Infrastructure Development in Bhutan

A journey through time



Ministry of Works and Human Settlement

2015



Dedication

This book is dedicated to the Father of the Nation, the inspiration for every citizen,
Drukgyal Zhipa Jigme Singye Wangchuck
in commemoration of His 60th Birth Anniversary.

Long Live Your Majesty!
Long Live Tsa-Wa-Sum!

VISION

A leading organisation in the region in infrastructure development for human settlement and transportation.

MISSION

To provide safe, reliable and sustainable infrastructure for human settlement and transportation towards balanced regional development embodying the Bhutanese values.

Status of Infrastructure in the Country today

Primary National Highways	– 1860.12 km
Secondary National Highways	– 578.26 km
Dzongkhag Roads	– 1178.29 km
Urban Roads	– 349.67 km
Gewog Connectivity Roads	– 5255.19 km
Bridges	– 337
Trail Suspension Bridges	– 409
Dzongkhag Thromdes	– 19
Yenlag Thromdes	– 18
Other Thromdes	– 23
Percentage of populations covered by improved drinking water sources (NSB Bhutan Multiple Indicator Survey, 2010)	– 96
Engineers	– 319 (civil engineers)

Important national infrastructures designed and implemented by MoWHS:

- Supreme Court of Bhutan
- Changlimithang National Stadium
- Royal Banquet Hall
- RAA Training Centre (design)
- Three Rows Office Complex (design)
- 3 Bazams (Pangrizampa, Centenary Farmer's Market and Changjiji)
- Coronation Park

Foreword

The Royal Government of Bhutan beginning 1961 shaped a series of national economic plans. Since then, exponential growth and changes have taken place where the economy has been guided through development plans setting Bhutan on the way to planned national development. There was time when basic infrastructure development including roads, power, communication system, transport, agriculture and animal husbandry formed the major capital investment of the government.

Bhutan has walked a long way. Now, in more than fifty years of planned national economic development, the nation has established numerous basic infrastructure facilities in remotest part of Bhutan as well, the urban centres.

A backbone for all the developments, His Majesty the Fourth Druk Gyalpo's reign is marked by phenomenal development and enormous progress. A driving force of change in bringing positive revolution in the nation, a figure loved and revered by all Bhutanese. The reign of His Majesty the Fourth Druk Gyalpo connected the remotest corners of Bhutan with roads and bridges, schools and hospitals, basic services in agriculture and livestock. Industries flourish with snow-fed torrents being harnessed into lucrative hydropower projects and digital telecommunication system bonding the isolated spots of Bhutan.

Thus, this book is published by the Ministry of Works and Human Settlement to commemorate the 60th Birth Anniversary of our beloved King, His Majesty the Fourth Druk Gyalpo Jigme Singye Wangchuck, who gave new meaning to the role of monarchy in the modern world. It is an occasion where we join our hands in celebrating the 60 years of His Majesty the Fourth Druk Gyalpo's life spent in the service of the nation and its people.

We dedicate this book to the Father of the Nation, Jewel of all Hearts, His Majesty the Fourth Druk Gyalpo of Bhutan.

This book contains the history and milestones of the Ministry of Works and Human Settlement for the last five and half decades in building up the nation.

Dorji Choden

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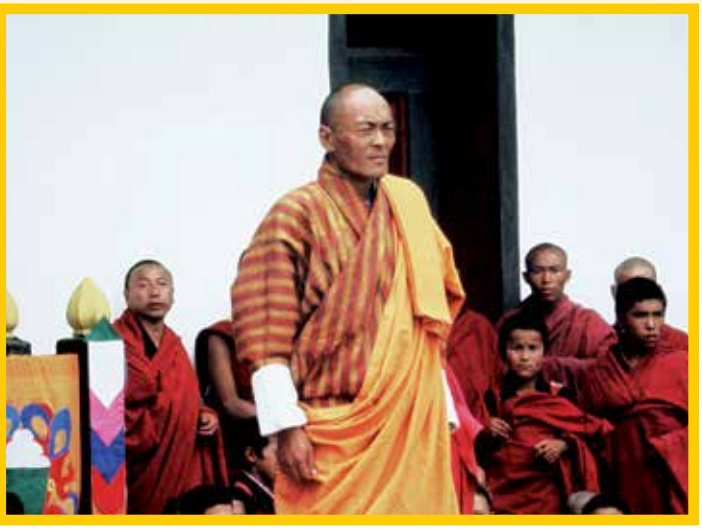


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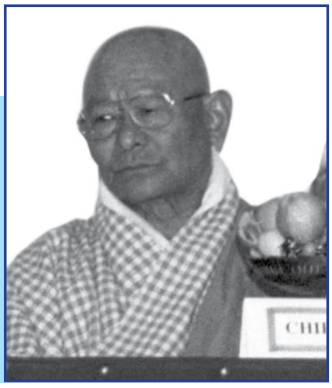


Ministers



Lyonpo Sangay Penjore became the Minister for Ministry of Communications in May 1970. Lyonpo also served as the Zhung Kalyon, Chief Justice of Bhutan, Bhutan's Permanent Representative to the United Nations, New York, Ambassador of the Kingdom of Bhutan in New Delhi, India, and Kuwait. Lyonpo Sangay Penjore was the Minister of Communications Ministry from May 1970 to August 1971.

Lyonpo (Dr.) T. Tobgyel began his service in 1954. His Majesty the Third Druk Gyalpo conferred upon him the red scarf and the title of Dasho in 1964. Lyonpo also served as the secretary general of the Ministry of Development, twice as Bhutan's Ambassador to India. He also served as foreign secretary. In 1985, Lyonpo Dr. Tobgay was awarded the orange scarf and served as the Minister for Social Services from 1987 to 1992.





Lyonpo Wogma Leki Dorji began his service in the Royal Bhutan Army in 1963. He served in many important positions in the Ministry of Foreign Affairs, His Majesty's Secretariat, Registration Department, and the Ministry of Agriculture. In 1991, he became Deputy Minister at Ministry of Agriculture. Lyonpo served as the Head for Ministry of Communications from 1994 to 2003.



Lyonpo (Dr.) Kinzang Dorji joined government service in 1976 as a veterinary surgeon in Thimphu. Since then, Lyonpo held numerous important positions as Prime Minister, Speaker of the National Assembly and Minister for Agriculture, among others. Lyonpo was the Minister for the Ministry of Works and Human Settlement from 2003 to 2008.

Lyonpo Yeshey Zimba began his career with the Ministry of Finance in 1976. Lyonpo served as joint secretary and then as secretary of the Ministry of Finance from 1976 to 1997. In 1998, His Majesty the Fourth Druk Gyalpo appointed him the minister for Ministry of Finance where he served until 2003. Lyonpo also served as Minister for Ministry of Economic Affairs from 2003 until 2007, after which, Lyonpo resigned to join politics. Lyonpo became the minister for Ministry of Works and Human Settlement in 2008 and served until 2013.





Lyonpo Dorji Choden began her career as an assistant engineer with Public Works Department in 1985. Lyonpo served in various positions in the Ministry of Communications, Ministry of Health and Education, and in the Ministry of Works and Human Settlement. Lyonpo became director of Standard Quality Control Authority in 2003. In 2006, Lyonpo became commissioner of Anti-Corruption Commission. Between 2009 and 2012, Lyonpo was with United Nations Development Project. Lyonpo became the Minister of Works and Human Settlement Ministry in 2013.

Secretaries



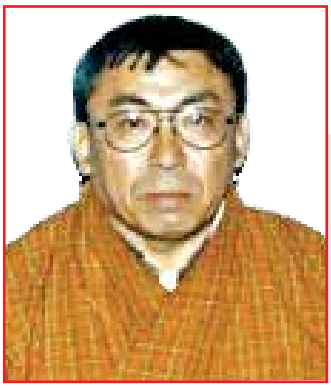
Lyonpo Wogma Dasho Karma Letho joined government service as an officer in the Post and Telegraph in 1955 and became its head in 1965. In 1970, Dasho was transferred as the Secretary to the Ministry of Communications and Tourism and was later promoted as its Deputy Minister in 1985 by His Majesty the Fourth Druk Gyelpo. Before his retirement, Dasho Letho also served as Bhutan's Ambassador to India and as the Chairman of the Royal Advisory Council.



Lyonpo Wogma Dasho Nado Rinchen began his career in 1963 with the Ministry of Communications. In a career spanning over three decades, Lyonpo Wogma served in various positions in the Ministry. Dasho became the Secretary of Ministry of Communications in 1988 and served until 1993.



Secretary (Late) Dasho Dorji Tenzin joined government service in 1964 in the Ministry of Development. Dasho later served in various positions in the other organisations in the government. His Majesty the Fourth Druk Gyalpo awarded him the Red Scarf in April 1984. Dasho served as Secretary of the Ministry of Communications from 1989 to 2002.



Secretary Tshering Dorji began his career in 1975 with the Public Works Division as Engineer. After serving in various positions. He became the Director of Department of Roads in 1994, and Director General of Department of Urban Development and Housing in 1998. He became the Secretary of Ministry of Works and Human Settlement in 2003, and served till 2008.



Secretary Nima Wangdi began his career in 1977 under the Home Ministry. He served in various positions in agencies such as Ministry of Health and Education, Ministry of Finance and in City Corporation as Thrompon. In August 2007 He joined the Ministry of Works and Human Settlement as its Secretary, and served the Ministry till May 2011.

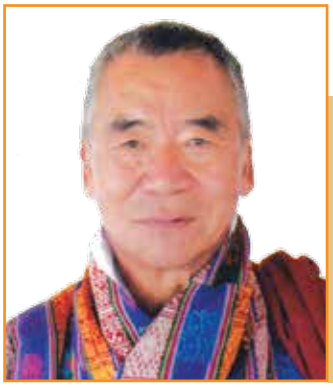


Secretary Dasho (Dr.) Sonam Tenzin joined Government service in 1983 as a Medical Doctor in the Ministry of Health and Education. Dasho served in various positions such as District Medical Officer, Project Manager, Zonal Medical Officer, Dzongdag, Director, Director General and then as Secretary. Dasho served as the Secretary of Ministry of Works and Human Settlement from June 2011 to May 2015.



Secretary Phuntsho Wangdi began his career in 1984 as an Engineer in the Department of Roads, Ministry of Communications. Working in the same Department, he was then promoted to become its Director in November 2003 and served as its Director until June 2008 after which he served as the Director General of the Bhutan Standards Bureau. In May 2015 His Majesty the King appointed him as the Secretary of Ministry of Works and Human Settlement.

Directors



Director Dasho Dorji Norbu began his career as Engineer with the then Bhutan Engineering Services in 1965. After having served in many important positions, Dasho was transferred to the Ministry of Social Services in 1985 as Director. Dasho became the Director of Public Works Department in 1977 and served as its Director until 1985. Dasho also served as the Zonal Administrator, and resigned from service in July 1988.



