

Enhancing the role of IOE in Shelter Design and Development in Nepal



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Shelter Situation Analysis

Introduction

"My heart is deep in the country. But I live for the City."

Background

Housing as a basic need and more than just a shelter is a widely accepted concept in Nepal. Housing process initiated by people influences human settlements as they create towns and cities. So the understanding of housing process is important as it makes cities and towns more manageable.

The rapidly growing population in urban centres of Nepal has created a big demand for housing. Many housing companies have proliferated in the major cities of Nepal offering the services. As government has no initiation to invest in urban housing projects the private sector is actively involved to alleviate the urban housing problems. In this context it is relevant to examine major issues of housing situation in Nepal, and the role **IOE** can play in terms of human resources and co-ordination among the actors and stakeholders.



Geography/Location/Administration

Nepal is a small South-Asian country between big countries like China and India. Well known for its topographic diversity, cultural plurality and ecological zones ranging from 200-8800m, horizontally divided into three regions, High Mountains, Hills and Terai (planes) the country has an area of 147,181 square meters and divided into 5 development regions, 75 districts and 14 zones. Kathmandu is the capital city and other urban cities are Lalitpur and Bhaktapur famous for temple architecture. Nepal is also admired for her natural beauty and Tran- quality, a variable Sangrila. Central Government comprises of all the ministries and Nepal Planning Commission (NPC makes Plans/Programmes), where as the local government deals with Municipal, Sub-Municipal corporations and Village Development Committee (lowest implementing unit). Under private Sectors Cbos., INGOs, NGOs and Others are working.

Basic General Data

Population, Demography and Health

Nepal covers an area of 147,181 sq.km, with a population of 23.2 million with the annual Population Growth rate of 2.14 percentage and the life expectancy at birth (yrs.) is 62.9 (Male) and 63.7 (Female).

Table-1 : Population % by age , source: NLSS Survey of 2003/004

Description	Nepal Living Standards Survey	
	1995/96	2003/04
Percent of Population (0-14 years)	42.4	39.6
Percent of Population (15-59 years)	50.8	52.8
Percent of Population (60 years and over)	6.8	7.6
Sex Ratio (Number of males per 100 females)	95.5	92.3
Dependency Ratio	97.0	89.2
Household size	5.7	5.3
Percent of female headed households	13.6	19.6

Table-2 : Fertility/Mortality rate, source: NLSS Survey of 2003/004

	2000	2004	2005
Fertility rate, total (births per woman)	4.0	3.5	..
Mortality rate, infant (per 1,000 live births)	69.0	58.6	..

Mortality rate, under-5 (per 1,000)	95.0	76.2	..
Births attended by skilled health staff (% of total)	11.9	15.0	..
Malnutrition prevalence, weight for age (% of children under 5)
Immunization, measles (% of children ages 12-23 months)	71.0	73.0	..
Prevalence of HIV, total (% of population ages 1-49)	0.5

Economy

Nepal is economically one of the poorest countries in the world. The various facets of poverty which flourish despite rich cultural heritage is the major developmental challenge before the nation.

GNI per capita US\$ 270 in 2005

GDP US\$ 7.3 billion in 2005

GDP annual growth 2.3% in 2005

Sources Of Income: **Agriculture, Remittance**, Others (Industries, Tourism etc)

Shelter related facts and Figures

Adequate Shelter for All! This is UN Habitat slogan:

We say in Nepal "A man is not a man if he has not built a house and women are not women if she has not given a birth to a child."

Housing in National Plan

Table-3: Five Year Plans

Year	Plan	works
1980-85	6th	Shelter was officially recognized
1986-90	7th	Launched urbanization and housing policy
1992-97	8th	Nepal National Housing Survey for shelter policy
1997-2002	9th	Building bye laws and building codes
2002-2007	10th	Urban development, housing and rural settlement Construct and develop safe, cost effective, environment friendly building
2007 onwards(10)		Contingency Plan on progress

Source: CBS-2004

Shelter is a basic need as food and clothing. Nepal government recognized shelter from the sixth plan and program followed accordingly up to tenth plan as the chart shows above.

Studies in the housing situation of Nepal, shows that there were three million dwelling units in the country in the year 1992, of which 10% were in the urban areas. It was estimated in 2000, that by 2006 about 2.5 million dwelling units will be required in the urban areas but the annual production was almost to the level of 50%.

