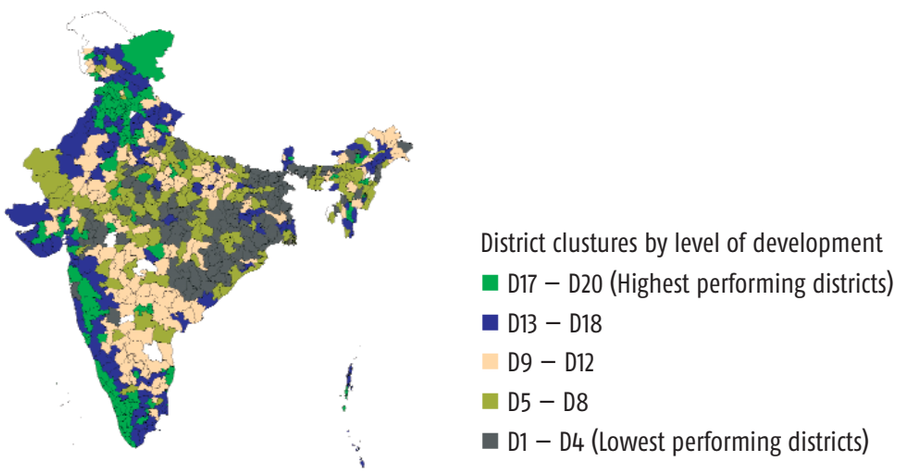
Appendix 2
Construction of District Development Clusters

The 'district cluster' approach provides a composite view to assess the level of progress in access of 'basic needs' in a groups of homogeneous districts during 2011 to 2018. At the intra-district cluster it compares one district/district clusters against its regional reference point as well as track progress and relative positions between over last eight years. It is also significant basis for policy dialogue on how best to address issues related to basic needs, especially in the specific geography with poor performance. In addition, it could help focus attention to areas of need when deciding future priorities and interventions.

In this context, a district cluster approach is adopted to measure the level of progress in accessing basic needs by Indian citizens. A district cluster is group a homogeneous group of districts identified based on composite principal component scores calculated for all 640 districts using a set of 19 district development indicators[3] available from Census 2011.

Principal component analysis (PCA) technique is used as it captures most of the variation and co-variation in multivariate data through a few combinations of the original standardised of district-level indicators. All districts are arranged in ascending order using standardised principle-component scores and finally, district development clusters are formed by grouping all 640 districts into 20 clusters, having equal number of districts (32) in each cluster.

The standardised PCA score of districts of least development district cluster (D1) is 81 against districts of most development district scored more than 717. District cluster map is presented below.



3 Census 2011 indicators used to identify in district clusters
Demographics: Urbanization (share of urban population), Female literacy Non SC/ST population.
Basic amenities: Households having electricity, own LPG/PNG, access to tap water, having toilets within premises.
Quality of housing: Houses having more than one room, Condition of house is good and liveable.
Consumer durable goods: Radio/Transistor, TV, Laptop, Internet, Landline, Mobile, Landline, Both Landline & Mobile, Scooter/Motor Cycle, Car/Jeep/Van.
Household access of banking facility.

Appendix 3

Basic Information about District Development Clusters

District Development Clusters (DDC)	Number of districts	Households (2018)		Household size	Annual household growth (2011-18, %)	Urban population (%)
		Estimated number ('000)	Share of district cluster to total			
D 1 (Least developed)	32	12,819	4.3%	4.48	2.6%	12%
D 2	32	12,488	4.2%	4.61	2.7%	11%
D 3	32	12,057	4.0%	4.49	2.9%	15%
D 4	32	16,470	5.5%	4.78	2.8%	14%
D 5	32	12,495	4.2%	4.93	2.7%	17%
D 6	32	13,940	4.7%	5.03	2.7%	17%
D 7	32	12,060	4.1%	5.10	2.7%	16%
D 8	32	12,308	4.2%	4.89	2.3%	16%
D 9	32	12,764	4.3%	4.98	2.3%	21%
D 10	32	15,052	5.1%	5.05	2.0%	20%
D 11	32	18,052	6.2%	4.71	1.9%	25%
D 12	32	16,970	5.8%	4.62	2.0%	29%
D 13	32	14,679	5.0%	4.68	1.9%	32%
D 14	32	16,847	5.7%	4.49	2.0%	41%
D 15	32	12,036	4.1%	4.85	2.2%	35%
D 16	32	13,112	4.5%	4.68	2.1%	41%
D 17	32	12,261	4.2%	4.54	1.9%	43%
D 18	32	13,676	4.6%	4.55	2.5%	50%
D 19	32	23,296	7.8%	4.38	2.9%	70%
D 20 (Most developed)	32	22,281	7.5%	4.32	2.5%	87%
All India	**640**	**2,95,665**	**100.0%**	**4.68**	**2.4%**	**33%**

Source: Census (2001 & 2011); PRICE estimates (2018)

Appendix 4

Composition of District Developement Clusters: List of States and Districts

District Development Cluster 1 (D1)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D1 (%)
West Bengal	Birbhum, Koch Bihar, Murshidabad, Puruliya, Uttar Dinajpur	5,083	40%
Odisha	Baudh, Debagarh, Kalahandi, Kandhamal, Malkangiri, Mayurbhanj, Nabarangapur, Nuapada, Subarnapur	2,364	19%
Bihar	Katihar, Kishanganj, Madhepura, Saharsa	2,134	17%
Jharkhand	Dumka, Godda, Pakur, Sahibganj	1,120	9%
Madhya Pradesh	Alirajpur, Dindori, Jhabua	602	5%
Assam	Dhubri	512	4%
Chhattisgarh	Bijapur, Dakshin Bastar Dantewada, Jashpur, Narayanpur	470	4%
Rajasthan	Banswara	446	3%
Arunachal Pradesh	Kurung Kumey	22	0.2%
	TOTAL (D1)	**12,751**	**100%**