Director Sangpa Tamang joined service in 1973 with the Ministry of Communications as an Engineer. After serving in various positions in the civil service, he became the Director of Department of Urban Development and Housing under the Ministry of Communications in January 1986. He served as its Director until may 1989 after which he resigned from service to join the Asian Development Bank.



Director (Late) Rinchen Dorji began his career as Engineer with the Department of Roads, Ministry of Communications in 1976. After serving in various positions in the same Department, Rinchen Dorji become its Director in January 2000. In 2003 Director Rinchen Dorji was transferred as Director to the Department of Urban Development and Engineering Services and served until 2013. Director Rinchen Dorji superannuated in April 2013.



Director General (Late) Sangay Tenzin began his service as Engineer in the Ministry of Communications. Director General served in various positions in Ministry of Information and Communications and in Corporations. In June 2008 he became the Director General of Department of Roads, Ministry of Works and Human Settlement. Director General served the Department till his superannuation in October 2013.



Director Kinzang Norbu joined the service in 1986 as Engineer in the Department of Urban Development and Housing, Ministry of Communications. Director Kinzang Norbu also served as Thrompon and as Executive Secretary in Phuntsholing City Corporation. He became the Director of Department of Human Settlement in January 2012 and served until December 2013.

Director Karma Galay began his career as Planning Officer with the then Planning Commission in July 1995. Director Karma Galay also worked in the areas of Planning, Research and Programme in agencies such as Centre for Bhutan Studies and in the Ministry of Home and Cultural Affairs. He became the Director of Department of Roads in January 2013 and is the incumbent Director of the Department of Roads.





Director Wangchuk Thayay began his career with the Ministry of Finance in 1994. Working in the same Ministry, he became the Regional Director, Regional Revenue and Customs Office. He was appointed as the Director of the Department of Human Settlement in February 2014 and is currently the Director of the Department of Human Settlement.

Director Tenzin began his career as Engineer in January 1998 with the Ministry of Agriculture. Director Tenzin served in various positions in the Ministry of Agriculture till end of 2013. He became the Director of Department of Engineering Services in January 2014 and is the current Director of the Department of Engineering Services.



An Institution Evolution of Ministry of Works and Human Settlement

Beginning 1961, the Royal Government of Bhutan shaped a series of national economic plans. Since then, there has been commendable socioeconomic growth in the country. There is no denying that at the heart of such grand success had been planned development programmes.

There was time when basic infrastructure developments like roads, power, communication system, transport, agriculture and animal husbandry formed major capital investment of the government. Now, in more than fifty years of planned national economic development, the nation has established numerous infrastructure facilities even in the remotest part of the country.

In the early days of planned development, the nation needed to balance development with Bhutanese values, tradition, culture, religion and environment, among others. Gradually, the need for better infrastructure facilities kept on growing. Thus, an organisation was established to provide growing infrastructural needs of the country.

Bhutan Engineering Services was formed in 1961, which was later (in 1966) renamed as Public Works Department (PWD) to look after the construction of basic infrastructure. The Public Works Department under the Ministry of Development, established in 1968, was the main builder that contributed to the development of both rural and urban settlements.

In 1974, Central Town Planning Committee (CTPC) was established with ministers and key government secretaries as members to guide the development of towns. The task of the CTPC was to develop the towns by acquiring land, to establishment commercial centres, and to construct private and government houses.

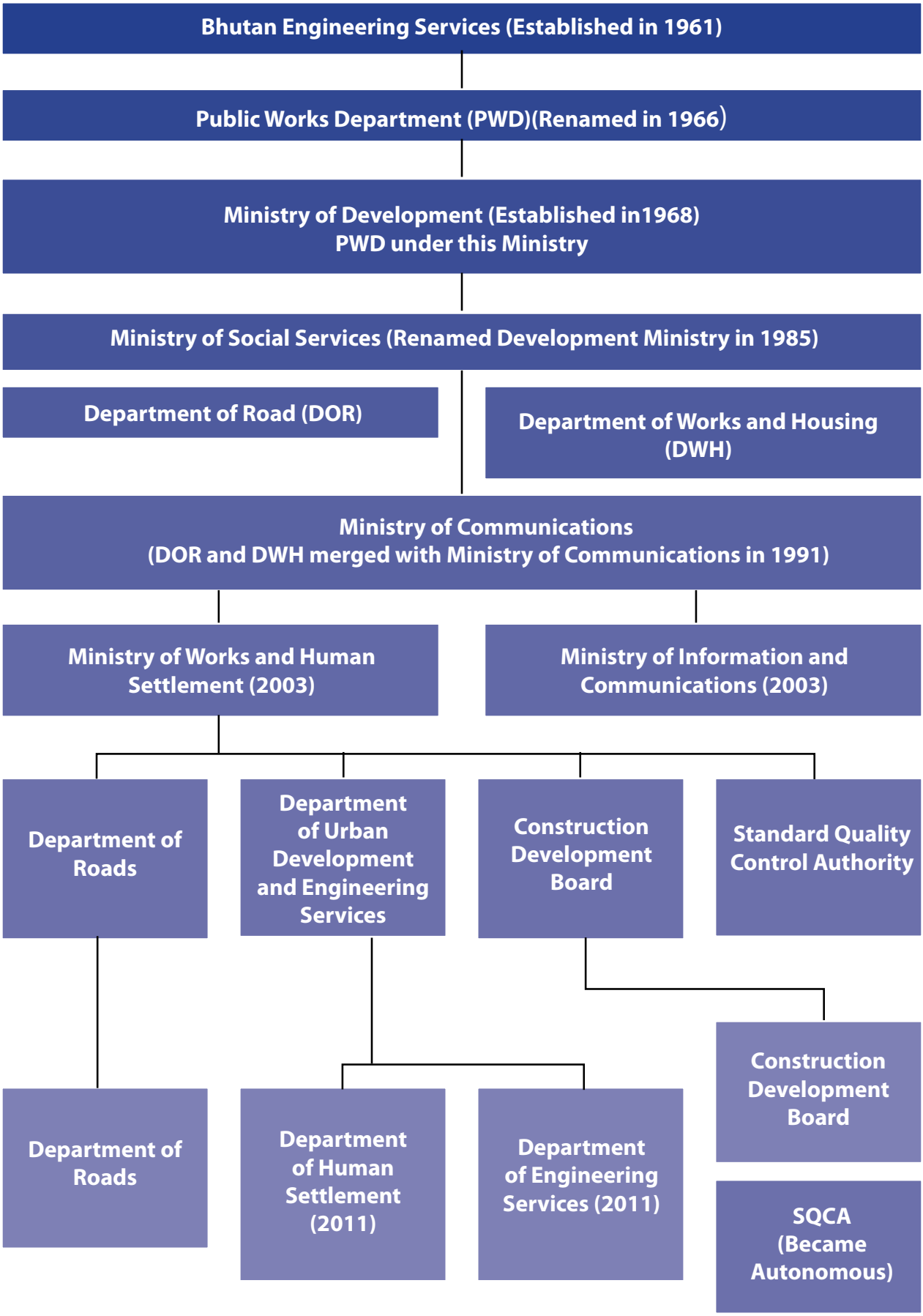
In 1976 a Town Planning and Architecture Cell was established to provide technical support to the Central Town Planning Committee. The CTPC was reconstituted and renamed as National Urban Development Corporation (NUDC) in 1984 and it was mandated to bring in urban development and to introduce housing technology in the country.

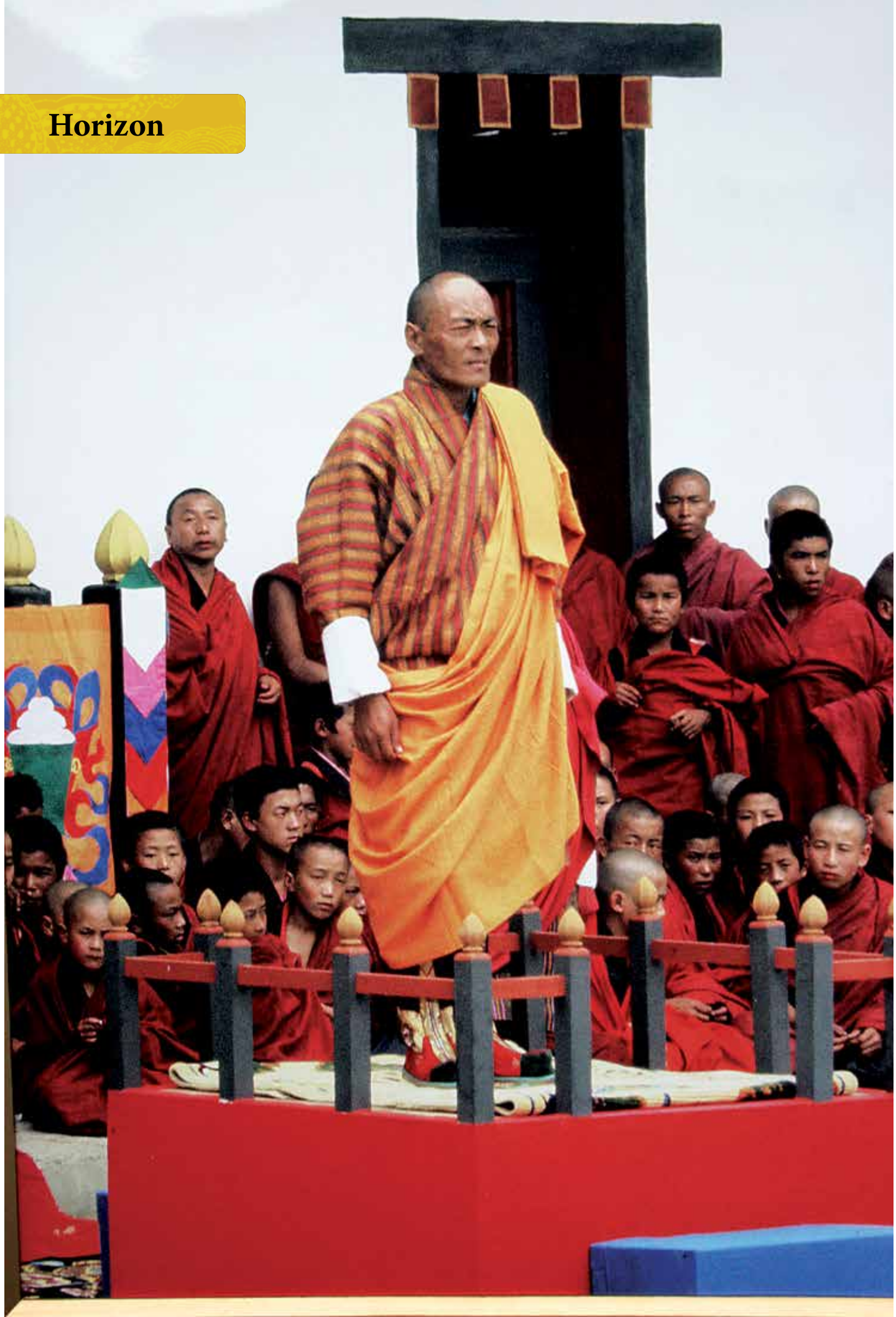
Ministry of Development was renamed as the Ministry of Social Services in 1985. Later, in 1989, non-road functions of PWD were merged with NUDC. Out of it were born Department of Works and Housing (DWH) and Department of Roads (DoR). These were the two main technical departments that helped build infrastructure in the country. Later, in 1991, DoR and DWH were merged with Ministry of Communications.

