Does design of a wastewater treatment plant matter for its acceptance? Results from a study in Raisen, Madhya Pradesh

Presented by: Dr. Markus Starkl (BOKU)

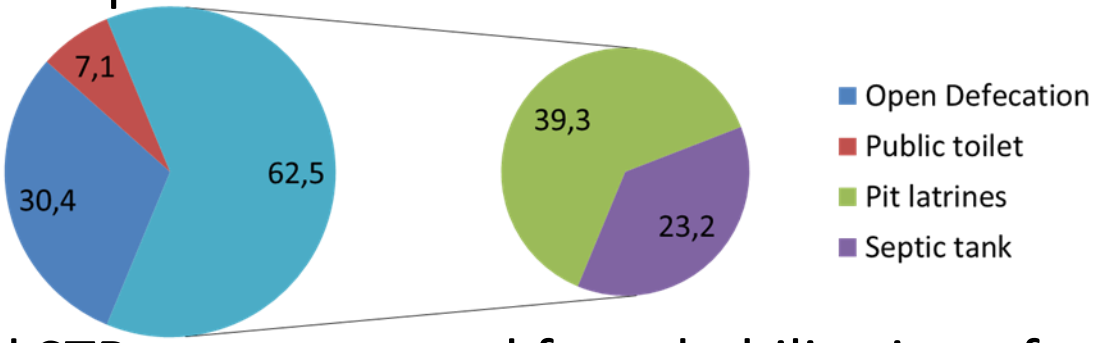
Co-authors: N. Brunner, V. Mishra, N. Unawane (CEMDS)

Content

- Background
- Research questions
- Design options
- Willingness to pay studies
- Conclusions

Background

- **Raisen**
  - 50km east of Bhopal, around 50.000 inhab.
  - City Sanitation Plan (CSP) was conducted in 2010 by partner CEMDS with support from Wateraid
  - Usual problems of poor water and sanitation solutions highlighted

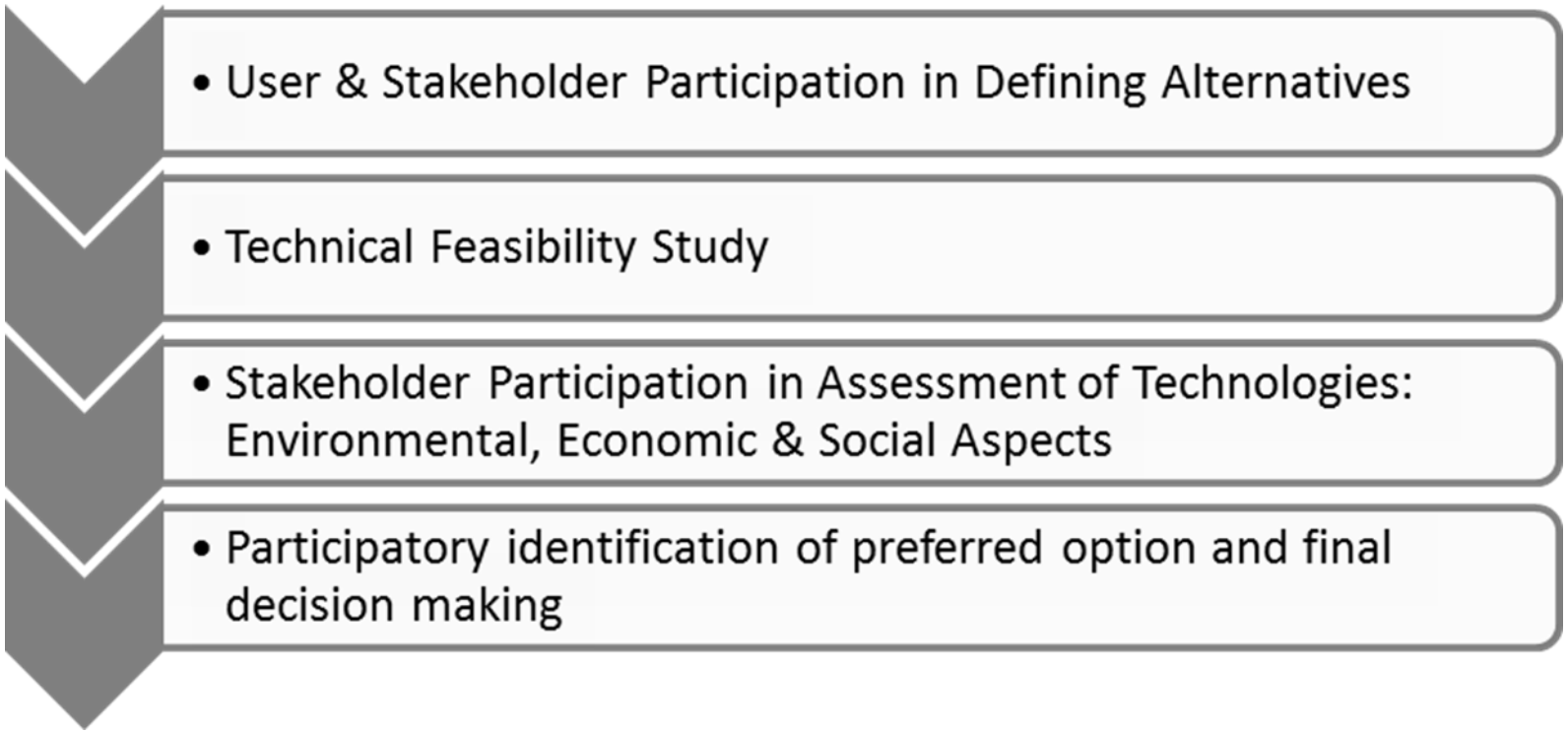


  - A decentralized STP was suggested for rehabilitation of a pond with religious importance
  - Subsequent application for EU funds to plan and implement solution successful
  - Selected technology: trickling filter (first a constructed wetland)