District Development Cluster 2 (D2)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D2 (%)
Bihar	Araria, Banka, Khagaria, Purnia, Samastipur	3,422	27%
Odisha	Balangir, Bargarh, Dhenkanal, Gajapati, Kendujhar, Koraput, Nayagarh, Rayagada	2,760	22%
West Bengal	Bankura, Dakshin Dinajpur, Maldah	2,370	19%
Chhattisgarh	Bastar, Janjgir - Champa, Kabeerdham, Mahasamund	1,372	11%
Jharkhand	Garhwa, Jamtara, Khunti, Latehar, Pashchimi Singhbhum, Simdega	1,296	10%
Madhya Pradesh	Barwani, Sheopur	496	4%
Gujarat	Dohad	408	3%
Assam	Kokrajhar	209	2%
Meghalaya	West Khasi Hills	78	1%
Nagaland	Kiphire	15	0.1%
	TOTAL (D2)	**12,424**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 3 (D3)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D3 (%)
Bihar	Begusarai, Darbhanga, Jamui, Sitamarhi, Supaul	3,646	30%
Madhya Pradesh	Balaghat, Damoh, Mandla, Narsimhapur, Panna, Rajgarh, Seoni, Shivpuri, Umaria	3,184	27%
Chhattisgarh	Raigarh, Surguja, Uttar Bastar Kanker	1,281	11%
Assam	Barpeta, Chirang, Darrang, Hailakandi, Karimganj	1,221	10%
West Bengal	Jalpaiguri	1,026	9%
Odisha	Jajapur	472	4%
Maharashtra	Nandurbar	387	3%
Rajasthan	Dungarpur	349	3%
Jharkhand	Gumla	221	2%
Tripura	Dhalai	102	1%
Nagaland	Longleng, Mon	56	0.5%
Gujarat	The Dangs	46	0.4%
Arunachal Pradesh	Anjaw	5	0.0%
	TOTAL (D3)	**11,995**	**100%**

District Development Cluster 4 (D4)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D4 (%)
West Bengal	Nadia, Paschim Medinipur, Purba Medinipur	4,297	26%
Madhya Pradesh	Ashoknagar, Dhar, Katni, Khandwa (East Nimar), Khargone (West Nimar), Raisen, Shahdol, Sidhi, Tikamgarh	3,182	19%
Bihar	Madhubani, Nawada, Pashchim Champaran, Vaishali	3,185	19%
Uttar Pradesh	Budaun, Kheri, Sitapur	2,644	16%
Odisha	Anugul, Baleshwar	979	6%
Jharkhand	Chatra, Lohardaga, Palamu	788	5%
Rajasthan	Dhaulpur, Karauli	588	4%
Maharashtra	Gadchiroli	281	2%
Assam	Baksa	222	1%
Gujarat	Narmada	134	1%
Nagaland	Tuensang	39	0.2%
Manipur	Tamenglong	27	0.2%
Arunachal Pradesh	East Kameng	17	0.1%
	TOTAL (D4)	**16,384**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 5 (D5)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D5 (%)
Uttar Pradesh	Bahraich, Bara Banki, Hardoi, Kanshiram Nagar, Shrawasti	2,804	23%
West Bengal	South Twenty Four Parganas	2,201	18%
Madhya Pradesh	Chhatarpur, Morena, Shajapur, Singrauli	1,593	13%
Bihar	Arwal, Bhagalpur, Lakhisarai, Sheohar	1,203	10%
Odisha	Bhadrak, Kendrapara, Puri	1,142	9%
Rajasthan	Jalor, Jhalawar, Pratapgarh	965	8%
Andhra Pradesh	Srikakulam	750	6%
Assam	Goalpara, Morigaon, Udalguri	670	5%
Jharkhand	Deoghar	329	3%
Karnataka	Yadgir	238	2%
Haryana	Mewat	205	2%
Gujarat	Tapi	184	2%
Meghalaya	East Garo Hills, South Garo Hills	100	1%
Mizoram	Lawngtlai	27	0.2%
Arunachal Pradesh	Upper Subansiri	21	0.2%
	TOTAL (D5)	**12,431**	**100%**

District Development Cluster 6 (D6)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D6 (%)
Bihar	Gaya, Jehanabad, Kaimur (Bhabua), Muzaffarpur, Nalanda, Purba Champaran, Sheikhpura	4,521	32%
Madhya Pradesh	Anuppur, Bhind, Burhanpur, Guna, Sagar, Vidisha	2,076	15%
Gujarat	Banas Kantha, Panch Mahals	1,174	9%
Odisha	Ganjam, Sambalpur	1,130	8%
Uttar Pradesh	Balrampur, Shahjahanpur	1,006	7%
Chhattisgarh	Bilaspur, Dhamtari	993	7%
Assam	Dhemaji, Nagaon	837	6%
Jharkhand	Giridih, Saraikela-Kharsawan	737	5%
Andhra Pradesh	Vizianagaram	627	5%
Karnataka	Chamarajanagar	271	2%
Meghalaya	Jaintia Hills, West Garo Hills	227	2%
Tripura	North Tripura	179	1%
Jammu & Kashmir	Kishtwar	54	0.4%
Manipur	Ukhrul	38	0.3%
	TOTAL (D6)	**13,870**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 7 (D7)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D7 (%)
Uttar Pradesh	Chitrakoot, Gonda, Kannauj, Kaushambi, Lalitpur, Mahrajganj, Pilibhit, Unnao	3,402	28%
Madhya Pradesh	Betul, Chhindwara, Datia, Ratlam, Rewa, Satna	2,720	23%
Rajasthan	Baran, Barmer, Dausa, Sawai Madhopur, Sirohi	1,816	15%
Bihar	Aurangabad, Munger, Saran	1,551	13%
Assam	Cachar, Sonitpur	927	8%
Chhattisgarh	Korba, Koriya, Rajnandgaon	892	7%
Karnataka	Koppal	303	3%
Tripura	South Tripura	242	2%
Jammu & Kashmir	Ramban	67	1%
Meghalaya	Ribhoi	58	0.5%
Nagaland	Peren	19	0.2%
	TOTAL (D7)	**11,997**	**100%**