A number of recommendations were made in 1999 during the restructuring of the Royal Government to enhance good governance, efficiency, transparency and accountability.

In 2003 Ministry of Communications was bifurcated to Ministry of Information and Communications and Ministry of Works and Human Settlement.

Today Ministry of Works and Human Settlement has four departments – Department of Roads, Department of Engineering Services, Department of Human Settlement, and Construction Development Board (CDB).


Bhutan Engineering Services (Established in 1961)
Public Works Department (PWD)(Renamed in 1966)
Ministry of Development (Established in1968)
PWD under this Ministry
Ministry of Social Services (Renamed Development Ministry in 1985)
Department of Road (DOR)
Department of Works and Housing (DWH)
Ministry of Communications
(DOR and DWH merged with Ministry of Communications in 1991)
Ministry of Works and Human Settlement (2003)
Ministry of Information and Communications (2003)
Department of Roads
Department of Urban Development and Engineering Services
Construction Development Board
Standard Quality Control Authority
Department of Roads
Department of Human Settlement (2011)
Department of Engineering Services (2011)
Construction Development Board
SQCA (Became Autonomous)





The Beginning

– Infrastructure Development in the 1960s and the 1970s

The nation made a choice and there was no looking back. The wind of change had started to blow; Bhutan could no longer remain isolated.

Naturally, the decision to open up posed myriad challenges to the nation that woke up late, so to speak. Development required strong communication linkages. Manpower was scarce.

Bhutan realised early on that little progress can be achieved if the country lacked strong infrastructure base. Socioeconomic development and national security depended heavily on safe, efficient and reliable road network.

Thus, the first decade of planned development was aimed at creating strong and reliable communication networks. A large share of national budget was allocated to building roads. Out of plan budget of Nu 174.7 million, Nu 62 million went to construction of roads.

For efficient execution of road-building projects, Bhutan Engineering Service (BES) was established on October 1, 1961 with technical experts mostly on deputation from the Central Public Works Department of India. BES was also responsible for the construction of buildings, both residential and non-residential, and

to provide drinking water supply and electrification services in major administrative settlements.

Due to extreme labour shortage, government had to handover road construction work to the Border Roads Organisation (BRO). With BRO, Bhutan undertook construction of Phuentsholing-Paro road (180km), Confluence-Thimphu Road (38km), Sarpang-Tsirang road (60km), Tshalemaphe-Wangdue road (64km), approach road to Tala (8km), Lobesa-Punakha road (13), Trashigang-Rangjung road (12 km), and Wangdue-Tongsa-Baykar-Mongar-Tashigang road (380km).

Along with roads, suspension bridges were built to integrate rural communities and dispersed regions to develop the national economy. BES also constructed guesthouses across the country and a number of offices besides installing diesel generators in Thimphu, Paro, Phuentsholing and other town centres.

Even though Bhutan started late on the path of modernisation, it has achieved remarkable socioeconomic development. Development and enhancement of road networks has helped expand strategic infrastructure programme that is vital for poverty reduction in the country.

Even as road network in the country remains inadequate, both in terms of coverage and connectivity, roads are increasingly seen as crucial developmental element for the country to achieve its overarching goal of reducing food insecurity. That has called for improved methods of building roads that are not only environment-friendly, but also durable and dependable.

However, challenges remain due to difficult topography and resource constraints as roads are generally built following land contours with as less number of bridges as possible.

"The first decade of planned development was aimed at creating strong and reliable communication networks. A large share of national budget was allocated to building roads. Out of plan budget of Nu 174.7 million, Nu 62 million went to construction of roads."



>> Prime Minister of India, Pandit Jawaharlal Nehru being received by His Majesty Jigme Dorji Wangchuk in 1958

Gaining momentum

The development of road networks was one of the greatest achievements of the preceding plans. The far-removed communities were brought closer to fast developing towns, thereby allowing them to enjoy significant share of development benefits. Travel became less arduous and trade much easier.

This was the time when the construction of the east-west highway was underway. Regions had to be brought closer so that balanced development could be achieved. Further, the Third Five-Year Plan focused on building and improving internal roads and approach roads to border towns. Special priority was also given to the improvement of mule tracks.

Construction of roads to link remote communities necessitated building a number of bridges. So, the Public Works Department (PWD), which eveloved from BES, undertook the construction of several suspension bridges, such as Dorakha, Chengmari, Chanchey Khola, Rong Khola, Burichu Khola, Punakha, Chargharey, Dagana Chu, Bade Nadi, Lamidara, Kalikhola, Dagapela Mao Khola, Pankhar-Phangri Zam.

Because of increasing demand for improved connectivity, the plan also included the construction of many bailey bridges, such as Duktey Zam in Trashigang, Pangkhar Zam in Kheng, Langthil Zam in Trongsa, Thanchu Zam in Wangdue, Cha Zam in Kurtoe, Shari Zam in Paro, and Phyiko Shingkhar Zam.

These strengthened transport facilities in the country, helping people improve their living standards. Thanks to improved road networks, the economy of the country improved manifolds.

And with economic development came the need to develop other amenities. Town planning had to be conceived and construction of government quarters became urgent. Thus, in 1976, Town Planning and Architecture Cell was established to provide technical support to the Central Town Planning Committee (CTPC).

“Because of increasing demand for improved connectivity, the plan also included the construction of Duktey Zam in Trashigang, Pangkhar Zam in Kheng, Langthil Zam in Trongsa, Thanchu Zam in Wangdue, Cha Zam in Kurtoe, Shari Zam in Paro, and Phyiko Shingkhar Zam.”



>> Indira Gandhi, Prime Minister of India, inaugurates the Phuntsholing-Thimphu highway

On May 3, 1968, Prime Minister of India, Indira Gandhi, paid her second state visit to Bhutan for three days. Sonia Gandhi, her daughter–in–law, accompanied her. It was during this visit that Indira Gandhi inaugurated the Thimphu–Phuntsholing highway.

Third King's speech at the opening of Thimphu-Phuentsholing highway



Your Excellency, Distinguished Guests, Ladies and Gentlemen

During my recent visit to Delhi, I was touched by the warmth of hospitality extended to me and my officers by your Government and the people of India. I felt that the welcome was a special one reserved for one's family members only. Today is a great day in the life of my country, for we have the honour of welcoming not only the great leader of the Indian people, but also a lady of remarkable charm and distinction.

Ten years ago we had the honor of welcoming your great father, late Pandit Jawaharal Nehru, and yourself at Paro. It was a result of that visit, and the vision and statesmanship displayed by your father that India started assisting us in our economic development programmes. The first major project in this new era of economic co-operation between our two countries was the construction of the Phuntsholing-Thimphu National Highway in 1960.

The Phuntsholing-Thimphu National Highway was built on the sweat and tears of my people. We had no surplus labour force, and so we had to conscript men and women from all parts of the country to work on this project, Many of my countrymen lost their lives in this venture. On your part you were generous with financial and technical assistance. It was this combined effort that saw the completion of this project in record time. The benefits from this road have been innumerable. It has ushered in a new era of progress and prosperity in my country. No longer do my people walk for

seven days from Thimphu to Phuntsholing, and seven days back, just to buy salt from the Indian border towns. No longer do my people think only of the affairs in their village, for the roads have opened a window to the outside world and made them feel one journey is not yet over. In fact, it has only begun. We shall not rest till the humblest citizen of my country is free from the scourge of ignorance, poverty and disease; and is able to lead a life of human dignity. In this great undertaking I hope I will continue to have the goodwill and support of the great Indian nation.

The ties of culture and friendship that bind our two countries is a matter of history. Our spiritual heritage which we consider our greatest national treasure stems from the teaching of the great son of India, Lord Gautama Buddha, whose message was brought into our mountainous country in the 8th Century A.D. by the Indian Saint, Guru Padmasambhava. The mighty Himalayan ranges have not only protected India from numerous invaders in the past, but have also safeguarded our national sovereignty and independence. The snow-fed rivers which originate in my country have, through time immemorial, flowed into the plains of India, causing not only the intermingling of the soils and waters of our two countries, but of our folk lore and legends and arts. The caravans have traditionally left our mountain fortresses carrying for trade musk and yak tails and returning from the Indian plains with salt and betel nuts and raw silk. Trade and Commerce have been further strengthened in the recent past and now all our trade is with India. The bonds of understanding and friendship have been further consolidated as a result of the growing economic and technical co-operation between our two countries, and I am fully confident that nothing can ever shake or destroy our friendship.

Before I end, I would like to pay a tribute to Mr. O. P. Mathur, who as Chief Engineer of the Bhutan Engineering Services saw the completion of the initial motorable road from Phuntsholing to Thimphu, and Border Road Chief Engineers, Brig. T. V. Jegannathan and Brig. O. P. Datta, who gave the finishing touches to the road, and to numerous officers and men who served under them with full devotion to duty and under conditions of extreme physical hardships.

I would now like to request Her Excellency the Prime Minister of India to open the Phuntsholing-Thimphu Shung Highway.