Raisen

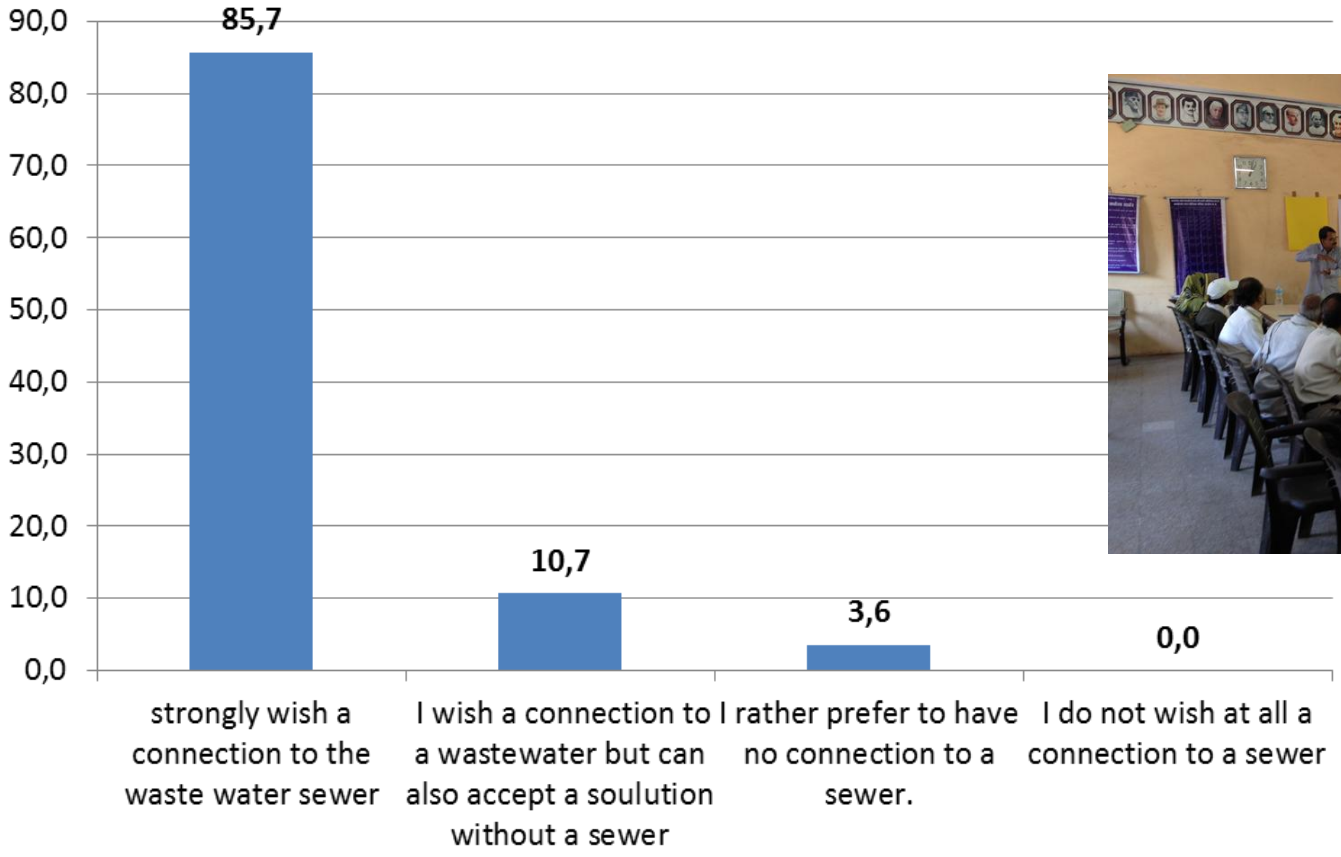
Background

- Participatory planning process has been applied following the POSAF methodology