Housing Stock/Types

According to the survey of 1991, there were altogether 30, 00,000 dwelling units. Out of those 2,700,000 dwelling units in rural areas and only 3, 00,000 dwelling units in urban areas.

Table-4: Stock by Housing Type

Particulars	National %	Urban %	Rural %
Squatter	7.81	9.09	7.64
Traditional (Urban)	0.53	4.28	0
Temporary	42.18	8.25	46.94
Semi Permanent	41.18	37.09	41.76
Permanent	8.30	41.27	3.67



Source: NIS 2004

Housing Deficit

The immediate housing deficit is assumed to be demanded for the 15% of the population of the valley.

Table-5: Dwelling units demand in Kathmandu Valley

	Extra Population	Per/HH	Need of dwelling units
Housing deficit till 2001	*242724	5	48545
Extra Housing need from 2001 to 2011	739153	5	14831
Extra Housing need from 2001 to 2021	1076788	4.5	239286
Total housing need till 2021			435662

Tenure of Households are categorized into owner, renter, rent-free and others.

Rental (formal and informal)

In Nepal, 95% of the buildings are built by owner themselves. Approximately 40% of urban households living in rental accommodation are relatively poor and facilitate with lower service levels compared to owner occupied housing. Rental housing sub-system serves about 30-35% of total municipal population. (Regulating Growth, IUCN, 1995 and Thapa, K., 1994).

Shelter and Poverty

Housing is a growing problem for urban poor. Over ten years, the city has experienced remarkable growth in its informal settlements. At present there are about 63 informal settlements, popularly known as **sukumbasi basti** (landless). These settlements provide housing to about 2600 families on nearly 15000 people. In the 1970s, there were only 17 informal settlements in the valley. This means that in the last 17 years the numbers of informal settlements have been increased 400 fold (an increase on nearly 25% per year)..For poor people practice of co-operatives have been started by some organizations like Lumanti.

In terms of poverty incidence across the belts of Nepal, Tarai belt has the lowest poverty rate at 28%, compared with 33% in the Mountains and 35% in the hills.33% of the total population lived below the poverty line (NPC 2005:14).

Housing affordability ratio

Normally it takes about Rs one million to build a single storey house of about 650 sft so:

- Higher income population own big houses built in large plots.
- Middle-income populations own a minimum of 856 sft of land and have a tendency to build their houses in an incremental order.

House price to income ratio

About US \$ 24,600 is required to build a single storey house of about 650 sft. , and the average income of Nepalese people is US \$ 270 per year, so for a lower income person to own a house is difficult.

Housing Construction and Materials

The housing construction process in Nepal is totally individual type.

Constructions by the contractors and permission are granted from the municipalities for constructions. In terms of Building Materials used in Urban Cement-bonded outer walls, Concrete or galvanized sheet roof and Cemented/tiled floor, But Rural construction materials are extremely location-specific.

Access to and cost of basic services

The housing process of Kathmandu can be defined in the following sequence

- **People > Land > House > Services**

Whereas the international experience shows that the process should be

- **Land > Services > House > People**

The later process insures cheaper infrastructure cost as the whole area gets the required facility at one time. In urban area majority of household have access to basic facilities. Among all urban centres, Kathmandu valley enjoys most of the human resources (Electricity- 99%, Telephone- 51% Sanitary- 98%, Garbage- 83% etc.)

Access to and cost of Education

Basically the education system is divided into two parts namely public institutes and private institutes. Public institutes almost free education till higher studies. Private institutes are very expensive and inaccessible to the lower income population of the city. NLSS give a clear idea on the literacy rate of males and females in Kathmandu and other urban areas:

- Males is 91.2% Females is 72%

Table 7: Literacy rates by gender group.

	(Percent)					
	Population 6 years and old			Population 15 years and Old		
	Male	Female	Total	Male	Female	Total
Urban	84.5	64.2	74.4	84.8	61.2	72.8
Kath. Valley	91.2	72.0	81.6	90.0	68.3	79.1
Other	80.7	59.8	70.2	81.6	56.9	69.0

Existing Housing Policy

The few basic concept of the National Shelter Policy are as follows:

- Housing is taken as producing, repairing and maintaining DU and improving the standard of shelter.
- Housing as a tool for poverty alleviation and economic development, thus raising the living standard of the people.
- Shelter as an asset and integral part of economic productivity of the nation.
- Public and Private sectors involvement in housing development.
- Financial self reliance and promotion of effective mobilization and allocation of financial resources (credit and cost recovery).Also financial self - sufficiency of the shelter sector.
- Government as the enabler and facilitator and private sector as the provider.