>> The roads that connect the land-locked country of Bhutan

Reflections of changes

Roads



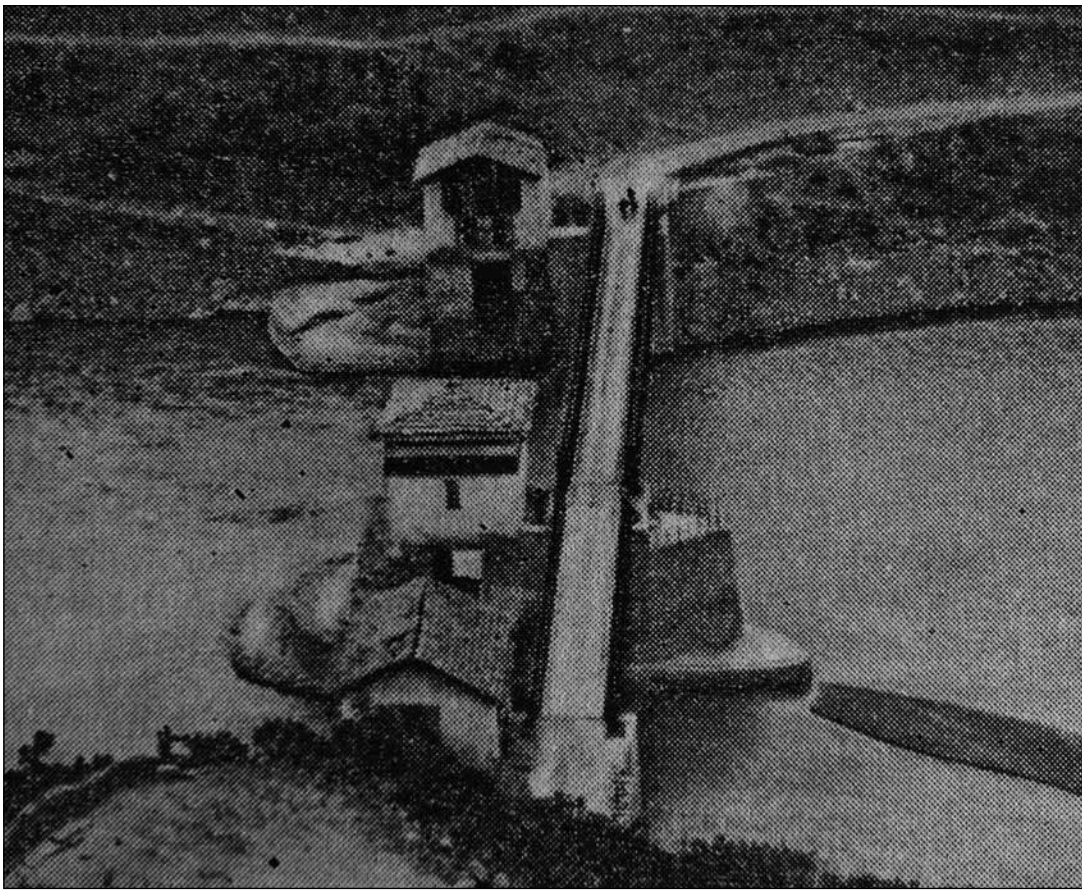








>> *Bazam over the Punatshangchhu river, Wangdiphodrang, before 1970*



>> *Bazam and the motorable RCC bridge over the Punatshangchhu river, Wangdiphodrang (kuensel April 28, 1974)*

From the Newspaper Archives

- Kuensel

Roads and Bridges

His Majesty the King opens Lobeysa-Punakha road (31/03/1971)

His Majesty the King on March 22, 1971 inaugurated the 14-kilometre road from Lobeysa to Punakha that was completed in January 1971.

The construction of the Rs 26,92,00 road, which began in October 1969, was carried out by Bhutanese constructors under the supervision of Bhutan Public Works Department.

Sarbhang-Chirang road almost complete (23/04/1972)

At this time, the 61-kilometre Sarbhang-Damphu (Chirang) road was almost complete with one-forth of the total length already metalled and blacktopped. Meanwhile, a branch road from Damphu to Lapsibotey was also under construction with the active participation of the local villagers. .

PWD construction works in progress (21/10/1973)

During this time, the Public Works Department (PWD), Thimphu Division, was racing ahead with the construction of six UNDP cottages being built near Thori Road.

Meanwhile, PWD continued their work of broadening all main roads in Thimphu, providing wide pavements for pedestrians and adequate drains. The new General Hospital complex above Lungtenzampa was also almost complete, with every medical facility being provided in addition to quarters for the hospital staff.

The work on the Thimphu Degree College was also in its final stages while the construction of the auditorium, gymnasium, and study hall. The PWD architects have at this point, re-designed the grounds of the Royal Guest Hall (Banquet Hall) and the Hall was itself to be fitted with a complex lighting system. A well laid-out garden was also being prepared.

Motorable roads in eastern Bhutan opened (30/05/1977)

A new motorable road, connecting Tashiyangtse with Tashigang in eastern Bhutan, was opened on May 15, 1977 by Mr. Dorji Norbu, Executive Engineer with PWD. The inaugural function was presided over by the Dasho Dzongda, Tashigang Dzongkhag.

The road was constructed under Royal Command. In December 1976, during His Majesty's visit to eastern Bhutan, a request was made for the construction of the road.

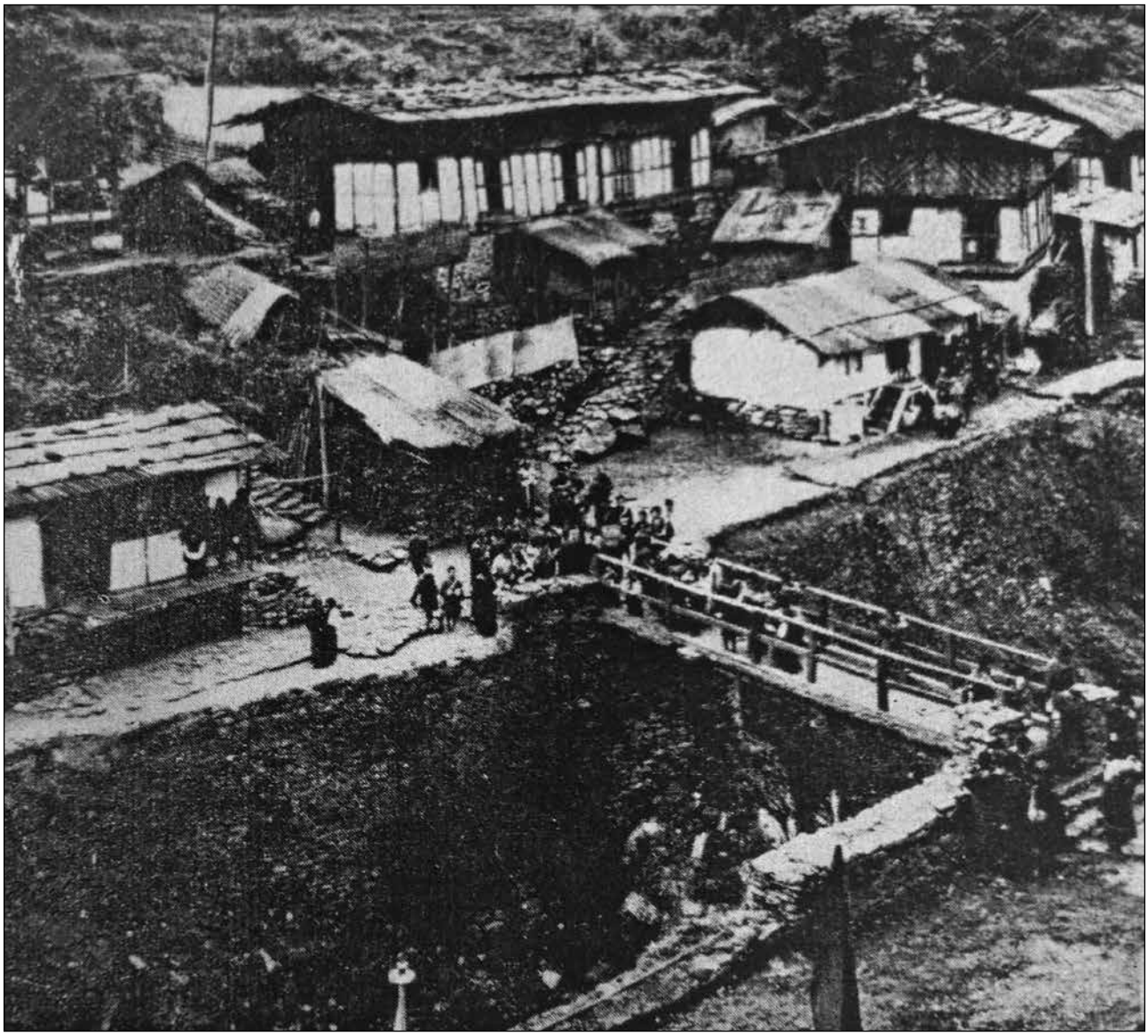
Motorable road from Tselingore to Pemagatshel (19/02/1979)

According to Director of Public Works Department, Dorji Norbu, the construction of a 25 km motorable road between Tselingore and Pemagatshel, Shumar was begun on February 1, 1979. Construction cost has been estimated at Nu. 500,000. About 800 local labourers were working on the road which was expected to be completed within the financial year '79-'80. The road, which has been taken up after approval from His Majesty, was planned for considerable benefit to Shumar district, and also several blocks of Tashigang and Mongar districts. Additionally, it was aimed to facilitate the exploitation of gypsum deposits in the area.

His Majesty the King inaugurates the Pemagatshel road (23/12/1979)

His Majesty the King, on his way to Pemagatshel to celebrate the National Day, inaugurated the 24 km road linking Pemagatshel with the Samdrupjongkhar-Tashigang highway at Tshelingore.

About 200 people and heavy machinery were engaged for the construction of this road. Work was carried out around the clock since March 3, 1979.



>> Bridge in a village in Tongsa (kuensel, February 24,1975)



>> Tashigang Dzong (1976)



>> Tashigang Town\ (kuensel, June 15, 1975)

Progress on the Monger-Lhuntse road (13/01/1980)

The Mongar-Lhuntse road was begun in 1978 by the PWD with labour provided by the people of the two districts. Labour for the 23 km to the Lhuntse border was arranged by the public of Mongar and the 36 km to Lhuntse by the people of Kurtoe.

In his report the Mongar Dzongda mentions the genuine interest taken by the Assistant Engineer in the work and the regular payment of labourers which is of great help to them enable them to progress the work. A PWD guesthouse has also been constructed at Autsho.

His Majesty inaugurates Mongar-Lhuntse road (21/12/1980)

His Majesty inaugurated the Mongar-Lhuntse road on December 19. After the inauguration ceremony all the village works and officials who were involved in the construction of the road were summoned from Kurtoe and were given cash gifts.

The plan for the construction of this motorable road was conceived and initiated by His Majesty the King during his visit to Kurteo in 1977. The work on the road started in February 1978.

Greater mechanisation of road construction (21/10/1979)

The idea of road mechanisation was conceived from early 1970s. Several discussions had been held in Thimphu between the Public Works Department and visiting UNDP teams specialising in this field.

The main aim of mechanising road construction was to facilitate the development of backward and remote regions in the country by linking these areas to main highways through the construction of a network of subsidiary roads.

Royal Government requested for an additional USD 800,000 worth of equipment from the Office for Project Execution (OPE) in New York in order to help the PWD attain an annual road construction target of 50 Km.

Lyonpo Jagar inaugurates construction of Chirang-Dagapela road (18/05/1980)

The Hon'ble Home Minister, Lyonpo Tamji Jagar, inaugurated the Damphu-Daga road construction on April 20, 1980. The construction of the road starts from 'O' road point, Deoraliee, near the Damphu Jr. High School. Lyonpo Jagar said that road is a vital factor that enables people to meet one another and exchange views.