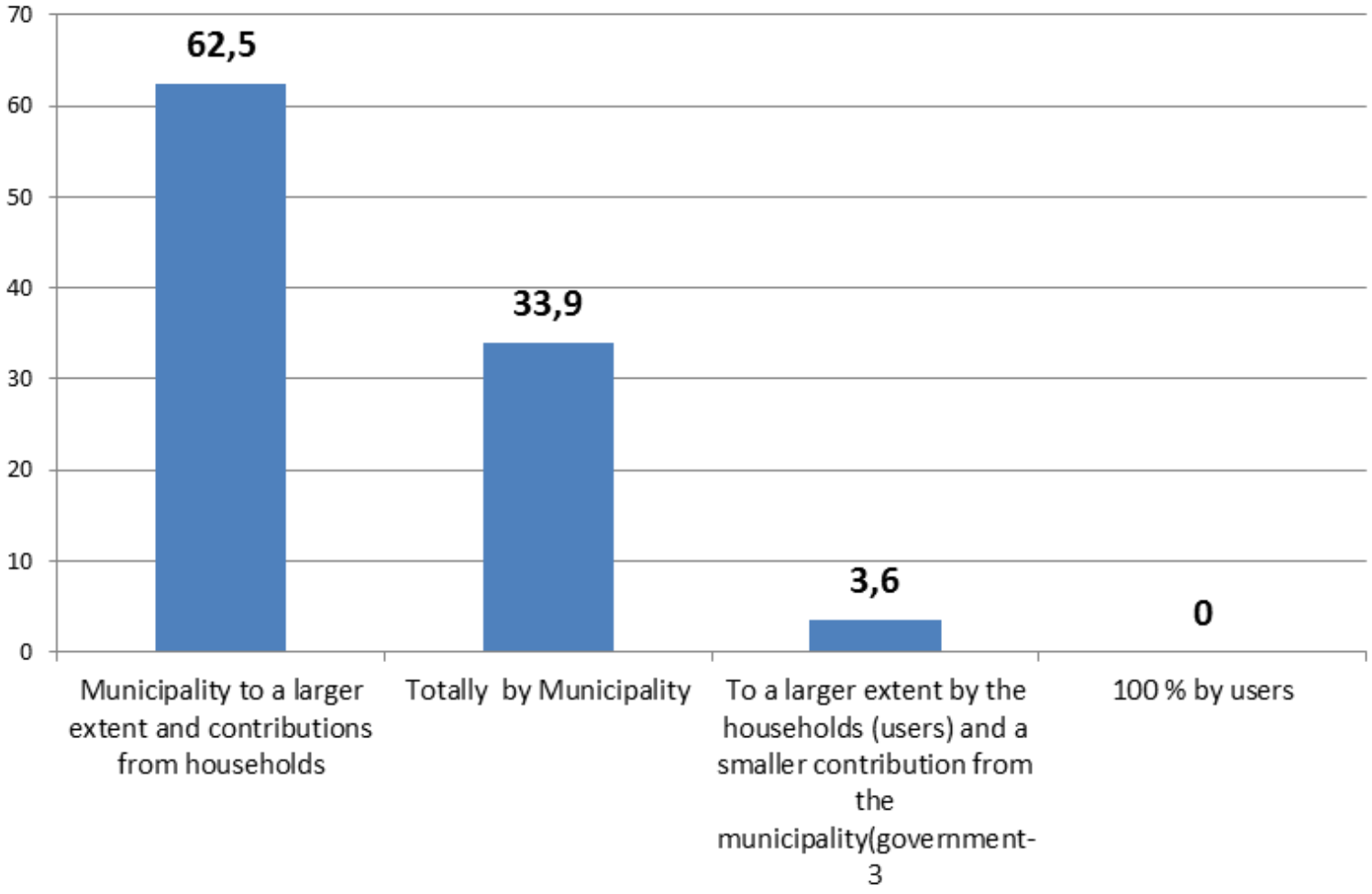
Background

- Focus on acceptance and willingness to pay (WTP)
- Strong focus on awareness raising activities (with support from Wateraid)
- Initial survey had shown that people strongly wished a connection to a WWTP



Background

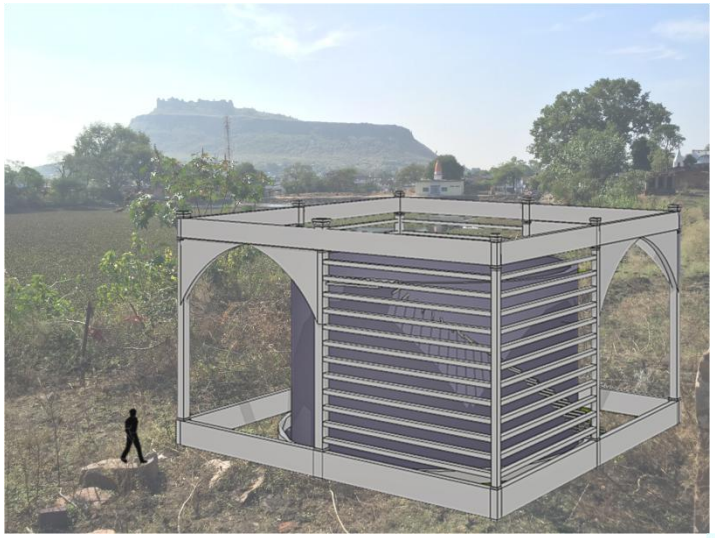
- Initial response to financing:

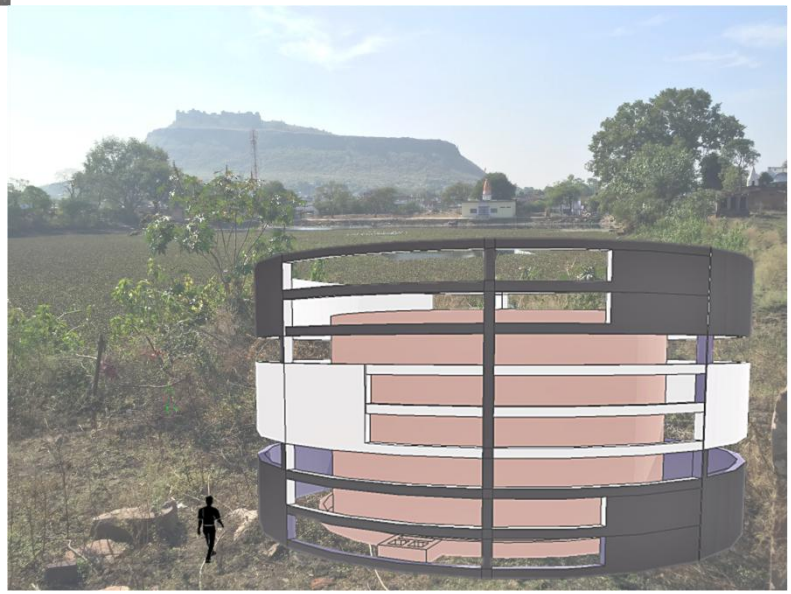


Research questions

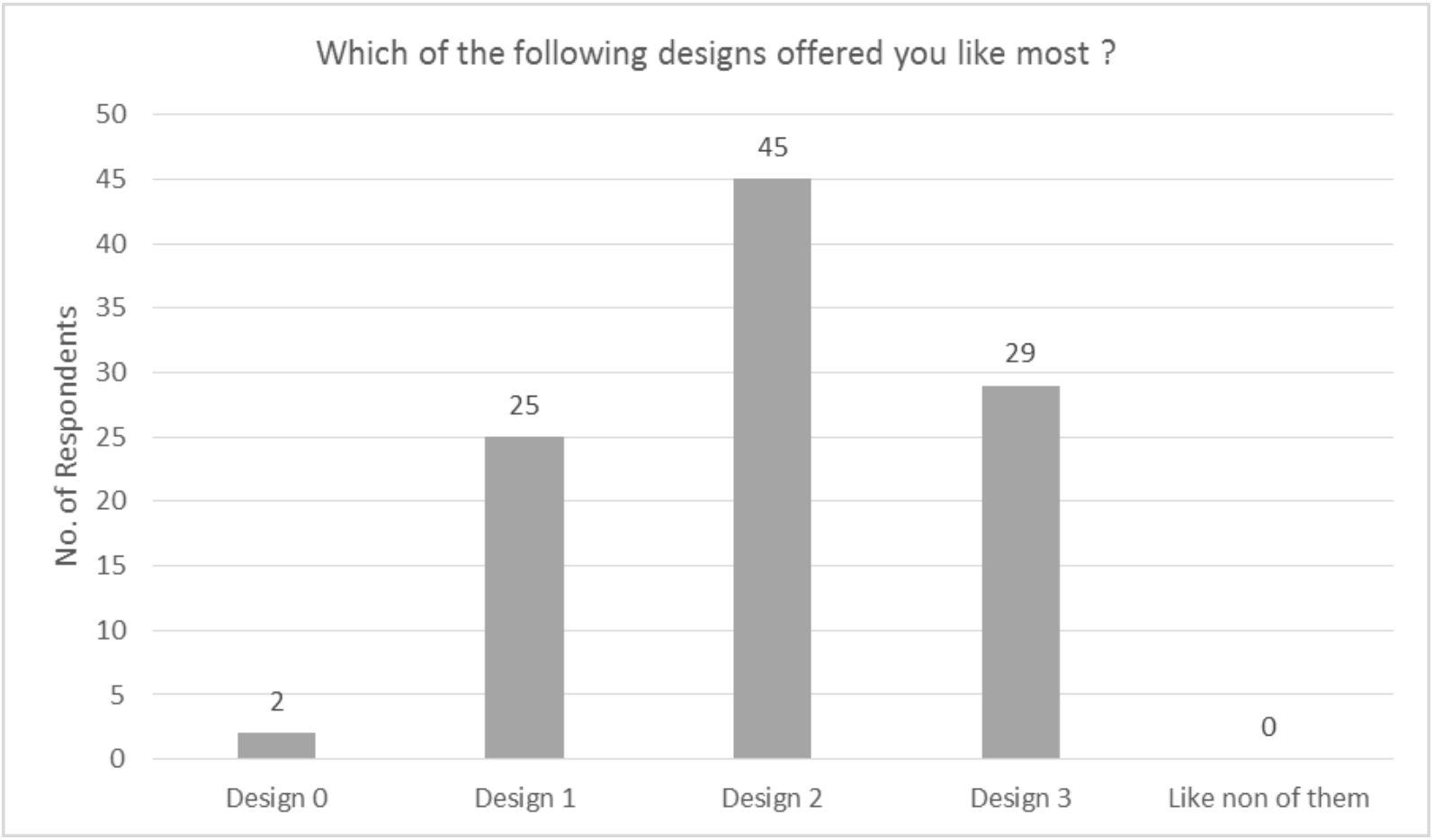
- **3 main research questions**
  - 1: Trickling filters are known for their architectural impact, which is a main disadvantage. Can it be improved by architectural beautification?
  - 2: What is the opinion of the users about the appearance and beautification options?
  - 2: Financing of WWTP: What is the WTP of users to cover costs for the plant, and is there a relation with the architectural appearance of the plant?