District Development Cluster 8 (D8)

Year: 2018

State	Districts	Households	
		Estimated number ('000)	Share of state in the D8 (%)
Uttar Pradesh	Auraiya, Etah, Kushinagar, Rae Bareli, Sant Kabir Nagar, Siddharthnagar	2,740	22%
Maharashtra	Bid, Hingoli, Washim, Yavatmal	1,939	16%
Telangana	Adilabad, Mahbubnagar	1,737	14%
Rajasthan	Bundi, Jaisalmer, Udaipur	1,166	9%
Odisha	Jagatsinghapur, Jharsuguda, Sundargarh	988	8%
Andhra Pradesh	Prakasam	969	8%
Bihar	Buxar, Siwan	977	8%
Madhya Pradesh	Harda, Mandsaur, Sehore	797	6%
Assam	Bongaigaon, Karbi Anglong	381	3%
Tamil Nadu	Ariyalur	217	2%
Manipur	Chandel, Senapati	199	1%
Jammu & Kashmir	Reasi	74	1%
Nagaland	Phek	41	0.3%
Arunachal Pradesh	Tirap	22	0.2%
	TOTAL (D8)	**12,248**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 9 (D9)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D9 (%)
Uttar Pradesh	Ambedkar Nagar, Ballia, Banda, Farrukhabad, Fatehpur, Kanpur Dehat, Mainpuri	3,013	24%
Maharashtra	Buldana, Gondiya, Nanded, Osmanabad	2,132	17%
Rajasthan	Bharatpur, Rajsamand, Tonk	1,125	9%
Chhattisgarh	Raipur	1,136	9%
Bihar	Bhojpur, Gopalganj	974	8%
Madhya Pradesh	Dewas, Hoshangabad, Neemuch	889	7%
Andhra Pradesh	Sri Potti Sriramulu Nellore	871	7%
Telangana	Khammam	855	7%
Karnataka	Chitradurga, Raichur	808	6%
Jammu & Kashmir	Doda, Punch, Rajouri	391	3%
Assam	Dima Hasao, Lakhimpur	287	2%
Jharkhand	Kodarma	152	1%
Arunachal Pradesh	Changlang, Lohit	68	1%
	TOTAL (D9)	**12,699**	**100%**

District Development Cluster 10 (D10)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D10 (%)
Uttar Pradesh	Azamgarh, Basti, Chandauli, Etawah, Firozabad, Jyotiba Phule Nagar, Mau, Mirzapur, Sonbhadra, Sultanpur	4,707	31%
Andhra Pradesh	Anantapur, Kurnool	2,120	14%
Karnataka	Bagalkot, Bijapur, Chikkaballapura, Gadag, Haveri, Ramanagara	2,112	14%
Maharashtra	Bhandara, Jalna, Parbhani	1,185	8%
Telangana	Nalgonda	983	7%
Rajasthan	Bhilwara, Chittaurgarh	969	6%
Tamil Nadu	Viluppuram	920	6%
Odisha	Cuttack	661	4%
Bihar	Rohtas	549	4%
Assam	Kamrup	359	2%
Jharkhand	Hazaribagh	350	2%
Nagaland	Zunheboto	27	0.2%
Mizoram	Mamit	23	0.1%
Arunachal Pradesh	Upper Siang	6	0.0%
	TOTAL (D10)	**14,972**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 11 (D11)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D11 (%)
Uttar Pradesh	Deoria, Faizabad, Ghazipur, Jaunpur, Mahamaya Nagar, Mahoba, Moradabad, Rampur, Sant Ravidas Nagar (Bhadohi)	4,627	26%
Andhra Pradesh	East Godavari, Y.S.R.	2,369	13%
Karnataka	Bellary, Bidar, Mandya, Tumkur	2,101	12%
Telangana	Karimnagar, Warangal	2,094	12%
West Bengal	Barddhaman	1,964	11%
Tamil Nadu	Dharmapuri, Perambalur, Tiruvannamalai	1,255	7%
Rajasthan	Nagaur, Pali	1,182	7%
Maharashtra	Chandrapur, Dhule	1,058	6%
Gujarat	Kheda, Patan	814	5%
Assam	Golaghat	261	1%
Jammu & Kashmir	Kupwara	145	1%
Manipur	Churachandpur	51	0.3%
Nagaland	Wokha	35	0.2%
Arunachal Pradesh	Dibang Valley	2	0.0%
	TOTAL (D11)	**17,958**	**100%**

District Development Cluster 12 (D12)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D12 (%)
Andhra Pradesh	Chittoor, Guntur, West Godavari	3,792	23%
Maharashtra	Akola, Amravati, Aurangabad, Jalgaon, Latur	3,693	22%
Uttar Pradesh	Bijnor, Bulandshahr, Hamirpur, Jalaun, Pratapgarh	2,600	15%
Telangana	Medak, Nizamabad	1,465	9%
Rajasthan	Alwar, Churu	1,179	7%
Gujarat	Sabar Kantha, Surendranagar	933	6%
Karnataka	Gulbarga, Kolar	922	5%
Chhattisgarh	Durg	820	5%
Madhya Pradesh	Ujjain	465	3%
Tamil Nadu	Pudukkottai	440	3%
Uttarakhand	Bageshwar, Champawat, Uttarkashi	198	1%
Assam	Nalbari	183	1%
Jammu & Kashmir	Udhampur	130	1%
Arunachal Pradesh	Lower Dibang Valley, West Kameng	34	0.2%
Sikkim	West District	28	0.2%
	TOTAL (D12)	**16,881**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 13 (D13)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D13 (%)
Uttar Pradesh	Aligarh, Bareilly, Gorakhpur, Saharanpur	3,164	21%
Tamil Nadu	Krishnagiri, Nagapattinam, Ramanathapuram, Theni, Thiruvarur, Virudhunagar	2,712	19%
Maharashtra	Ahmadnagar, Solapur, Wardha	2,342	16%
Karnataka	Belgaum, Davanagere, Hassan	2,055	14%
West Bengal	Darjiling, Hugli	1,903	13%
Jharkhand	Bokaro, Ramgarh	657	4%
Assam	Sivasagar, Tinsukia	583	4%
Tripura	West Tripura	481	3%
Jammu & Kashmir	Bandipore, Kathua, Kulgam	299	2%
Uttarakhand	Tehri Garhwal	141	1%
Himachal Pradesh	Chamba	114	1%
Dadra & Nagar Haveli	Dadra & Nagar Haveli	109	1%
Arunachal Pradesh	Tawang, West Siang	34	0.2%
Sikkim	North District	8	0.1%
	TOTAL (D13)	**14,603**	**100%**