The construction of the road, he said, was one of such projects where people have to participate and the people should willingly come forward to do the work.

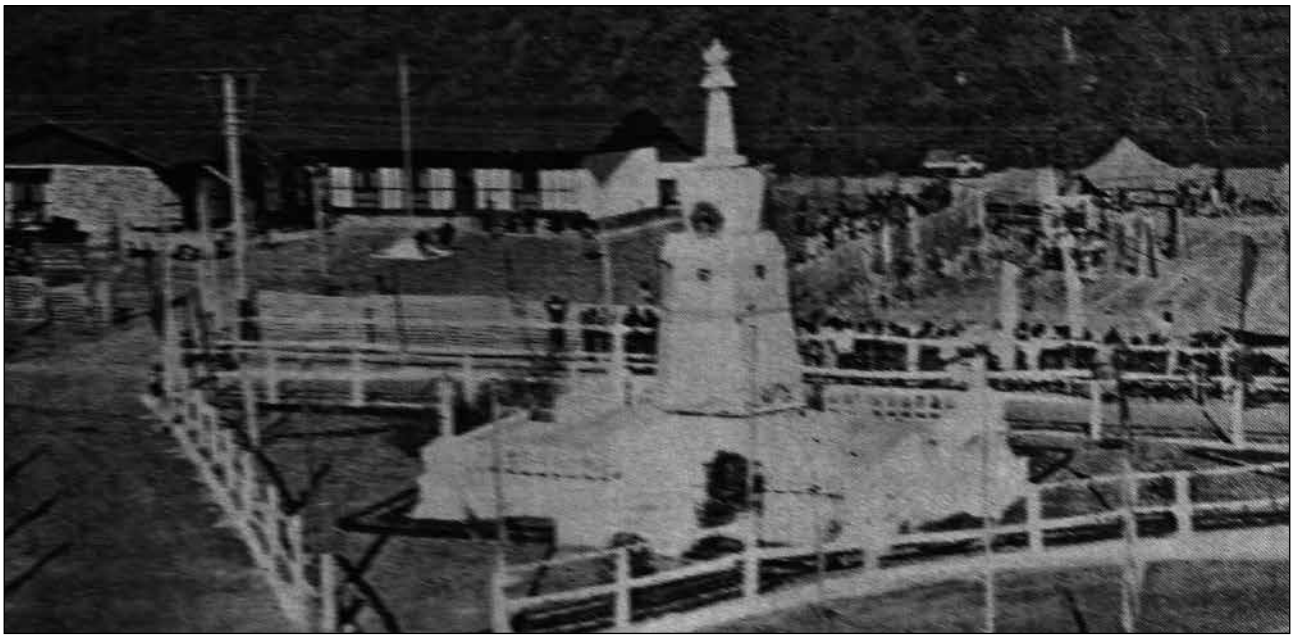
The Director of PWD, Mr. Dorji Norbu, said that 85 Km long road, would eventually be extended either to Chimakothi or Wangdue in the west. He mentioned that there would be 3 major bridges on the whole length of the road. One bridge costing about Nu 300,000 over Sunkosh River and the other two, estimated at Nu 200,000 each, over Dagachu. Mr. Norbu informed that the PWD would try to mechanise the road construction to avoid the involvement of huge manual labour. He said 2 small and 2 big bulldozers and 5 compressors would initially be put on work.

Deothang-Bhangtar road construction (18/05/1980)

On April 19, 1980, construction on the Deothang-Bhangtar road had commenced. The Royal Government has allotted a sum of Nu 200,000 for the purpose during the 1980-1981 financial year.

Road construction from Samchi to Sibsoo (31/08/1980)

The cutting of a 30 km road from Samchi to Sibsoo was in full swing. The construction works was done phase wise and about 60 labours were engaged in the cutting despite the shortage of labourers and mechanical glitches.



>> A memorial at Deothang where His Majesty the King laid a wreath on April 24, 1975 in the homage to those who lost lives in the task of building Bhutan's roads (kuensel, April 25, 1975)



>> The memorial stupa of Deothang is still conserved to pay respect to those who lost lives in road construction (Photo captured in 2012)



Naming of Roads (09/06/1971)

There was a substantial increase of road networks and commercial city in early 1970s. The meeting held in October, 1970 between Hon'ble Ministers, Chief Engineer, Public Works Department, Superintending Engineer, Civil Engineering Services, Divisional Engineer, Civil Engineering Services and Executive Engineer, Public Works Department decided to name different roads within Thimphu Township. The naming of roads was then supposed to make the delivery of letters and information convenient and faster for all their private and official correspondences.

New Damphu township plan recommended (23/01/1977)

The Central Town Planning Committee has recommended the planning of Damphu Township in Tsirang district. The recommendation was made after a meeting between the Central Town Planning Committee (CTPC) and the local town Planning Committee.

The Central Town Planning Committee team, consisting of the former Minister for Home Affairs, Lyonpo T. Jagar; Minister of Finance, Lyonpo Chogyal; Chairman of the Royal Advisory Council, Dasho Kalyon; Secretary-General in the Ministry of Development, Dasho (Dr.) T. Tobgyel; Secretary in the Ministry of Communications, Dasho K. Letho; Secretary in the Ministry of Trade, Industry and Forest, Om Pradhan; the Chief Engineer (PWD) and the Chief Town Planner visited Damphu on January 3 where they held a meeting with local authorities.



Drinking Water and Sanitation

Pure drinking water supply (17/02/1980)

Realising the importance of pure drinking water, the Public Works Department has worked to supply water to the residents of the Samdrupjongkhar town. The main work, expected to be completed within March 1980.

An official of the PWD said that one pressure filter through which 20 gallons of water will be passed per second is to be erected. The reservoir as well as the coagulation tank and the work on the realignment of pipes and distribution lines were expected to complete by March.



Drinking water supply schemes in Tashigang District (01/06/1980)

Tashigang District although rich in natural resources with rivers and streams flowing through valley, drinking water supply for human as well as for domestic animals have been a major problem. In early 1970 the Royal Government through the Public Works Department made efforts to solve the problem in the rural areas by setting up schemes of drinking water supply. With UNICEF assistance, the PWD. has executed during 1974-75, 9 drinking water supply schemes, 1975-76, 27 schemes, 1977-78, 17 schemes, 1979-80, 9 schemes and 1980-81, 6 schemes.



Reflection of changes

Bridges

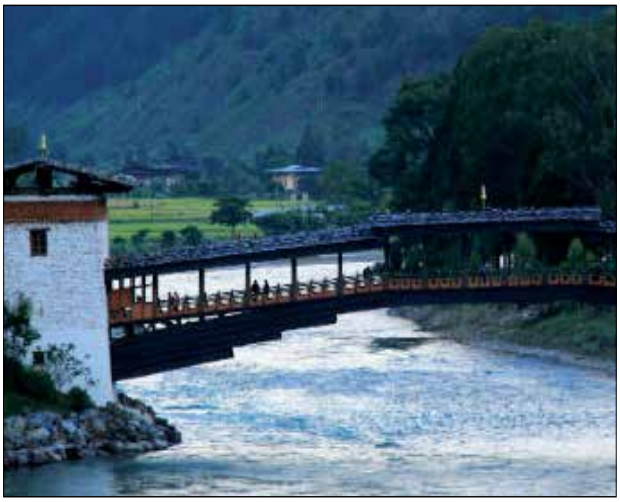















CHAZAM
CHAZAM





Mechanisation and adoption
of new technologies in the 1980s and the 1990s

In addition to the Public Works Department, the Border Roads Organisation was involved in the construction of major roads in the country. The construction and maintenance of infrastructures was challenging. There were 2,050 kilometers of roads in Bhutan already built, of which about 1,200 kilometres were blacktopped. By 1982, almost all the dzongkhag headquarters were connected with roads along with towns and industrial areas.

Expatriate workers had to be brought in due to lack of national workers. There was an acute shortage of engineers, which compelled the government to outsource the work. Thus, the mechanised road construction was introduced on a small scale for the first time in order to overcome labour shortage.

The main objectives of this decade was to further develop network of roads, suspension bridges and mule-tracks to connect every settlement in the country for economic integration and growth.

Starting with the fifth five-year plan, the construction of a network of feeder roads began. Feeder roads are lower standard roads that connect the small villages to the main urban centres in the Dzongkhags. The Wangdue-Tsirang highway was important in the decade as it was the main link between western and south-central Bhutan. The Northern East-West highway between Wangdue and Trashigang was also blacktopped in this decade.

To provide better communication links between villages and to link them to the road heads, the construction of 106 new suspension bridges continued in this decade. During the Fifth Five-Year plan, the construction of 80 suspension bridges was being undertaken with assistance from the UNCDF.

Suspension bridges over the rivers on foot trails and mule tracks linked the valleys to the road network and to the rest of the country. To keep communities connected and break the marginalilisation caused by rural isolation, Bhutan started a countrywide suspension bridge programme in 1971. Since then, a number of suspension bridges were constructed with support from the UNCDF and the HELVETAS. The suspension bridges programme was a big success with full national capacity to design and execute the works.

The Central Town Planning Committee (CTPC) was reconstituted and renamed as National Urban Development Corporation (NUDC) in 1984 to take the major steps in bringing urban development and to introduce the housing technology. Different rules and design concepts were developed during this decade like introduction of Bhutan Building Rules, Electrical Code for House Wiring, Manual for Timber Trusses and Manual for Timber Engineering.

In the sixth plan, housing programmes were taken over by National Urban Development Corporation (NUDC). The NUDC took the responsibility to ensure housing to the civil servants and to maintain all government housing in the country.

The NUDC also initiated major infrastructure developments programmes by taking grants and loans from other countries.

The sector introduced new construction technology in house construction with focus on planning the houses, promoting insulation, use of locally available construction materials, traditional architecture and enhancing the quality of life. With the initiation of urban development plans and human settlement, the plans were professionally prepared for more than 15 towns and were renamed as structure plans.

Bhutan falls under Siesmic Zone V which has high earthquake risk. To this end, seismic design code was introduced in 1997 to enable earthquake safe designs and constructions.

The improvement of public health in the country by reducing the incidence of waterborne diseases through the provision of adequate water and sanitation facilities to all by the year 2000 was initiated in this decades. Education and creation of awareness on the importance of water, sanitation, hygiene and health were considered nationwide.

Development of urban water supply was initiated in 1983 in six major towns of Thimphu, Phuntsholing, Paro, Trashigang, Gelephu and Samdrupjongkhar. for the sustenance of the water supply schemes. In addition, practical trainings were provided to the caretakers and village maintenance committees.

In order to avoid wastage, water meter system was introduced in major towns of the country.