Actors in Shelter Delivery and their Roles

With the growing population of nation and constant changes that comes with each change in administration, there is a need to consolidate the efforts of all the actors in the housing delivery process.

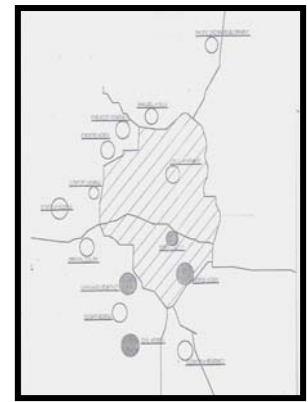
The lack of co-ordination and co-operation among actors involved in the process of housing between the government actors and with others are also affecting in housing delivery.

There are very less chances to choose good design, alternative technologies and the planning concept as the beneficiaries are not involved at all. In this case government research institutions and educational institutions need to be more involved in the collection and dissemination of information current and future architecture which would be instrumental in changing the environment.

Up till now the **State** and **Central Government** prepare polices and laws and issue guidelines etc. **Local Government** initiates cost recovery mechanism in infrastructure provision. **NGOs** identify local needs and prioritise mobilizing community groups. **Private Sector and Housing Producers** initiate Public private Partnership, invest in housing and infrastructure services, **Community organization** identify problems and priorities. **Research institutions** reach to create baseline and offer advisory services, conduct training land/housing and construction disseminating appropriate technologies. **Political Leaders** influence for policy changes and review of laws.

The role of **Institute of Engineering** is important as a main institution for producing human resources of different cadres, doing research and having various roles through centres and campuses and its stake-holders.

This is an example of private sectors developing, housing and Kathmandu valley.



Shelter Design and Social Aspects

Shelter design may vary according to various zone in, building height, facade treatment or the architectural charact.The byelaw of the city has categorized its land use pattern. Basically according to the function, mass of crowd, noise production activity in the categories like, **Residential zone, Commercial zone, Conservation zone, Monumental zone, Industrial zone** etc.Physical design can be **Eco-friendly** and Women **friendly** with livelihood opportunities.

Shelter means not only a house but also the whole living environment, which should include the followings:

Durable houses, Access to the road, Safe, affordable and regular supply of water, Good sanitation facility, Electricity and telephone facility, Good and co-operative neighbourhoods

Shelter Quality/ Safety/ Comfort and women

Improper structuring such as insufficient reinforcement and wrong positioning, weak joints, non-resistance to earthquake is mostly seen in Nepalese casse.Contractors modify the details as per their convenience, no monitoring so no quality work.

- More focus has been given to the earthquake safe construction technology.
- Elements like street lights, wide paths, and cycle tracks are not enough.
- Alarm system for elderly and disables are not yet incorporated.
- Personal and traffic safety is not guaranteed, which should be, as Karin explains in her lecture “Cities for every one ----- accessibility for every one regardless of class, age, race/ethnicity, gender, handicap, etc, ---”
- A house with proper sized rooms, proper ventilation and easy approach to all services and utilities is comfortable to live.

Istanbul Declaration of 1996 establishes it view as '..... we recognize the particular needs of women, children and youth for safe, healthy and secure living conditions.

We shall intensify our efforts to eradicate poverty and discrimination, to promote and protect all human rights and fundamental freedoms for all, and to provide for basic

needs, such as education, nutrition and life-span health-care services, and, especially, adequate shelter for all.'

Worldwide recognition of the women in all development works is also waking 21st century Nepal to involve women in all levels. The socio-economic and legal situation of women varies as:

- Most of the women are limited inside a house
- Inheritance of law, son inherits the house and most of the properties, not daughter.
- Difficulty in legal share of property in connection with divorcee.
- Lack of earnings so no savings for women's comfort
- No say on decision and policy making

The table below shows number of women involvement in government services which is very low in percentage.