District Development Cluster 14 (D14)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D14 (%)
West Bengal	Haora, North Twenty Four Parganas	3,959	24%
Tamil Nadu	Cuddalore, Dindigul, Thanjavur, Vellore	3,078	18%
Andhra Pradesh	Krishna, Visakhapatnam	2,659	16%
Uttar Pradesh	Allahabad, Mathura, Muzaffarnagar	2,462	15%
Gujarat	Amreli, Bhavnagar, Valsad	1,378	8%
Rajasthan	Bikaner, Hanumangarh	920	5%
Jharkhand	Dhanbad	565	3%
Uttarakhand	Almora, Chamoli, Pithoragarh, Rudraprayag	424	3%
Punjab	Mansa, Tarn Taran	406	2%
Assam	Jorhat	266	2%
Maharashtra	Sindhudurg	219	1%
Haryana	Palwal	203	1%
Manipur	Thoubal	97	1%
Nagaland	Mokokchung	46	0.3%
Mizoram	Champhai, Saiha	40	0.2%
Andaman & Nicobar Islands	Andaman (North and Middle Andaman), Nicobars	38	0.2%
	TOTAL (D14)	**16,760**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 15 (D15)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D15 (%)
Rajasthan	Ganganagar, Jhunjhunun, Jodhpur, Sikar	2,246	19%
Gujarat	Anand, Junagadh, Kachchh, Navsari, Porbandar	2,074	17%
Tamil Nadu	Karur, Salem, Sivaganga	1,766	15%
Bihar	Patna	1,158	10%
Haryana	Bhiwani, Fatehabad, Kaithal, Mahendragarh	984	8%
Jharkhand	Ranchi	688	6%
Madhya Pradesh	Jabalpur	621	5%
Punjab	Firozpur	451	4%
Maharashtra	Ratnagiri	407	4%
Uttarakhand	Udham Singh Nagar	397	3%
Assam	Dibrugarh	312	3%
Karnataka	Bangalore Rural	272	2%
Jammu & Kashmir	Anantnag, Ganderbal, Kargil	271	2%
Meghalaya	East Khasi Hills	197	2%
Manipur	Bishnupur	54	0.5%
Sikkim	South District	36	0.3%
Puducherry	Yanam	21	0.2%
Arunachal Pradesh	Lower Subansiri	20	0.2%
	TOTAL (D15)	**11,975**	**100%**

District Development Cluster 16 (D16)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D16 (%)
Tamil Nadu	Namakkal, The Nilgiris, Thoothukkudi, Tirunelveli	2,182	17%
Maharashtra	Nashik, Raigarh	2,218	17%
Uttar Pradesh	Agra, Baghpat, Jhansi, Varanasi	2,170	17%
Karnataka	Chikmagalur, Mysore, Shimoga, Uttara Kannada	1,910	15%
Gujarat	Bharuch, Jamnagar, Mahesana	1,324	10%
Uttarakhand	Garhwal, Hardwar	591	4%
Odisha	Khordha	592	4%
Rajasthan	Ajmer	588	4%
Jharkhand	Purbi Singhbhum	553	4%
Haryana	Jind	277	2%
Jammu & Kashmir	Badgam, Samba, Shupiyan	243	2%
Punjab	Muktsar	204	2%
Himachal Pradesh	Kullu, Lahul & Spiti	115	1%
Mizoram	Kolasib, Lunglei	58	0.4%
Arunachal Pradesh	East Siang	21	0.2%
	TOTAL (D16)	**13,044**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 17 (D17)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D17 (%)
Tamil Nadu	Erode, Madurai, Tiruchirappalli, Tiruppur	3,322	27%
Haryana	Hisar, Jhajjar, Karnal, Panipat, Rewari, Sirsa, Sonipat, Yamunanagar	2,261	19%
Uttar Pradesh	Kanpur Nagar, Meerut	1,635	13%
Maharashtra	Sangli, Satara	1,372	11%
Punjab	Faridkot, Gurdaspur, Moga	859	7%
Rajasthan	Kota	500	4%
Madhya Pradesh	Gwalior	480	4%
Kerala	Idukki, Wayanad	429	4%
Himachal Pradesh	Bilaspur, Mandi, Sirmaur	448	4%
Karnataka	Dharwad	445	4%
Jammu & Kashmir	Baramula, Pulwama	290	2%
Daman & Diu	Daman	81	1%
Nagaland	Kohima	67	1%
Mizoram	Serchhip	15	0.1%
	TOTAL (D17)	**12,202**	**100%**

District Development Cluster 18 (D18)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D18 (%)
Gujarat	Gandhinagar, Rajkot, Surat, Vadodara	4,030	29%
Punjab	Amritsar, Barnala, Bathinda, Fatehgarh Sahib, Hoshiarpur, Rupnagar, Sangrur, Shahid Bhagat Singh Nagar	2,212	16%
Tamil Nadu	Kanniyakumari, Thiruvallur	1,852	13%
Rajasthan	Jaipur	1,493	11%
Himachal Pradesh	Hamirpur, Kangra, Kinnaur, Shimla, Solan, Una	1,003	7%
Maharashtra	Kolhapur	927	7%
Kerala	Palakkad	639	5%
Haryana	Kurukshetra, Rohtak	449	3%
Karnataka	Kodagu, Udupi	438	3%
Uttarakhand	Nainital	232	2%
Manipur	Imphal East	114	1%
Nagaland	Dimapur	96	1%
Sikkim	East District	68	1%
Puducherry	Karaikal	59	0.4%
	TOTAL (D18)	**13,611**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