Advanced mechanisation of road construction technology and engagement of private road construction companies started in later part of this decade.

"With lessons learnt from the implementation of rural water supply schemes, a major change in the approach in planning and implementing the rural water supply took place from 1990. Rehabilitation programmes were greater priority over new construction and traditional spring source protection was introduced to serve the scattered households."

There has been a continued investment in the urban water supply programmes since then. Urban water supplies comprised of source tapping and transmission through closed pipes, conventional treatment of filtration and disinfection and distribution were constructed. By the end of 1980s, the coverage of rural water supply reached 30 precent.

With lessons learnt from the implementation of rural water supply schemes, a major change in the approach in planning and implementing the rural water supply took place from 1990. Rehabilitation programmes were greater priority over new construction and traditional spring source protection was introduced to serve the scattered households.

Community participation right from the planning stage to the labour contribution during construction and operation and maintenance after completion was encouraged. Water caretakers were appointed and village maintenance committees were established

Modernisation of infrastructure development

Over 3,200 km road, serving almost all district headquarters and a large proportion of the rural settlement, were maintained and built during this decade.

Five private companies were engaged in resurfacing works under the latter part of the decade.

Due to increasing traffic and for safety of travellers, old steel bailey bridges were replaced in this decade.

Structural plans for urban centres were initiated to achieve a balanced development of all urban centres and to create a functional, healthy and aesthetically pleasing physical environment. Basic infrastructure like road, power, drainage, water, sanitation, recreation, communication and traffic facilities were planned in an environmentally friendly way.

In the first part of this decade, it was planned that improved water supply would benefit 57 percent of the population. More than 45 percent of the population was provided access to safe drinking water from improved schemes. This was the decade when augmentation of drinking water supply schemes, construction of piped sewerage system with oxidation ponds, and water service charge through metering for two major towns of Thimphu and Phuentsholing were accomplished.

To have better future and to lessen the impact of pollution, waste management was also prioritised with the introduction of first landfill site at Memelakha, Thimphu, as well as improving the collection and disposal of solid waste.

The importance was also given to universalise the use of household latrines and also assist 11,000 households (15 percent of the rural population) to build hygienic latrines.

Building human resource was important to achieve the set goals. Institutional capacity building was given priority since there were no specialised engineers in the road sector. In-service training programmes were arranged for specialised training. Priority was given to structural engineering, pavement and maintenance management, geotechnical survey and design.

Kasho issued by His Majesty the Fourth Druk Gyalpo

His Majesty the King issued a Kasho, raising the goongda woolla wages paid by the Royal Government to Nu.25.00 for all workers, from July 1, 1993. In the past, men were paid Nu.15.00 and women Nu.13.00.
Issued on June 8, 1993 from Tashichhodzong, the kasho said that while the new rate will cost the Royal Government a large amount in funds. His Majesty the King hoped that it would have a direct impact in increasing the income of the people.

The Kasho also pointed out that goongda woolla, which is the mobilisation of local moanpower to implement development projects, is an important aspect of the policy of the Royal Government and the people working together for the development of the country.

His Majesty emphasised the importance of the success of the goongda woolla system, in promoting a greater degree of self reliance in the implementation of development activities.

His Majesty instructed the Dzongdas, GYT members, and gups in all the dzongkhags to take full responsibility in promoting greater people's participation to ensure the progress and development of the country.

From the Newspaper Archives

- Kuensel

Roads and Bridges

New road construction from Wangdue to Tsirang (02/05/1982)

The construction of motorable road from Wangdue to Chirang began on April 26, 1982. The opening of this route linking Tsirang to Wangdue was aimed at people living around to reap the benefits of rural area development programmes.

PWD takes over road maintenance (27/02/1988)

The Public Works Department (PWD) of the royal government took over the maintenance of the 185 km stretch of the national highway from Ura to Pelela from DANTAK. The DANTAK suggested that the maintenance of the road should be manpower oriented because of the problems involved in repair and maintenance of machinery. Another problem was the transportation of heavy equipment like the D80, TD20 and D7 dozers, which have to be dismantled if the distance involved more than 30-40 km reducing the lifespan of the machine. This was the first of a four-phase, taken over by PWD within the Sixth Plan. On March 31, 1987, the total stretch of roads in Bhutan was 2,155.5 km out of which the DANTAK maintained a total of 1,384 km.

The second phase of the take over was scheduled in 1989-90 together with PWD captivating the sector from Pelela to Wangdue and from Ura to Mongar, a total of 202 kms. The third and fourth phases were to be carried out between 1990-91 and 1991-92. DANTAK was supposed to hand over 157 km from Mongar to Tashigang, Wangdue to Simtokha and 273kms from Sarpang-Geylegphu-Tongsa.

While some of the problems faced by PWD were the shortage of labour and the inexperience of the labourers, officials of PWD were optimistic that with the right support of the Royal Government, it will be able to handle the maintenance of the road.

Roads department takes over maintenance of Tongsa-Sarbhang highway (04/04/1992)

Project DANTAK handed over the responsibility of maintaining the highway from Tongsa to Sarpang to the Department or Roads in April 1992.

Colonel R P. Singh of the 19 Border Road Task force formally handed over the responsibilities to the Secretary of Roads, Dasho Dorji Tenzin.

Houses for national work force members (08/10/1994)

More than 100 houses were constructed by the Public Works Division in 1993 for the maintenance workers, better known as the national work force, mainly along the lateral highway - Trashigang to Thimphu - and on the Trongsa-Gaylephug, and Wangdue-Tsirang roads. In 1994 the pace of constructions increased and another 130 houses were built.

Each house, with wooden frames, CGI roof, and the walls plastered with cement, costs between Nu 50,000 and Nu 70,000. The UNICEF, however, finances the sanitation facilities separately. The houses were also being installed with Bukharis and water taps.

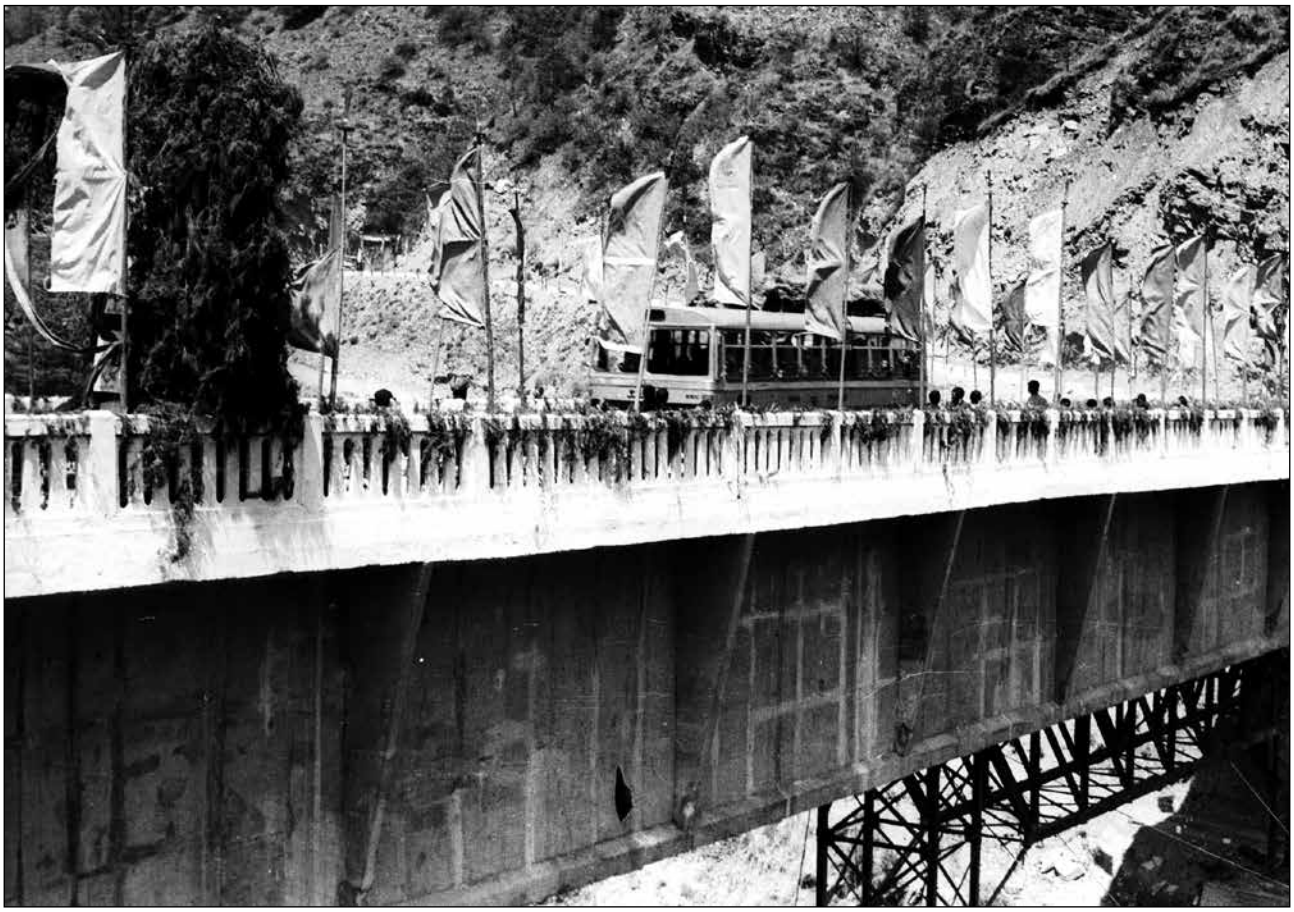
The houses were a necessity for the workers who have been living bearing the severity of extreme weather and torrential monsoon rains without any proper roof over their heads in miserable bamboo and mud makeshift huts.