Table 8: Total Women in Civil Service by Levels

S.No.	Levels in Civil Service	Number of women	Percentage
1	Special	2	0.41
2	First	24	4.92
3	Second	113	23
4	Third	348	71.45
Total		487	

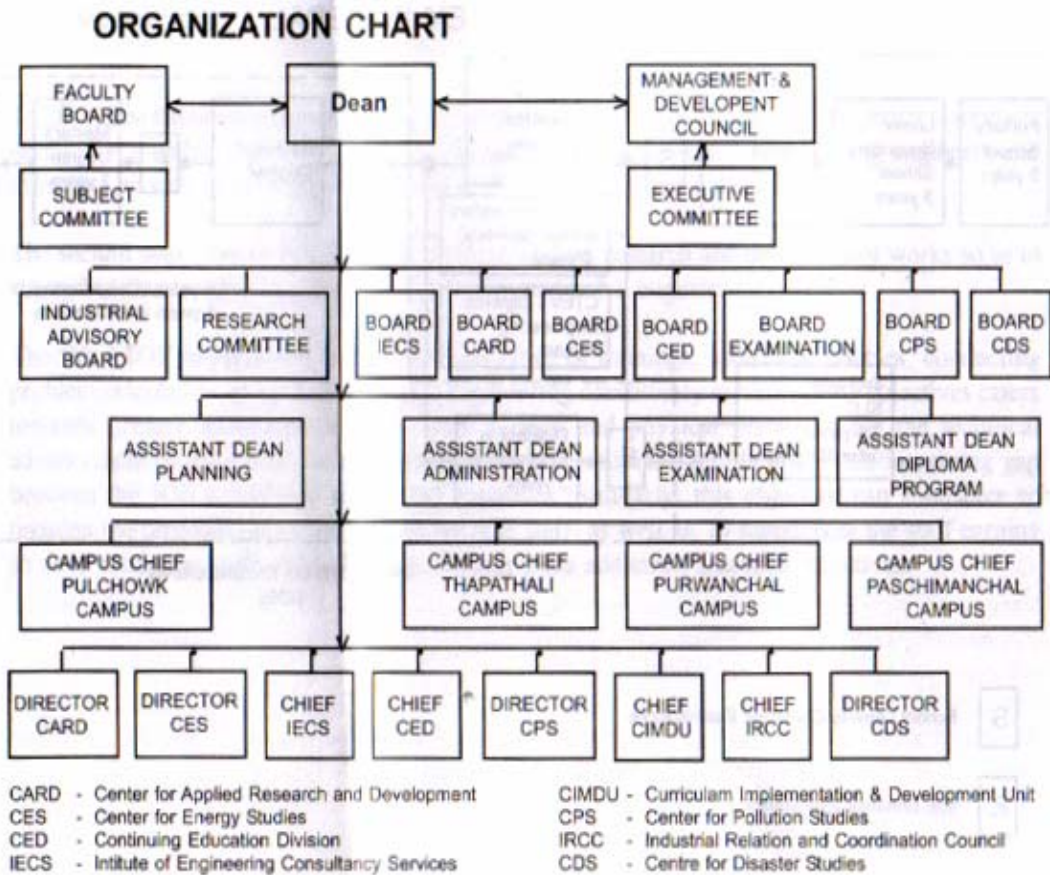
Organization

Institute of Engineering (IOE) established in 1972, is devoted to the production of technicians and engineers capable of meeting the national aspirations to accelerate the pace of development in the country. Besides this, the IOE is also offering a wide range of services for benefit of the country.

The first institutional objective of the IOE is to produce different levels of engineering manpower needed for meeting the national aspirations and goals

The second objective of the IOE is to perform various researches and development works so as to strengthen the national engineering capabilities and solve engineering problems.

The third IOE objective is to offer various types of trainings, sponsored courses, conducting problem oriented research and providing engineering consultancy services. IOE has provided 10% girls quota in all faculties for wider admission of the girl.



These objectives cater towards greater mobilization of the IOE human and physical resources for the technical advancement of the nation, and contribute to broaden the professional experience of the IOE staff. IOE has formal links with various international institutions, e.g. India Norway, Canada, Japan, USA, Indonesia, China etc.

Teaching Staffs Hierarchy:

- Professor
- **Associate Professor**
- Lecturer
- Teaching Assistant

I am in the second position in IOE administrative hierarchy and second in the ladder of Teaching hierarchy so right now as a manager, as a teacher, as a women, as a professional is very much involve in IOE staff and student development. Since I am working under the department of Architecture my duty is to promote shelter related projects and programmes in the initiation of campuses and IOE.