District Development Cluster 19 (D19)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D19 (%)
Kerala	Alappuzha, Kannur, Kasaragod, Kollam, Kozhikode, Malappuram, Pathanamthitta, Thiruvananthapuram	5,276	23%
Maharashtra	Nagpur, Thane	4,414	19%
Tamil Nadu	Coimbatore, Kancheepuram	2,509	11%
Uttar Pradesh	Ghaziabad, Lucknow	2,224	9%
Punjab	Jalandhar, Kapurthala, Ludhiana, Patiala	2,015	9%
Gujarat	Ahmedabad	1,800	8%
Telangana	Rangareddy	1,792	7%
Madhya Pradesh	Bhopal, Indore	1,471	6%
Karnataka	Dakshina Kannada	500	2%
Jammu & Kashmir	Jammu, Leh	373	2%
Puducherry	Puducherry	290	1%
Haryana	Ambala	249	1%
Manipur	Imphal West	142	1%
Andaman & Nicobar Islands	South Andaman	69	0.3%
Arunachal Pradesh	Papum Pare	46	0.2%
Lakshadweep	Lakshadweep	13	0.1%
Daman & Diu	Diu	7	0.0%
	TOTAL (D19)	**23,189**	**100%**

District Development Cluster 20 (D20)

Year: 2018

State	Districts	Households: Estimated number ('000)	Households: Share of state in the D20 (%)
Maharashtra	Mumbai, Mumbai Suburban, Pune	5,619	26%
Delhi	All 9 districts of Delhi	4,008	18%
Karnataka	Bangalore	3,304	14%
Kerala	Ernakulam, Kottayam, Thrissur	2,275	10%
Tamil Nadu	Chennai	1,276	6%
West Bengal	Kolkata	1,059	5%
Haryana	Faridabad, Gurgaon, Panchkula	1,165	5%
Telangana	Hyderabad	932	4%
Uttar Pradesh	Gautam Buddha Nagar	489	2%
Uttarakhand	Dehradun	440	2%
Goa	North Goa, South Goa	378	2%
Assam	Kamrup Metropolitan	362	2%
Chandigarh	Chandigarh	269	1%
Punjab	Sahibzada Ajit Singh Nagar	260	1%
Jammu & Kashmir	Srinagar	245	1%
Mizoram	Aizawl	100	0.4%
Puducherry	Mahe	8	0.0%
	TOTAL (D20)	**22,191**	**100%**

Source: Census (2001 & 2011); PRICE estimates (2018)

Appendix 5
Statistical Appendix

Correlation Matrix

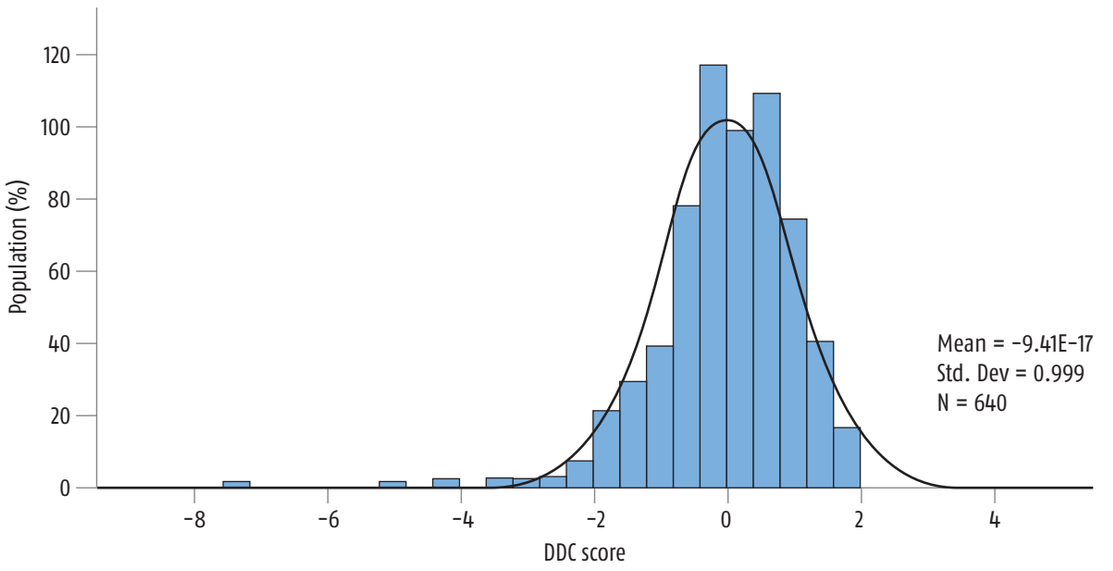
	Human Development Index (HDI)	Household income	Urbanization	Literacy
Access to no amenity at all	-0.681** (0.001) N=20	-0.580** (0.002) N=25	-0.539** (0.005) N=25	-0.531** (0.006) N=25
Access to all four amenities (Electricity, Tap Water, Toilet, LPG)	0.831** (0.000) N=20	0.736** (0.000) N=25	0.794** (0.000) N=25	0.720** (0.000) N=25

**Correlation is significant at the 0.01 level (2-tailed)

Numbers in parentheses show significance level (2-tailed)

Source: ICE 360° Survey (2016) and UNDP's HDI (2012)