Bio-engineering method of maintenance (02/03/1996)

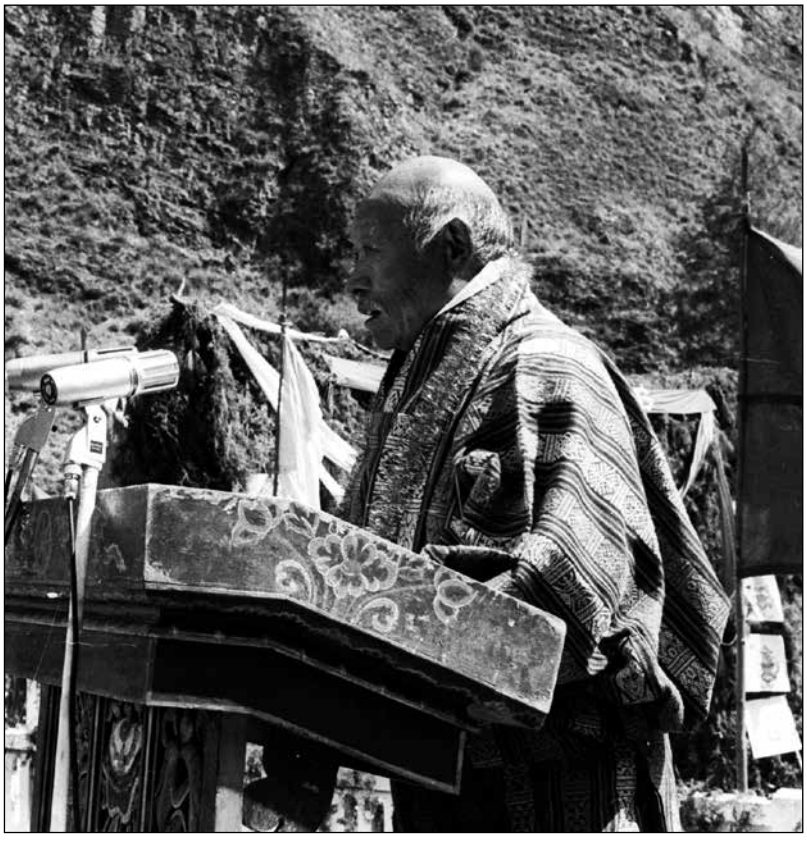
Public Works Division (PWD) adopted the new bio-engineering method in road maintenance in mid 1990s. The bio-engineering method would not only stabilise road slopes but also reduce overall maintenance cost of roads.



>> Survey of Samtenling-Dechencholing road, the first road designed using computer programme called Geocom



>> Tachhog bridge at Tanalum (kuensel, April 18, 1985)



>> The Home Minister Lyonpo. T. Jagar at the inauguration of Tachhog bridge atTanalum (kuensel, April 18, 1985)

Urban Development and Housing

Constructions of buildings to stop (04/04/1982)

As per Royal Command the Central Town Planning Committee was reorganised in April, 1982 and a working committee constituted for implementing the decisions taken by the Committee. According to a report received from the Chief town planner's office, meanwhile, the allotment of plots of land and issuing of building permissions was stopped till satisfactory urban services were planned and urban services were provided in all the urban centres in the country.

Decolonisation of departmental colonies (21/08/1983)

His Majesty the King endorsed the view of the Central Town Planning Committee that it would not be conducive for proper development of urban areas if departmental colonies are permitted to continue under the control of various departments. It has, therefore, been decided that all land in the urban areas should be vested under the respective Township Committees for proper planning, supervision and control.

Planned growth for Thimphu and Phuntsholing (05/09/1987)

An NUDC/UNCHS (Habitat) project had concentrated on planning development to curb haphazard and uncontrolled development of towns in Thimphu and Phuentsholing.

In August 1987, NUDC produced its urban development plan for Phuntsholing following the release of Thimphu plan in March 1987. It had also produced plans for Geylegphug, Samdrupjongkhar, Deothang, Pemagatshel, Kanglung, Mongar, Lhuntshi, Bumthang, Dagana, Damphu, Tongsa, Zhemgang, and Punakha. As the chairman of NUDC, Lyonpo Dawa Tsering said in his introduction to the Thimphu plan "urbanisation is now a fact of life in Bhutan."

Rural housing project (12/08/1987)

The Public Works Department has taken over the responsibility for the rural housing project in 1987. The initial design and planning was done by the National Urban Development Corporation.

PWD has taken over because it had the manpower and resources for implementation of the project. The aim of the project was the improvement of the rural house - to make it comfortable, warm and to ensure it has proper sanitation.

Support grant for urban development (25/12/1999)

The World Bank approved USD 22.6 million in credits to the Royal Government to improve and expand the coverage of basic urban services in 10 district towns and to improve rural access roads in December 1999.

The 10 district towns covered under Urban Development Project supports, which was approved on December 21 in Washington, included Wangdue, Trongsa, Zhemgang, Tingtibi, Bumthang, Lhuentse, Trashiyangtse, Duksum, Rangjung, and Paro.

The government's continued emphasis on urban development and decentralisation by strengthening the financial and institutional capacity of the responsible authorities to deliver basic urban services and by financing high priority investments in such services for which there was broad public support.

New Convention Centre (01/01/1994)

New Convention Centre on the opposite bank of the Wangchhu (Thimphu river) was formally inaugurated in the early hours of National Day in 1993. The new complex, which was widely referred to as the SAARC building, was also formally named the Convention Centre.

The exquisite structure resembles the Tashichhodzong with the distinct architectural tradition enhanced by improved workmanship and sophisticated technology.

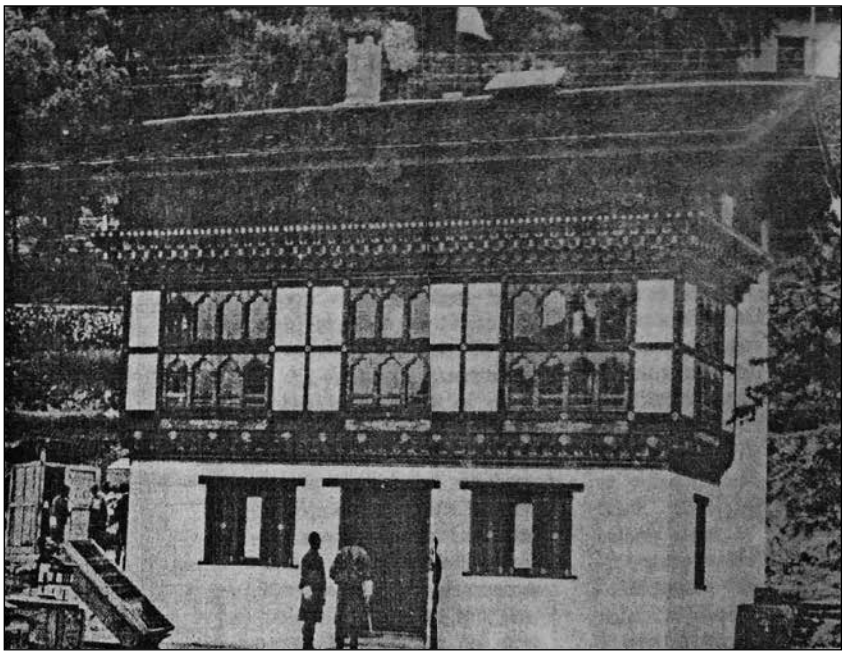
The surrounding gardens, including lawns, rock gardens and flowerbeds, were beautified by Japanese Peach Blossoms.

The construction work was taken up by the Indian company, Patel Engineering of Bombay, with M. D. Rajdhania as the architect and Sunita Kohali as interior designer.

The overall construction was supervised by a special committee chaired by Her Royal Highness Ashi Sonam Chhoden Wangchuck and then by the Foreign Minister



>> Handing over of Simtokha – Wangdue road to Dantak (kuensel, November 15, 1986)



>> Rural Housing project
(kuensel September 12, 1987)

Lyonpo Dawa Tsering. The Division of Works and Housing was among the other organisations involved in various aspects of the construction.

Success of Sewerage project (27/07/1997)

The Thrompons of Thimphu and Phuentsholing were two proud officials as they related the success of the urban water and sewerage project which was formally inaugurated with a relatively quiet function near the sewerage treatment ponds in Babesa on July 22, 1997.

The largest donor-assisted Nu 535 million project, which began at the turn of the decade in 1990s, provides treated water in four towns - Thimphu, Phuentsholing, Samdrupjongkhar, Gelephu and Paro, and sewerage systems covering 45 percent of Thimphu and 80 percent of Phuentsholing. Sustained through the collection of water and sewage service charges these projects are functioning smoothly and had made a positive impact on the health of Bhutan's urban population today.

Urban development in focus (24/04/1999)

Officials from the Asian Development Bank, DANIDA, UNDP and World Bank, sat with Bhutanese officials to look at the UNDP/UNCHS assisted urban management project which was coming to an end and the assistance from DANIDA, ADB and World Bank which was expected to take off soon.

In the Urban Development Sector Support Programme concentrating on Thimphu and Phuentsholing, DANIDA contributed about 70 million Danish Kroners to develop water, sanitation and sewerage facilities. The ADB with US $ 8.2 million of which 5.7 million loan, looked at roads, footpaths, traffic junctions, bridges and the World Bank complemented other donors and emphasise on institutional strengthening at district and local levels and physical investments after conducting the feasibility study.

Public Works Division split (06/02/1999)

The rapid growth of urban centres and its associated problems have called for renewed attention to urban development and housing.

It was with this rationale that the government decided to split the Public Works Division (PWD) in February 1999 into two separate divisions under the Ministry of Communications in order to give equal importance to the entire sector.

Under the Secretary, Dasho Dorji Tenzin, the newly formed Division of Roads took over all aspects of road and bridge construction responsibilities previously held by the PWD.

The Joint Secretary, Tshering Dorji, headed the other division, the Urban Development and Housing (UDH) Division. The UDH Division has also assumed the role of regulating all municipal authorities.

Urban housing (20/03/2000)

The Council of Ministers has given the Urban Development and Housing Division of the Communications Ministry the green signal to begin constructing about 600 new apartments over the next year to mitigate the housing shortage in two of Bhutan's biggest towns, Thimphu and Phuentsholing.

The construction, considered as one of the major activities commemorating the Silver Jubilee of His Majesty the Fourth Druk Gyalpo's Coronation, was expected to start before June 2 on 40 acres of land at Changjiji in Thimphu and 2.37 acres at Jarna in Phuentsholing. The Finance Ministry had sanctioned the amount of Nu 10 million for preliminary works.

Heaving a sigh of relief with the start of Changjiji housing (29/07/2000)

Urban Development and Housing Division (UDHD) started the preliminary work for the much-awaited Changjiji housing complex on July 25, 2000.

The main construction work was expected to begin sometime in 2001 when all other formalities like floating of construction tenders and quotations were to be carried out to encourage Bhutanese contractors to take up the construction work.