Shelter Problems

Rapid rate of urbanization (7%) leading it the rising prices of land and housing. The outcome is the increasingly widening gap between the affordability level of the low-income groups and the cost of housing in the market. The weakest section of the society, which requires maximum support, is the one that has been completely neglected.

When Prof Gorån writes in his book”--- Local government should----- critical”wåran, (pp 15, more urban less poor) he is very much true to his words which suits with the nature of developing countries.

In the developing countries there are various factors that create problems of any kind, and for shelter there are factors like civil war to vested political interest and pressures of housing demand.

Inadequate policies to include economically weaker section of society and Housing not included in priority sector so low cost housing for all is though a slogan but technology, material and transportation is difficult. Some of the identified problems are:

- Lack of access to land and access to credit,
- Inappropriate land record system and lack of access to technology
- Settlements without basic infrastructure and Squatter settlements are developing in and outer fringe of the cities
- Private sector target group is always middle and higher income groups
- Land is becoming scarce and the prices are escalating, also Housing finance is the least developed sector
- Lack of incentive to private sector

And I have concentrated on:

Low income and women headed poor households population is always ignored in housing provision

- Shelter design and development issues are not properly addressed in CURRICULUM of IOE Campuses.

Proposal for Change and Improvement

In the Government level Physical planning authorities and National planning commission and others will be involved in the following basis:

Short Term

- Shelter Related Awareness throughout the nation, through government Agents
- Provision of basic infrastructural needs in the shelter and squatters

Long term

- Housing as a tool for poverty alleviation and economic development.
- Shelter as an asset and integral part of economic development of the nation.
- Shelter for all groups of people.
- Shelter provision priority to the displaced families during insurgency.
- Coordination of government partners and other Institutions, Associations, CBOs ,NGOs, INGOs and private sector to impart proper knowledge among them for better shelter policies and uses.
- Financial support to the lower income groups through the help of government & private banks.
- Increase women access to housing and maximum involvement of Professional as well as grass root women (Women Integration for housing or introducing Women co-operation)

Institute Of Engineering

Short term

- Situational Analysis of shelter on urban areas through the Staff and student.

Long term

- Revision on syllabus and introduce the shelter related facts and findings where necessary suggested by the related departments and centres.
- Creation of small funding for the proposal that the centres need to design and combine the facts related programmes about Shelters.
- Create a sub-unit under IECS (consultancy Services) to advocate Shelter designs for poor.

Campus and department

Short&long

- Revision of syllabus and incorporation of shelter matters where-ever possible to include.
- Mobilization of students and attachment of shelter related facts in various courses.
- Take initiation through subject committee to pass the recommendation to the dean's office.

SWOT Analysis

Strength	Weakness	Opportunity	Threats
Teacher – student joint venture is the most acceptable working modality in IOE.	Facilities, tools are outdated, inefficient and needs repairing and maintenance.	Innovation, Tools to evaluate housing issues are available in market.	Fast changes in management make working difficult.
University requirement, basis for advocacy	Requires resources, Teaching staff don't conduct enough research	Results in innovation, Tool to evaluate debatable housing issues	Political instability in country and highly politicization in campus
Regular exchange of ideas, tools and methods taking place.	Piloting of ideas in field reality is lacking.	For Joint ventures with Associations., INGOs, NGOs and other universities seems possible.	Low level funds available in the market projects.

Strength	Weakness	Opportunity	Threats
<p>Consultancy services under IOE are acceptable to various shelter related agencies. Most of the members of IOE are involved in venture of housing construction business.</p>	<p>Rules and regulations are not friendly for innovative research activities.</p>	<p>A lot of housing development around can be good opportunity for student.</p>	

Action Plan

A national shelter strategy must spell out to clear operational objectives for the development of shelter conditions both in terms of the construction of new housing and upgrading and maintenance of existing housing stock and infrastructure and services. The plans and programme has to be need based and for all level of mankind.

Long term will be:

- Identify housing as the priority sector of development
- Provide financial support to the lower income population
- Awareness campaign in squatter settlements
- Increase women's access to housing
- Design shelter for all- even to disables, dwarfs and elderly people on the national level.