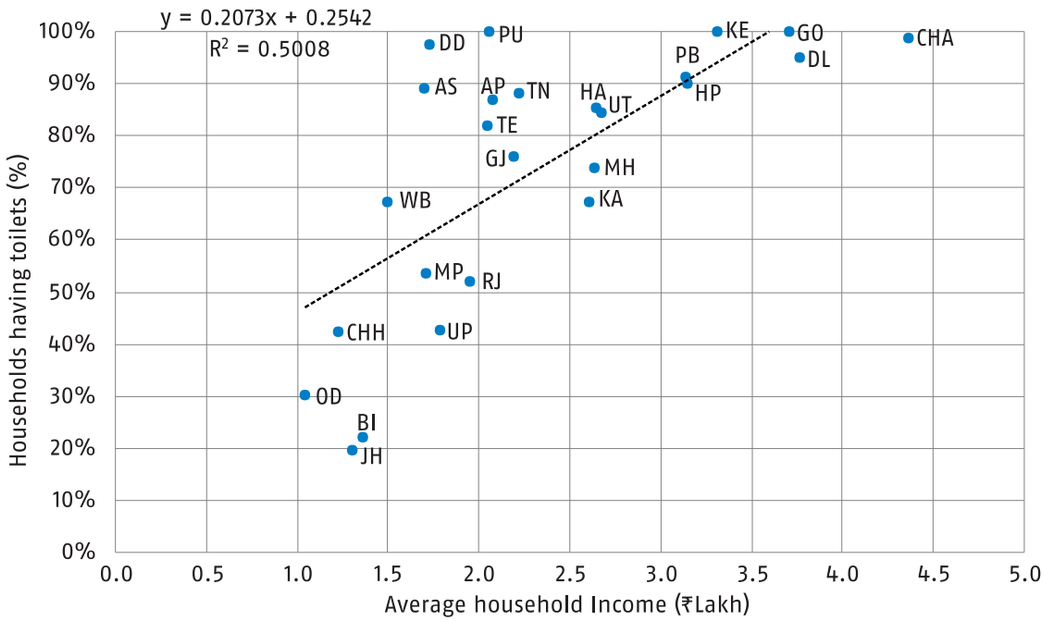
Distribution of population by DDC* score



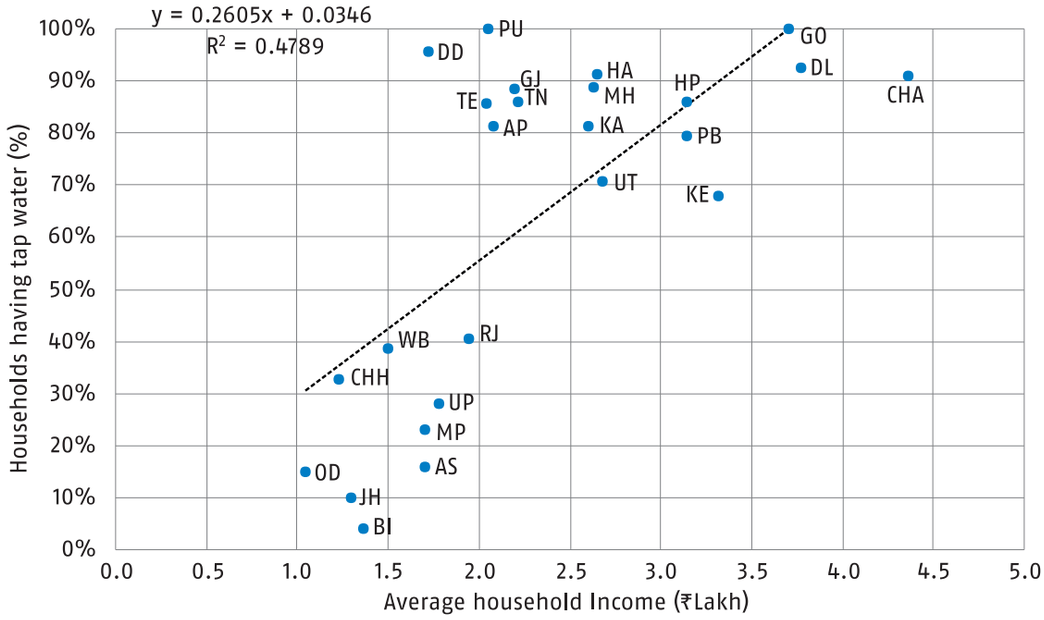
*District Development Cluster

Source: ICE 360° Survey (2016)

Relationship between toilet ownership and estimated household income



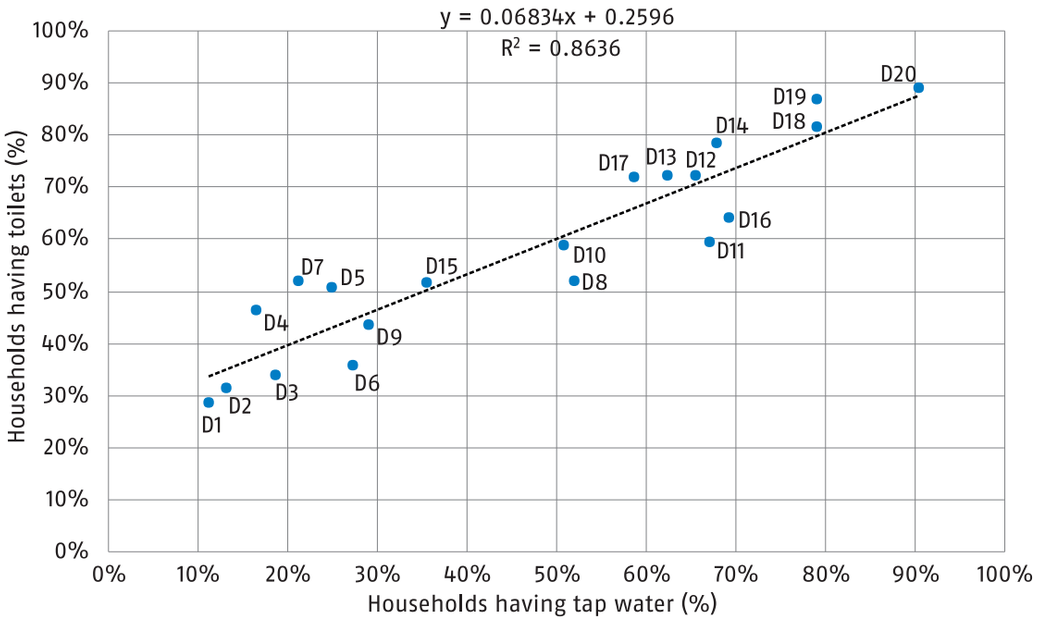
Relationship between tap water connection and estimated household income