Architectural beautification

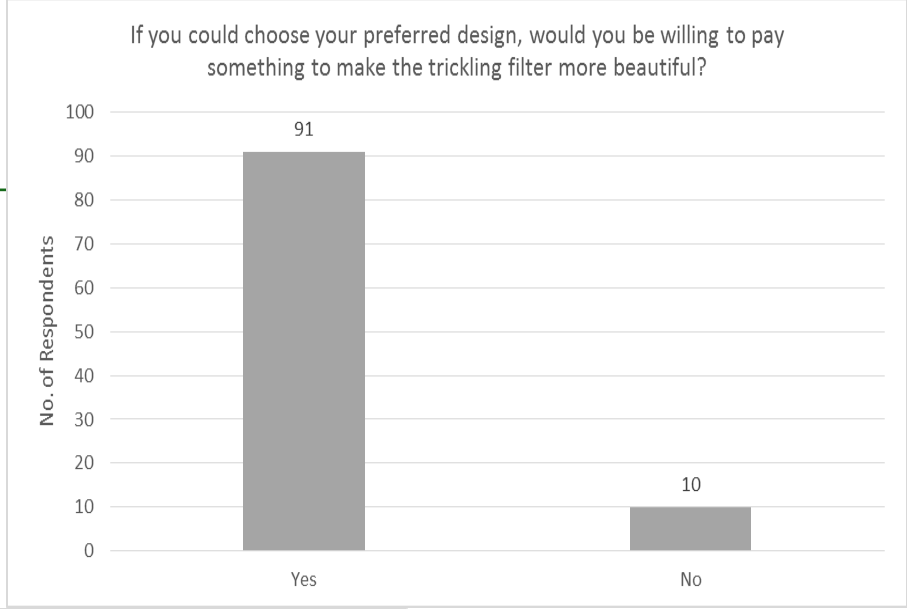


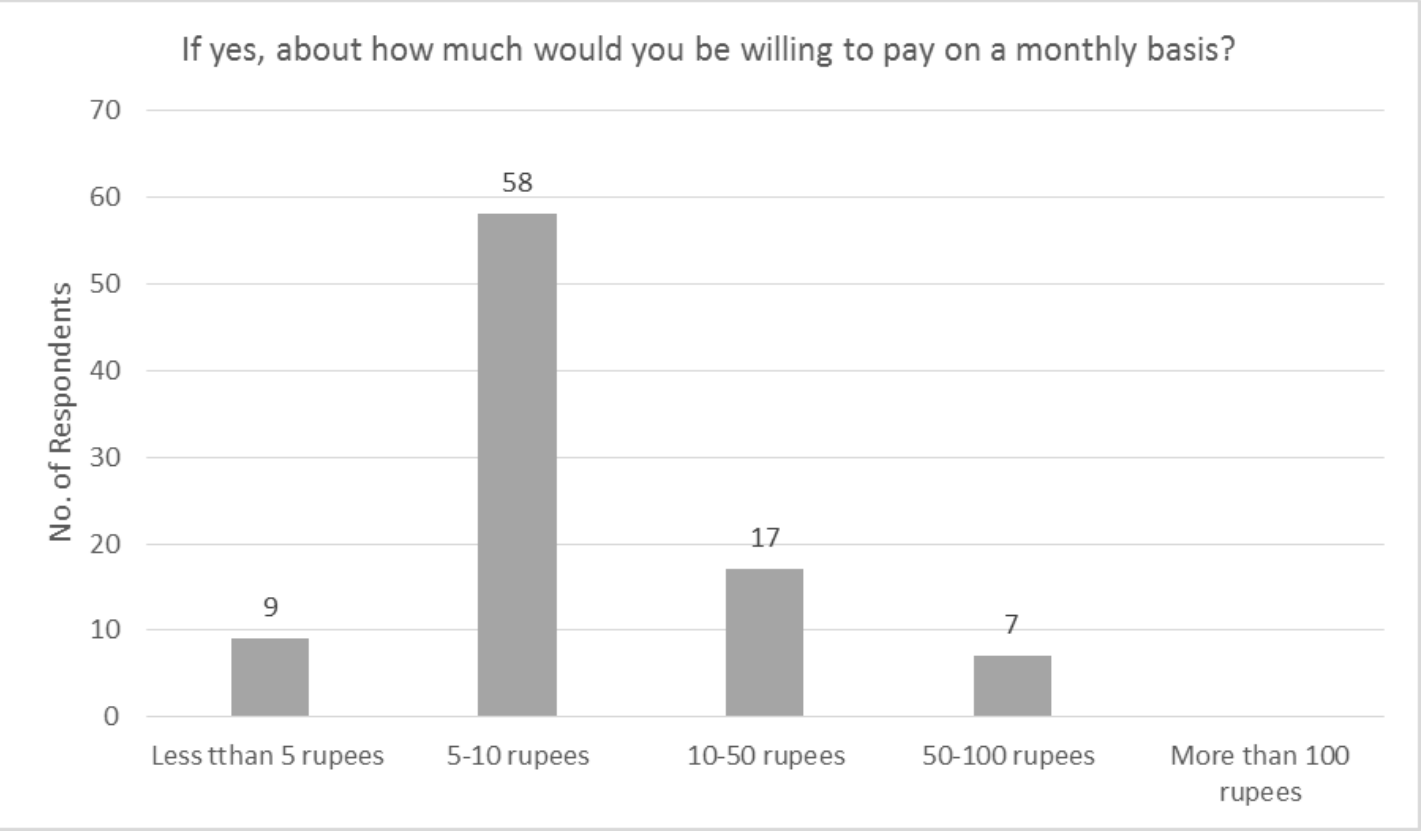


Results

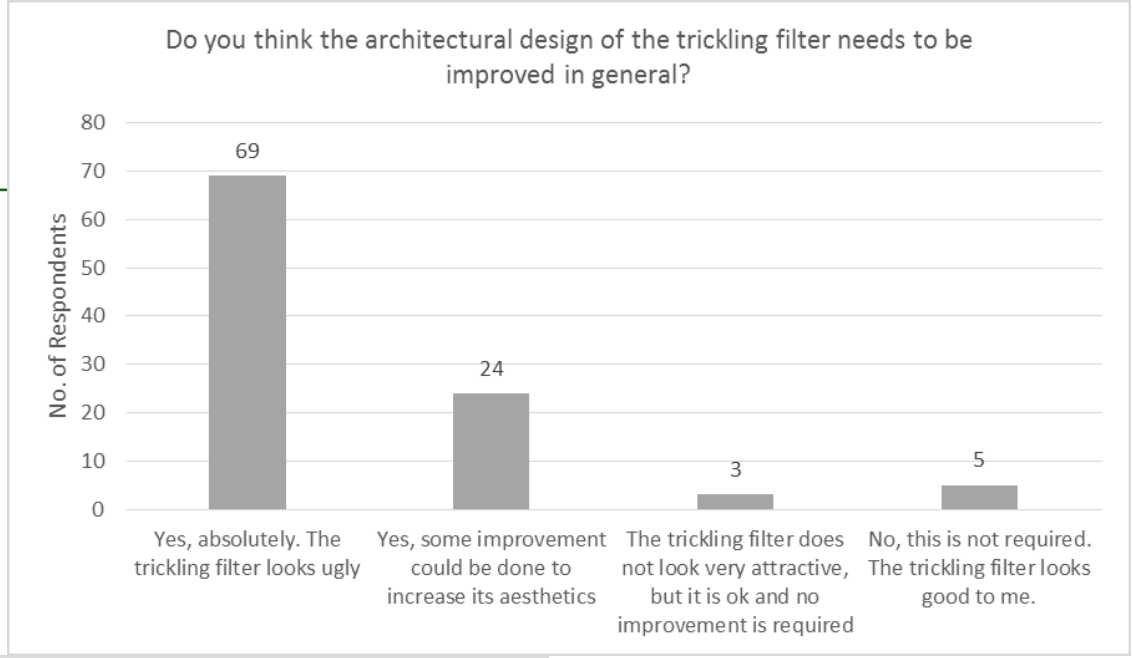

Which of the following designs offered you like most ?
No. of Respondents
50
45
40
35
30
25
20
15
10
5
0
2
25
45
29
0
Design 0
Design 1
Design 2
Design 3
Like non of them