IOE

Out of 8 centers, CED, CPS, CDS, CES, IECS, CARD, CIMDU, and IRSP

5 centers will be incorporating shelter related themes/information in their projects, programs, Seminars and other activities:

Where as CPS, CDS, IECS has already started working as pilot projects and Awareness Programmes in various villages and having seminars and workshops with different organizations, from 3 days workshop to 1 year Programs and continuous trainings and courses with CED.

Out of 4 constituent campuses Two of them are in the valley where Various activities are taking places, for example Pulchowk campus/dept. of arch and thapathali campus dept of Arch(model making traditional/Local and in comparison of modern buildings) took part in two expositions to disseminate the information about shelter problems, situational analysis of housing in Urban areas.

Out of 7 affiliated campuses two of them (dept of arch) are involved in awareness, Volunteers and advocating the building materials.

Awareness to every level people-professional /non-professional

Pulchowk Campus-Dept of Architecture

- Elective courses (IV/II, V/I) Directed studies (III/II), Design Studios, Professional Practice (V/I) in these subjects' teacher student ventures started about shelter designs and programmes.
- Revision on other subjects and year.
- Awareness /information disseminations throughout
- Student of various levels work as volunteers/Advocate in various Expos on shelter and building materials
- Universal shelter Design-(IV/II), included all types of impairment (SP), (Collaborating to the Min. of social welfare and federation)

Awareness campaign in Different regions through **students** during vacation in the areas of:

- Use of local, traditional and cost effective materials,
- eco-friendly design solutions,
- Affordable and, infrastructure designs
- Promotion of bamboo cultivation and its use for construction
- Food green city in Urban Areas

- Two groups of student are working on awareness program on western and Eastern region campuses since 20 Oct.2007 for two weeks and it will be a continuous program.

With various **Associations** like: NEA, SONA, IDEA, WEAN ect.

- Awareness Campaign
- Social and gender problems in shelter
- Women's access to housing; (girls architects)
- Women's participation in the planning process and women's needs and priorities in the design of dwellings and spatial planning. (Professional and grass root women)

Formation of **HDM Alumni**- Nepal. (Faster Track to work)

- Dissemination of shelter related information to actors involved in housing in Nepal (forum).
- Information dissemination about shelter in the expo 2007 organized by the Alumni.
- Students of KEC worked as volunteer, expo 2007 (about 20,000-25,000 people observed)
- International Buildings and shelters, like **Klasatorpet**, **Den Gamle By** and others were explained (compiled by Members of Alumni, created



Students of Thapathali campus (IOE) contributed in model making

(Village+Modern) and surface treatment in different type of houses in urban Areas
 Under institution capacity I will have the same action plans as proposed in chapter 4
 since I would like to start with students in various stages starting from July to
 October ,and the outcome will be submitted to NPC (national level and Ministry)and

to the Institution(local level). IOE has 8 centres working for different interest and Areas out of which I will work with the followings centres in long and short term basis/coerces:

- Centre for Consultancy services
- Centre for Disaster studies
- Centre for pollution studies
- Centre for Zero energy
- Centre for continuing education division (CED). and work on:

With the CED programmes can be developed on short term and long term basis, which could include situational analysis that provides solutions and also to develop local technology.

Center for Consultancy Services can develop a sub unit as '**Shelter Design and Development**'. The aim of the centre could be co-ordination between the department of Architecture, various units of Nepal Government, NPC and to promote understanding among key actors in the housing delivery system by creating a venue open to all.

The **Architecture Department** will be a small unit of change in terms of change in syllabus, in comporting shelter design as elective, Housing Design Projects.

Women's participation in Shelter design

- Awareness campaign in selected settlements through Promotion of bottom up approach to involve grassroots women in co-ordination with professionals and office holders
- Women's access to housing; in all
- Women's participation in the planning process;
- Women's needs and priorities in the design of dwellings and spatial planning.

Conclusions

Country is graduating to peace process so immediate focus on policy issues related to shelter may take some time, however following is suggested.

Nation-wide need of repairing and upgrading of the infrastructures demolished during insurgency. Adequate housing development with cost effective housing solution for urban poor is to be given priority. The need of social reform, gender

balance with women's involvement in all level of development activities is prioritized. Grass root level women should be integrated with professional women so that participation can be effective in assessing shelter issues and finding solutions. In the Institution level changes in syllabus, working with various centres of IOE in the field of shelter design and departmental initiation to I corporate in design studio will be proposed.

