Impact of Ecological Sanitation Toilets on Sustainable Development: A Case Study of Siddhipur Village Development Committee of Lalitpur District, Nepal

by

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Recommendation Letter

This project work entitled **Impact of Ecological Sanitation Toilets on Sustainable Development: A Case Study of Siddhipur Village Development Committee of Lalitpur District, Nepal,** submitted by Samita Shrestha, is a bonafide project work carried out under my supervision in partial fulfillment of the requirement for the degree of Master of Arts in Rural Development. I, therefore, recommend for its evaluation and approval by the project work Evaluation Committee.

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Research Supervisor

Approval Letter

This project work entitled **Impact of Ecological Sanitation Toilets on Sustainable Development: A Case Study of Siddhipur Village Development Committee of Lalitpur District, Nepal,** prepared by Samita Shrestha, has been accepted in partial fulfillment of the requirements for the degree of Master of Arts in Rural Development.

Evaluation Committee

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Executive Summary

The ecological sanitation, which is economically feasible, environmentally sustainable and based on a loop approach, is being promoted in different parts of agro based settlements. The double-vault urine diverting toilet, one of the options of ecological toilets, had constructed different peripheral communities of capital city. The beauty of ECOSAN toilet is assessed in terms of sustainable development in this study.

Nepal is a poor and agricultural dominant country. Being a poor country, we have to import chemical fertilizers and pesticides from other countries. Use of this fertilizers and pesticides leads to soil degradation which in turn leads to low production and two steps backward to poverty. Besides, except core areas of metropolitan and sub metropolitan cities, there are no sewerage systems. So, the main problem is how to use human waste properly.

The general objective of the study is to find out how ECOSAN toilet helps in the process of sustainable development. The specific objectives are functions of toilet, advantage over traditional sanitation system, impact of ECOSAN and social acceptance over the settlement of Siddhipur.

Siddhipur is traditional farmers' village located around 10 km southeast of Kathmandu in Lalitpur district. People are farming as an occupation, low rate of literacy, low level of income, poor sanitary condition, lack of sanitary facilities and lack of drinking facilities. Some of the sanitary practices are: *nauga*, *sag* and *khikhamoga*.

Fifty-nine ECOSAN toilets and same number. of households are in control area are taken for the study. The households in the control area were respondents in the study area. Observation, household survey and questionnaire were main sources of primary information. Various theses, ECOSAN journals and websites, paper of workshops and seminars are main sources of secondary data.

The ecological sanitation toilet can be promoted as a sustainable alternative. It is not only beneficial from the point of view of the excreta management and sanitation, but also from the point of view of nutrient recycling which is being lost as waste.

ECOSAN toilet pan consists of a slab built over two vaults. The slab has a hole over each vault for the faeces to drop in and a funnel like device to collect the urine. It takes an average household six months to fill one of the vaults. Then second vault is used. The vault is emptied following an additional six months of sanitization and the material is taken to soil compost. Urine is never mixed in this system which is collected separately and can be applied as a fertilizer by diluting with water as necessary.

It is found accepted as improved approach over traditional unhygienic practice of open defecation. ECOSAN is self modification in design and construction incorporating nauga and saga with ECOSAN. Its replacement in some cases and use of the unit constructing inside the dwelling with satisfaction can be taken as an evidence of cultural acceptance.

The settlements of Siddhipur community feel comfortable to use the toilet. Besides, there is improvement in sanitation status. Moreover, acceptability is found higher in agro-based settlement due to its manure value and also suitable in low land settlements because of its water tightness or collection tank and constructed above the ground. ECOSAN toilet is found superior to conventional options of sanitation in terms of cost, social and technical acceptance and environment benefit.

Urine separation or non-mixing system toilets are found accepted by the communities because of their manure value, improvement of traditional method, economic benefit, environmental benefit as well as social benefit. Yet, the people feel difficulty to use this type of toilet due to lack of public awareness.

We need to make additional efforts for massive replication of the system, addressing the reservation, correcting defects and exploring benefits.

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List of Acronyms and Abbreviations

CBS	Central Bureau of Statistics
ECOSAN	Ecological Sanitation
ENPHO	Environment and Public Health Organization
FSD	Forum for Sustainable Development
HH	Household
ICIMOD	International Centre for Integrated Mountain Development
OPD	Outpatients department
SOE	State of the Environment
UNICEF	United Nations International Children Emergency Fund
VDC	Village Development Committee
WCED	World Commission on Environment and Development
WHO	World Health Organization
%	Percentage