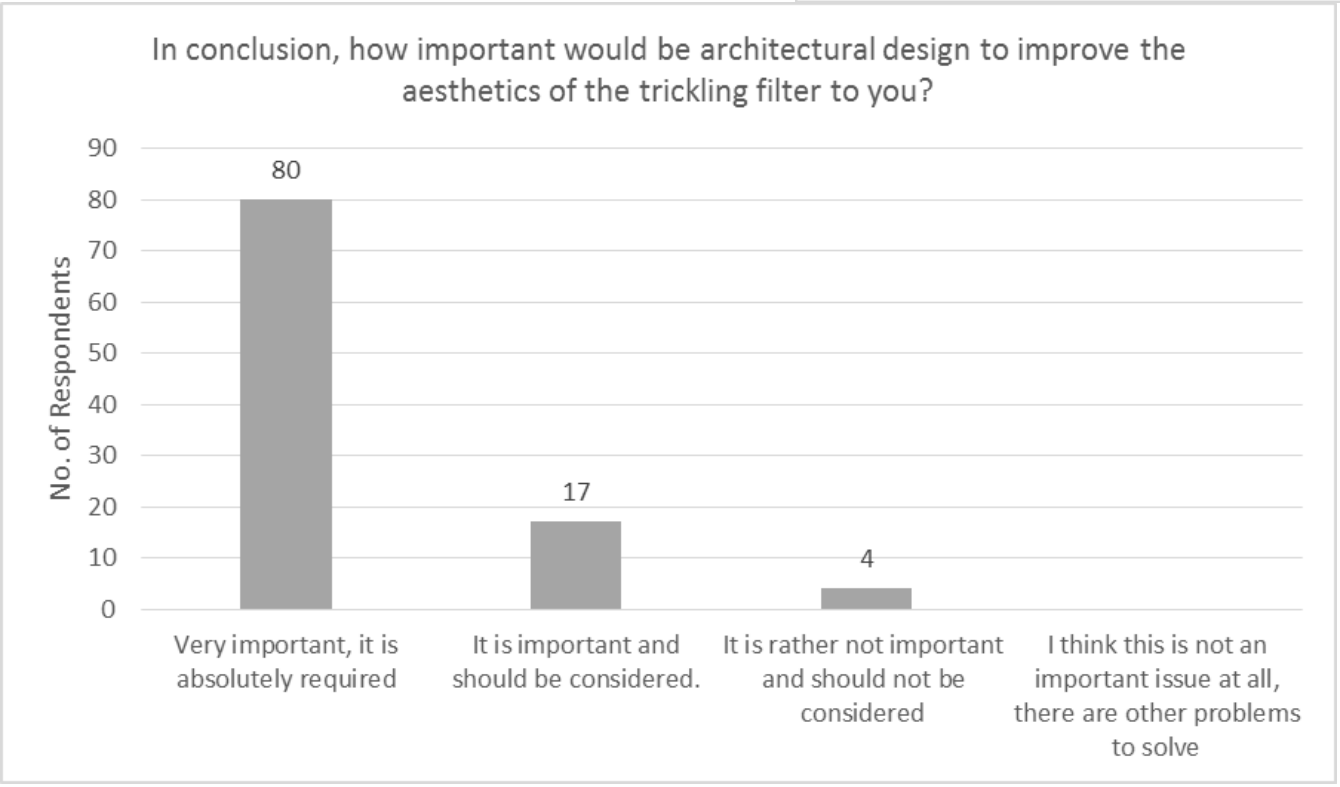
Results


If you could choose your preferred design, would you be willing to pay something to make the trickling filter more beautiful?
No. of Respondents
100
90
80
70
60
50
40
30
20
10
0
91
10
Yes
No


If yes, about how much would you be willing to pay on a monthly basis?
No. of Respondents
70
60
50
40
30
20
10
0
9
58
17
7
Less tthan 5 rupees
5-10 rupees
10-50 rupees
50-100 rupees
More than 100 rupees