I like to end with the version of Graciela's last version of her lecture" How relevant are decision making -----because the agenda does not allow it, -----social inclusion and thus -----adequate housing for all", Landaeta, dr. Graciela (lec., 02may 2007).

The end

Thank you.

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Shelter Design & Development

Advanced International Training Programme
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LUND UNIVERSITY
Housing Development & Management



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Abbreviation/Accronyms

ADB	Asian Development Bank
ACDPL	Ansal Chaudhary Developers Private Limited.
CBDM	Community Based Disaster Management
CBS	Central Bureau of Statistics
CDO	Chief District Officer
DDC	District Development Committee
DHUD	Department of Housing and Urban Development
DIPECHO	The Disaster Preparedness Programme of the European Commission's Humanitarian Aid Department
DMG	Department of Mines and Geology
DOR	Department of Road
DUDBC	Department of Urban Development and Building Construction
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EWS	Economically Weaker Section
FEMA	Federal Emergency Management Agency
FNCCI	Federation of Nepalese Chamber and Commerce
GDP	Gross Domestic Product
GLD	Guided Land Development
GoN	Government of Nepal (Previously called His Majesty Government, HMG)
Ha	Hectare
HDFC	Housing Development Finance Company
HIG	Higher Income Group
HMG	His Majesty's Government
HRD	Human Resource Development
HUDCO	Housing and Urban Development Company
IAP	Integrated Action Plan
ICIMOD	International Center for Mountain Development
IDFC	Infrastructure Development and Finance Company
JICA	Japan International Cooperation Technology
KDLRO	Kathmandu District Land Revenue Office
KDO	Kathmandu Division Office

KV Kathmandu Valley
KVDA Kathmandu Valley Development Act
KVPDP Kathmandu alley Town Development Committee
KVUDPP Kathmandu Valley Urban Development Plans and Programs
KVTDC Kathmandu Valley Town Development Committee
LAA Land Acquisition Act
LD Land Development
LDA Land Development Activities
LDP Land Development Project
LP Land Pooling
LPP Land Polling Project
LHDFC Land and Housing Development Finance Company
LMIG Lower Middle Income Group
LP Land Pooling
LPP Land Polling Project
LIG Lower Income Group
LS Land Subdivision
LSGA Local Self Governance Act
LSP Land Subdivision Project
MIG Middle Income Group
MLD Ministry of Local Development
MPPW Ministry of Physical Planning and Works
MoHA Ministry of Home Affairs
NEA Nepal Electrical Authority
NGO Non Governmental Agency
NHDFC Nepal Housing Development Finance Company
NHS National Housing Survey
NNHS Nepal National Housing Survey
NPC National Planning Commission
NRB Nepal Rastriya Bank
NRs Nepalese Rupees (\$1 = 74 Rupees)
NSET Nepal Society of Earthquake Technology
NTC Nepal Telecommunication Corporation

OECD Organization for Economic Co-operation and Development

PADCO Planning and Development Collaborative International

TDC Town Development Committee

TDCA Town Development Committee Act

TPPIA Town Planning Projects Implementation Act

TDF Town Development Fund

ULD Urban Land Development

UNCHS United Nations Center for Human Settlements (Habitat)

UN United Nations

USA United States of America

USAID United States Agency International Development

VDC Village Development Committee

WB World Bank

1 Hectare = 19.6 Ropani = 0000.00 sq.m.

1 Ropani = 16 Anna = 508.74 sq.m.

1 Anna = 4 Dam = 31.80 sq.m.

1 Dam = 4 Paisa = 7.95 sq.m.

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Development Agency, the Swiss Development Cooperation and the United States Agency for International Development.

Tables for main text

Table- A1 : Nepal Data Profile

	2000	2004	2005
Population, total	24.4 million	26.6 million	27.1 million
Population growth (annual %)	2.3	2.0	2.0
Life expectancy at birth , total (years)	60.5	62.2	..