AP: Andhra Pradesh; **AS:** Assam; **BI:** Bihar; **CHA:** Chandigarh; **CHH:** Chhattisgarh; **DD:** Daman & Diu; **DL:** Delhi; **GJ:** Gujarat; **GO:** Goa; **HA:** Haryana; **HP:** Himachal Pradesh; **JH:** Jharkhand; **KA:** Karnataka; **KE:** Kerala; **MH:** Maharashtra; **MP:** Madhya Pradesh; **OD:** Odisha; **PB:** Punjab; **PU:** Puducherry; **RJ:** Rajasthan; **TE:** Telangana; **TN:** Tamil Nadu; **UP:** Uttar Pradesh; **UT:** Uttarakhand; **WB:** West Bengal

Source: ICE 360° Survey (2016)

Relationship between toilet ownership and tap water connection



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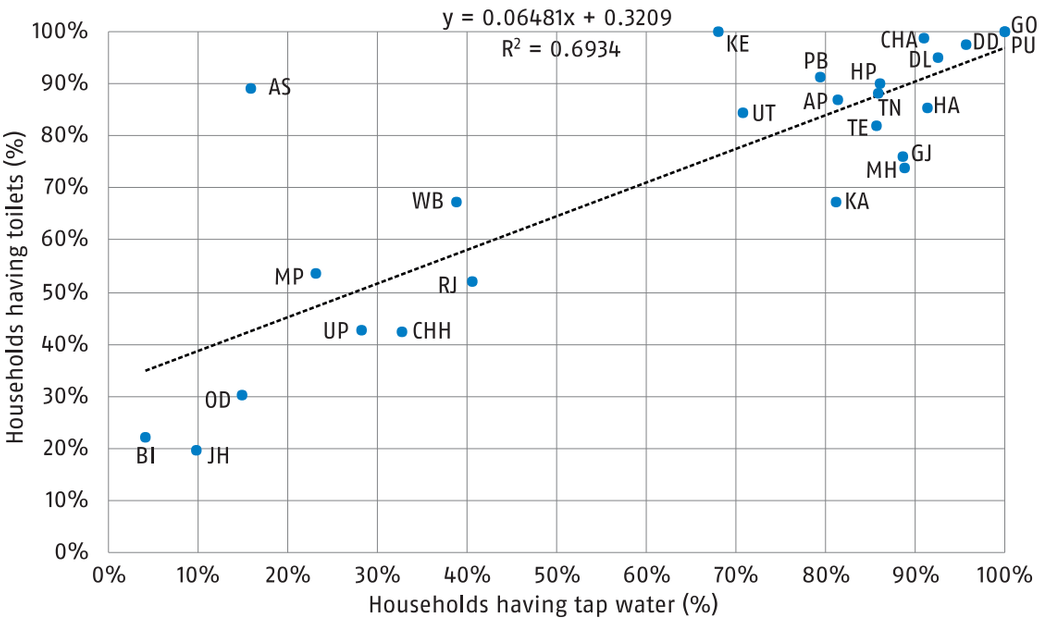

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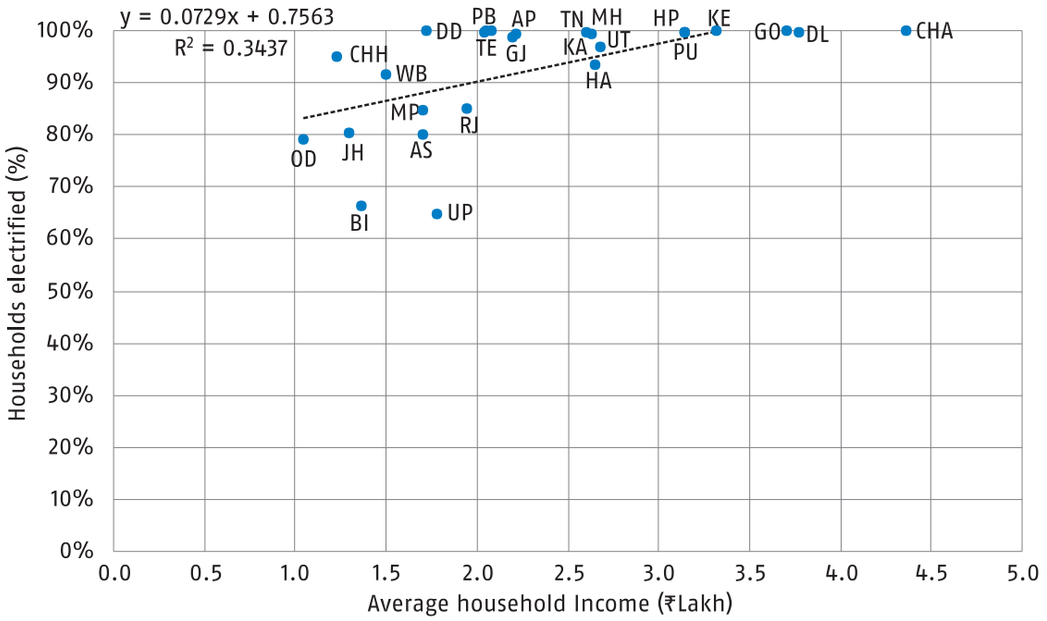
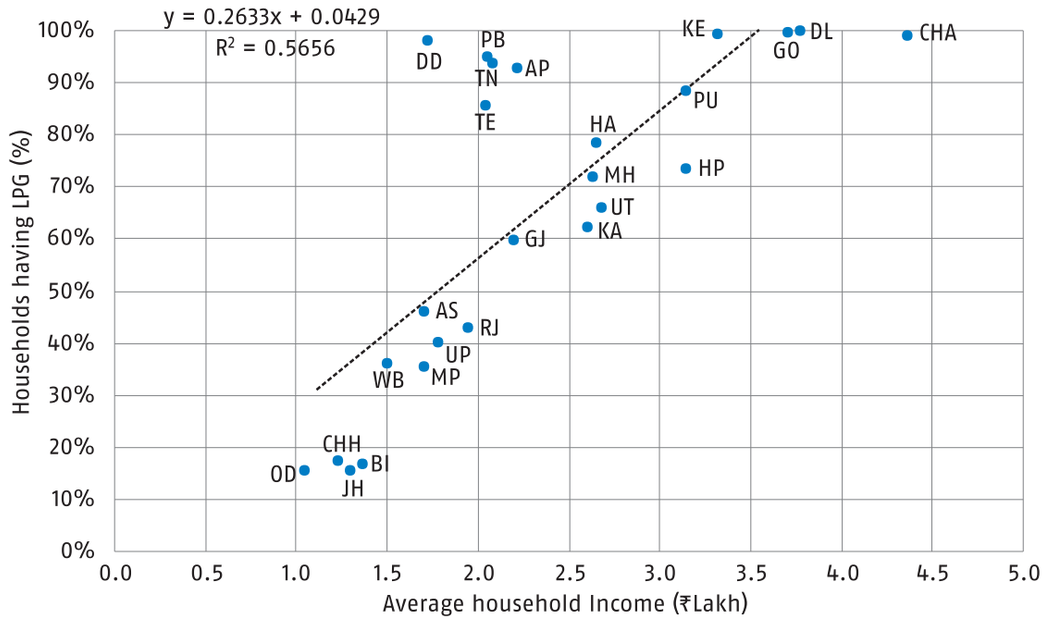
Source: ICE 360° Survey (2016)

