## Supporting materials

**Table A1** Process technology-based classification of sample cities

| No. | Processing techniques | Sample city (district) | Proportion (%) |
|---|---|---|---|
| 1 | anaerobic biogas | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29 | 93.10 |
| 2 | aerobic fermentation | 20, 28 | 6.9 |

Notes: Sample cities (districts) in the table are represented by their assigned numbers

**Table A2** Regional location-based classification of samples cities

| No. | Regional location | Sample city (district) | Proportion(%) |
|---|---|---|---|
| 1 | Northern region | 3, 6, 9, 11, 12, 14, 15, 18, 22, 27 | 34.48 |
| 2 | Southern region | 2, 4, 5, 7, 10, 16, 17, 19, 23, 24, 25, 26, 28, 29 | 48.28 |
| 3 | North-west region | 1, 8, 13, 20, 21 | 17.24 |

Notes: Sample cities (districts) in the table are represented by their assigned numbers

**Table A3** Urban income-based classification of sample cities

| No. | Urban income | Sample city (district): N | Proportion(%) |
|---|---|---|---|
| 1 | Low-income areas | 1: 0.64; 5: 0.36; 6: 0.52; 9: 0.58; 13: 0.53; 16: 0.59; 18: 0.37; 21: 0.50 | 27.59 |
| 2 | Middle-income areas | 2: 0.78; 8: 0.89; 10: 0.83; 11: 0.77; 14: 0.70; 15: 0.88; 19: 0.88; 20: 0.93; 23: 0.95; 28: 0.74 | 34.48 |
| 3 | High-income areas | 3: 1.17; 4: 1.27; 7: 1.87; 12: 1.36; 17: 1.76; 22: 1.09; 24: 1.05; 25: 1.79; 26: 1.29; 27: 1.65; 29: 2.25 | 37.93 |

Notes: Sample cities (districts) in the table are represented by their assigned numbers; the average per capita GDP is 72131 yuan

**Table A4** Service population size-based classification of sample cities

| No. | Service population size | Sample city (district): P | Proportion(%) |
|---|---|---|---|
| 1 | Small area | 1: 0.60; 2: 0.75; 3: 0.80; 8: 0.65; 9: 0.66; 10: 0.69; 11: 0.73; 13: 0.70; 14: 0.74; 18: 0.60; 19: 0.48; 20: 0.43; 21: 0.49; 25: 0.31; 28: 0.55 | 51.73 |
| 2 | Medium area | 4: 1.37; 5: 0.86; 6: 1.00; 7: 1.64; 15: 1.14; 16: 1.04; 23: 0.83; 26: 0.95; 27: 1.12; 29: 1.17 | 34.48 |
| 3 | Large area | 12: 2.59; 17: 2.21; 22: 1.85; 24: 2.06 | 13.79 |

Notes: Sample cities (districts) in the table are represented by their assigned numbers; the average service population is 1.68 million

**Table A5** Effect of service population size on tonnage investment

| Dependent variable | (I) Serving population | (J) Serving population | Mean difference (I-J) | Standard deviation | Sig. | 95% Confidence interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower limit | Upper limit |
| Tonnage investment | 1 | 2 | 23.0413 | 6.33830 | 0.003* | 9.2314 | 36.8513 |
| | | 3 | –0.4552 | 8.73674 | 0.959 | –19.4909 | 18.5805 |
| | 2 | 1 | –23.0413 | 6.33830 | 0.003* | –36.8513 | –9.2314 |
| | | 3 | –23.4965 | 9.18506 | 0.025* | –43.5090 | –3.4840 |
| | 3 | 1 | 0.4552 | 8.73674 | 0.959 | –18.5805 | 19.4909 |
| | | 2 | 23.4965 | 9.18506 | 0.025* | 3.4840 | 43.5090 |

Notes: * Mean difference in the level of 0.05 more significant