Source: World Development Indicators database, April 2006

Table- A2 : Economy

	2000	2004	2005
GNI, Atlas method (current US\$)	5.4 billion	6.6 billion	7.3 billion
GNI per capita, Atlas method (current US\$)	220.0	250.0	270.0
GDP (Current US\$)	5.5 billion	6.7 billion	7.3 billion
GDP growth (annual %)	6.1	3.4	2.3
Inflation, GDP deflator (annual %)	4.6	5.0	4.6

Source: World Development Indicators database, April 2006

Table A3 : Distribution of households by occupancy

	(Percent)				
	Owner	Renter	Rent-free	Other	Total
Urban	72	23.5	3.8	0.7	100
Kath.Valley	62.5	33.1	3	1.4	100
Other	77.2	18.2	4.3	0.4	100

Table A4 : Average number of rooms and average size of dwelling

	(Percent)		
	Average Number of Rooms	Average size of Dwelling (Sq.Ft.)	Average Area of Housing Plot* (Sq.Ft.)
Urban	4.5	584.0	1448
Kath.Valley	4.8	589.0	1162
Other	4.3	581.0	1606

Table A5 : Percentage of households with access to various facilities (percent)

	Electricity	Telephone	Sanitary System	Garbage Disposal	Toilet
Urban	87.4	31.9	54.4	45.0	81.3
Kathmandu Valley	99.1	51.3	98.1	83.0	98.9
Other	80.9	21.2	30.4	24.1	71.6

Table A6 : Population Projection of the Kathmandu Valley

Items/Year	2001
Population of Valley	1618159
Households number	318630
Average person per household	5.08
Population Growth*	3.834%

Table A7 : Population Projections

Estimated population for 2011	2357312
Estimated population for 2021	3434100
Population increase from 2001 to 2021	1815941
Population Growth*	3.834%

Source: Census 2001 (for population)

* Population growth: is calculated from census data 1981 (population 740619) and 1991 (Population, 1078909)

Annex-7

COURSES OFFERED AND ANNUAL INTAKE CAPACITY 2006/2007

Level	Courses	Campuses				IOE
		Pulchowk	Thapathali	Pashchimancha	Purwanchal	
Master's Degree	Urban Planning	16 ^{1/}	-	-	-	16
	Structural Engineering	16 ^{2/}	-	-	-	16
	Environmental Engineering	16 ^{3/}	-	-	-	16
	Water Resources Engineering	20 ^{3/}	-	-	-	20
	Renewable Energy Engineering	16 ^{3/}	-	-	-	16
	Information & Communication Engg.	16 ^{3/}	-	-	-	16
	Power System Engineering	10 ^{3/}	-	-	-	10
	Geotechnical Engineering	16 ^{3/}	-	-	-	16
Total		126	-	-	-	126
Bachelor's Degree	Civil	144 ^{4/}	-	48 ^{10/}	24 ^{6/}	216
	Architecture	48 ^{4/}	-	-	-	48
	Electrical	48 ^{4/}	-	-	-	48
	Electronics & Communication	48 ^{4/}	-	48 ^{10/}	-	96
	Mechanical	48 ^{4/}	-	-	-	48
	Computer	48 ^{4/}	-	-	-	48
	Agriculture	-	-	-	24 ^{6/}	24
	Industrial	-	48 ^{10/}	-	-	48
Total		384	48	96	48	576
Diploma	Civil	-	96 ^{7/}	192 ^{7/}	48 ^{6/}	336
	Architecture	-	48 ^{7/}	-	-	48
	Electrical	-	-	96 ^{7/}	48 ^{6/}	144
	Electronics	-	48 ^{10/}	48	48 ^{6/}	144
	Computer	-	48 ^{10/}	48 ^{10/}	48 ^{6/}	144
	Mechanical	-	24	24	24	72
	Automobile	-	24	24	-	48
	Refrigeration & Air Condition	-	-	-	24	24
Total		-	288	432	240	960

- 1/ 8 Regular and 8 Sponsored or full fee Students
 2/ 6 Regular and 10 Sponsored or full fee Students
 3/ 6 Regular and 14 Sponsored or full fee paying
 4/ Out of which 44 Full Fee Paying Students
 5/ Out of which 48 Full Fee Paying Students
 6/ Out of which 24 Full Fee Paying Students

- 7/ Out of which 48 Full Fee Paying Students
 8/ Out of which 12 Full Fee Paying
 9/ Out of which 12 Full Fee Paying
 10/ Out of which 36 Full Fee Paying