Relationship between electricity connection and estimated household income



Relationship between LPG connection and estimated household income



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Source: ICE 360° Survey (2016)

Study Team

Team Leader and Principal Author
Rajesh Shukla

Co-authors
Adite Banerjie
V. T. Prabhakaran
Amit Sharma

Data Analysts & Support
Avijit Bhargarh
Anil Kumar
Megha Shree

Technical Support
Shailendra Dubey
Ashwini Joshi

Co-ordination and Management
Pooja Sharma

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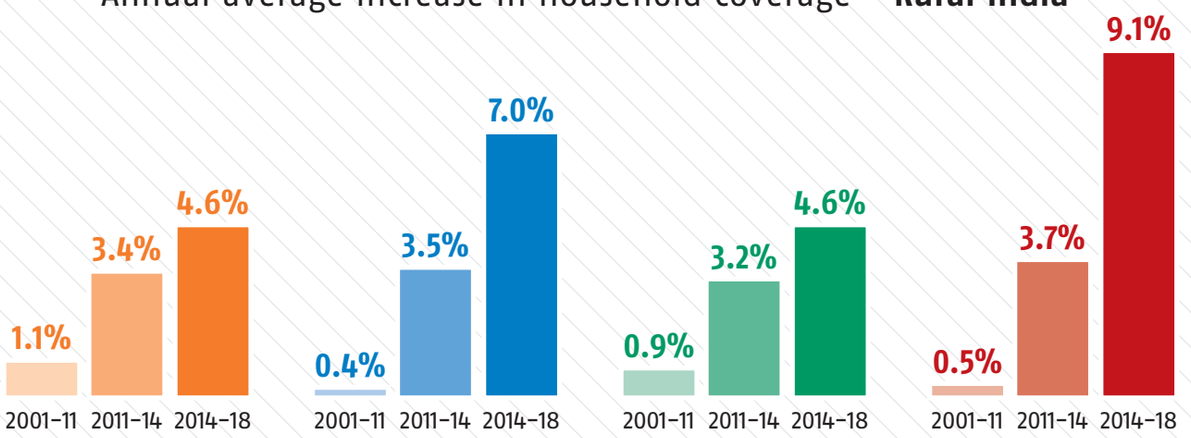
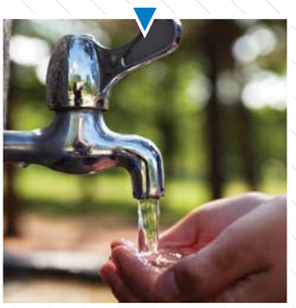
Annual average increase in household coverage – **Rural India**



Electricity

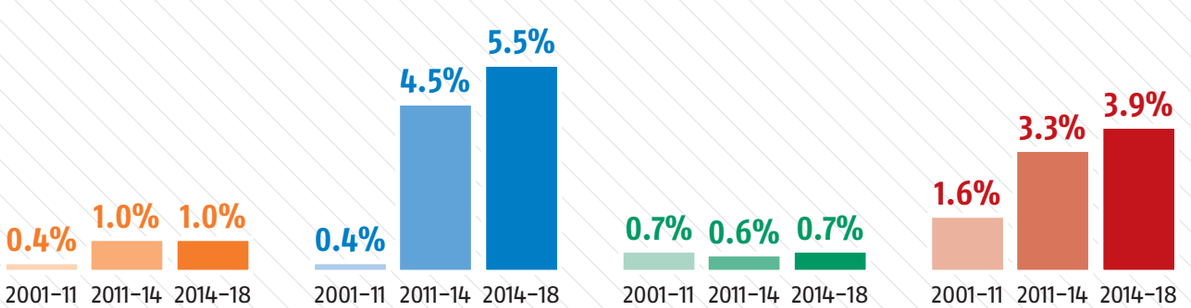
Tap Water



Toilet

LPG

Annual average increase in household coverage – **Urban India**



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