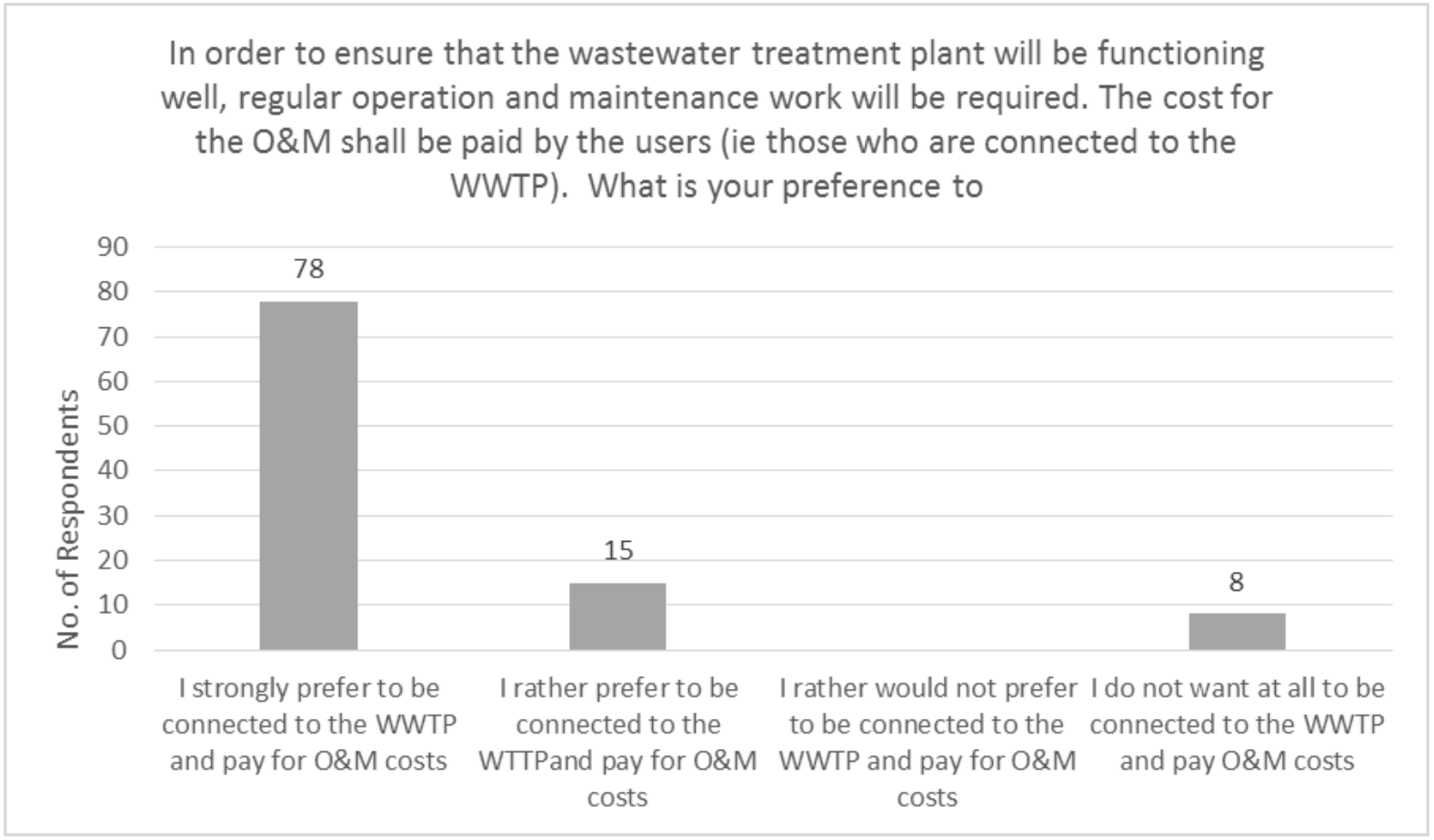
Results





Median WTP for design:
5-10 INR/month

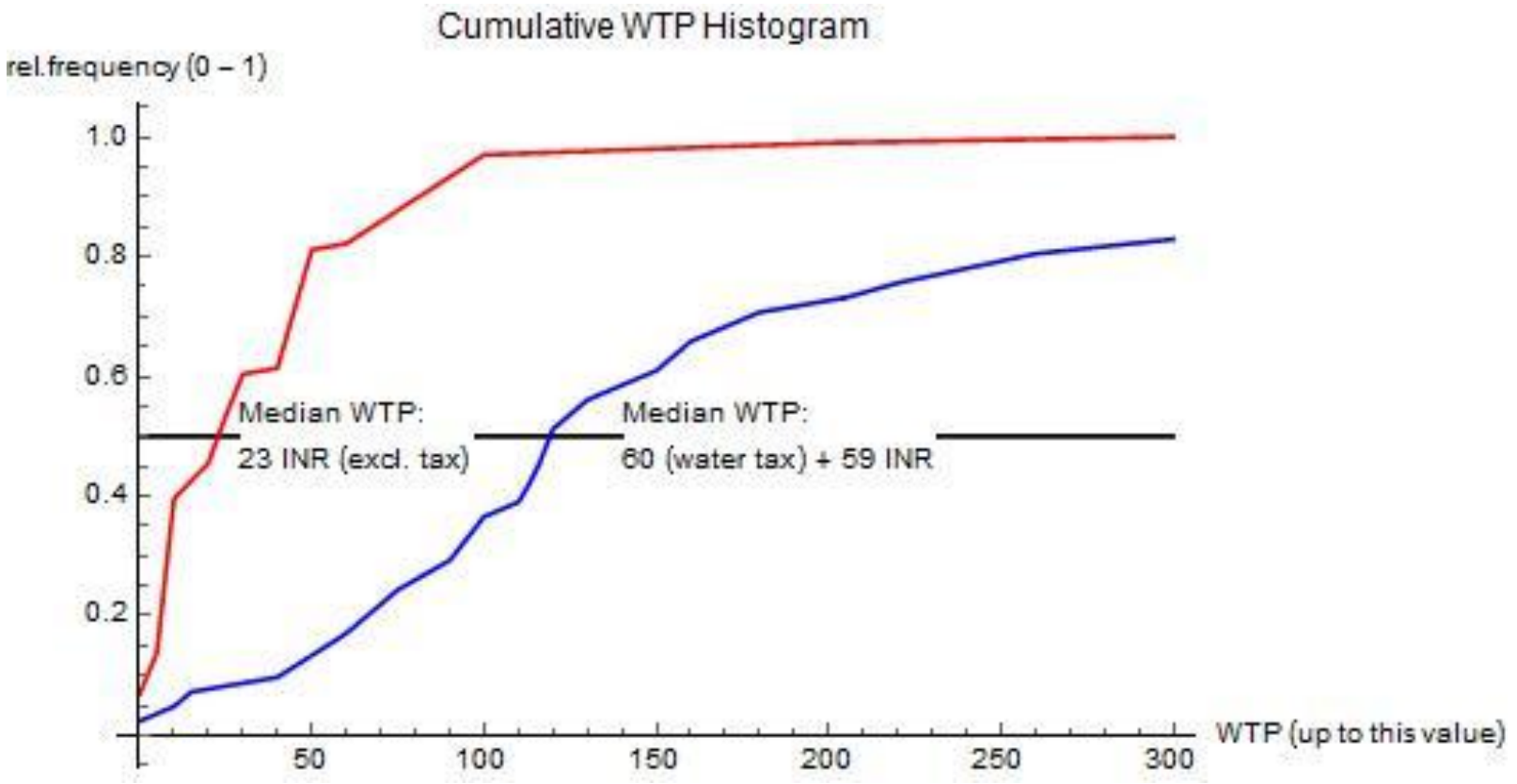
Results


In order to ensure that the wastewater treatment plant will be functioning well, regular operation and maintenance work will be required. The cost for the O&M shall be paid by the users (ie those who are connected to the WWTP). What is your preference to
No. of Respondents
90
80
70
60
50
40
30
20
10
0
78
15
8
I strongly prefer to be connected to the WWTP and pay for O&M costs
I rather prefer to be connected to the WTTPand pay for O&M costs
I rather would not prefer to be connected to the WWTP and pay for O&M costs
I do not want at all to be connected to the WWTP and pay O&M costs

Results

Development of WTP for O&M over time

blue	first survey (2014)	WTP for sanitation including water tax
red	second survey (2015)	WTP for O&M in addition to water tax



Conclusions

- Architectural design has positive influence on WTP and acceptance of WWTP
- Sanitation charge of 50 INR/month per HH (in addition to 60 INR water tax) sufficient to cover calculated O&M costs
  - (1,5 lakhs / year; around 2350 households, 50 INR per months and household)
- However, WTP may not suffice:
  at most half of charge could be expected to be collected
- Political issue!
  - Either poor are not covered by STP
  - Or subsidies for the poor for O&M costs are needed
  - Or measures to increase WTP of the poor for sanitation

Acknowledgements

- Project SARASWATI (Supporting consolidation, replication and up-scaling of sustainable wastewater treatment and reuse technologies for India)

  Project supported by the European Commission's FP7 (Grant Number 308672) and DST, GOI under EU-India cooperation in water technology: research and innovation