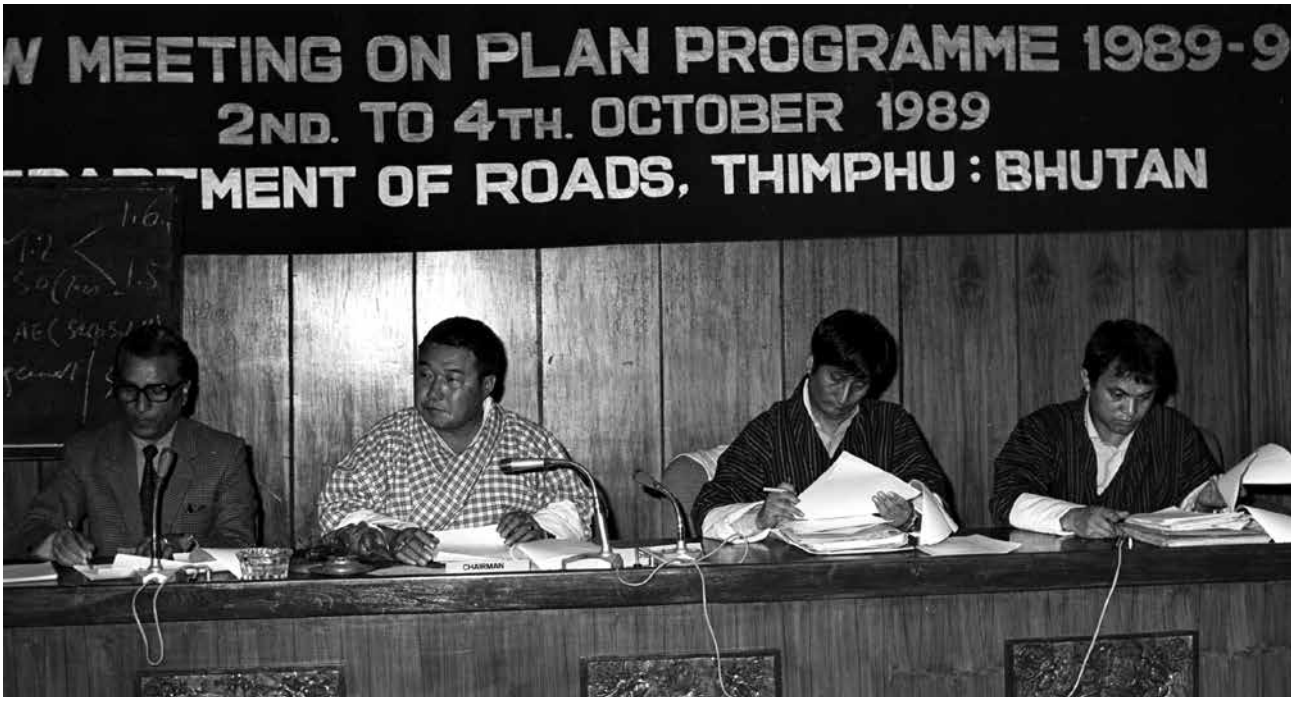
Township (17/06/2000)

The Urban Development and Housing Division began developing the Tsimasham township, which was approved in the Eighth Plan.

Massive earth moving work was under progress to mark commercial plots and construct new town roads. Tsimasham by then was expected to develop into a model satellite township.



>> His Majesty the Fourth Druk Gyalpo inspects the construction of traditional building



>> Half yearly review meeting of the Department of Roads :Dasho Dorji Tenzing chaired the meeting (kuensel, October 5, 1989)

Drinking Water and Sanitation

Local materials used (17/02/1980)

For the first time in Bhutan, toilet pans and other components for low cost sanitary latrines were being made.

They were made by the Public Works Department in Thimphu using local materials and were shown at a demonstration.

Training engineers and technicians (01/06/1990)

More than 30 engineers and technicians from Tsirang, Wangdue, Dagana and Punakha were trained in constructing ferro-cement tanks and upgrading other skills.

Organised by the Public Health Engineering Cell of the Department of Works and Housing in collaboration with UNICEF, the three-week course in Wangdue was a part of the royal government's strategy to provide people living in villages with clean drinking water through a good rural water supply design and system.

The ferro-cement tank, which was then a new introduction to rural water supply schemes, stood more economical, safe, hygienic and needed less maintenance.

Similiar training courses was also organized for Zone 3 (Geylegphug, Zhemgang. Tongsa and Bumthang) and Zone 4 (Samdrupjongkhar, Pemagatshel, Tashigang, Mongar and Lhuntshi) later.

Water meters in urban centres (23/07/1994)

Workshop on Better Management of Water and Sewerage held on July 1994 recommended the installation of water meters to ensure an efficient and clean drinking water supply system in the six towns, which were covered by the DANIDA-funded Urban Water and Sewerage Project.

The meter system was expected to be applicable to all consumers, including government organisations, educational institutions, hospitals, and business organisations on a tariff charged according to consumption.

Water supply scheme strengthened (18/03/1995)

By then, about 54 percent of the rural population in Bhutan received safe drinking water through Rural Water Supply Scheme (RWSS).

In 1995 there were 1,739 rural water supply schemes spread over the 20 districts in the country, most of them in Trashigang dzongkhag.

According to the former Executive Engineer of the PHE section, Dorji Choden, the rural water supply programme started in 1974, as a UNICEF-government co-operation, with the main objective of improving public health by reducing the incidence of water borne diseases.

Awareness drive on water and waste (19/10/1997)

People of Thimphu, Paro, Phuentsholing, Gelephu and Samdrupjongkhar were made aware of improved water supplies, water metering, sewerage, and solid waste disposal.

In consultation with the IECH Bureau and the Public Health Engineering cell of Public Works Department, the Royal Society for the Protection of Nature launched an education project on the Urban Water Supply and Sewerage Project.

Standard Quality and Control

Ensuring construction quality (26/08/2000)

The standards and quality control division under the Ministry of Communications was established in August 2000 to ensure the standards and quality in the construction industry.

The new division was supposed to visit the construction sites, sand and stone quarries, manufacturing firms and hardware stores to inspect the quality of goods. The division developed some codes like plumbing codes for water and sanitation, specifications for construction, and the Bhutan schedule of rates to name a few.

Monitoring the construction quality (08/09/2001)

With the introduction of new construction testing equipment, the standard and quality control division (SQCD) of the Department of Urban Housing and Development was able to identify the defect in the construction industry.

All of us who are part of the human family find increasing economic welfare important in our lives. Together with such improvement, it is desirable to be healthy, happy and peaceful. Many ingredients must be present to make all individuals of the country comfortable and content. Among many ways and means the Royal Government is pursuing toward this end, one of the most important policies is the promotion of a household latrine in each house and safe drinking water in both towns and villages....

Royal decree, 1992



>> Annual engineering conference

Called non-destructive testing (NDT) equipment, the assortment of digital equipment manufactured by a Swiss company Proceq was able to confirm whether a building, bridge, or road have been constructed according to actual designs and specifications. It tested building materials, metal, paper, wood and complete structural elements.

The NDT equipment, also helped to improve the quality of construction and seismic designs of buildings in Bhutan.

Introduction of Construction Development Board (10/06/1995)

The CDB, previously known as Contractor's Selection Board, was instituted with the objectives and guidelines to coordinate, equip and promote the contractors in the kingdom. It was entrusted with the responsibility to oversee the proper execution of developmental projects by the contractors.

In a move to control the quality of work produced by engineering consultants, the Public Works Division announced that engineers and architects must register their firms with the Construction Development Board (CDB).

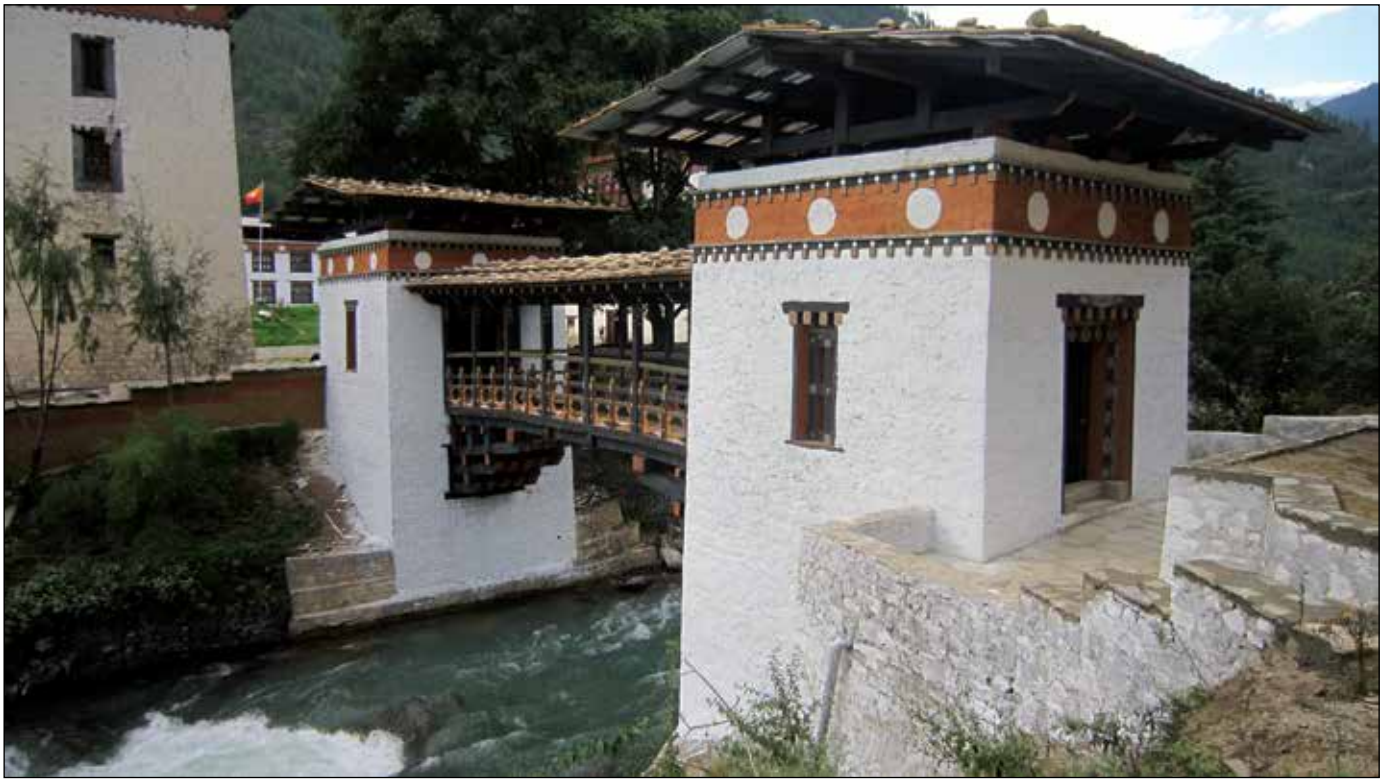
The move was aimed at strengthening the construction industry which in the past was ailed by poor drawing and design work engineers and architects submitted in the absence of a quality control benchmark.



>> In-country training related to construction of Suspension bridges conducted by Helvetas and UNCDF in Thimphu (kuensel, July 18,1989)



>> New bridge for Dodena (kuensel, March 5, 1988)



Hands-on-Training on the construction techniques of Traditional Wooden Cantilever bridge called Bazam was conducted at the construction site of Pangrizampa Bazam, Thimphu. Twenty technicians from the Dzongkhags attended the training. The Hands-on-Training was initiated to commemorate the 60th birth anniversary of His Majesty the Fourth Druk Gyalpo and to impart knowledge and skills on the techniques of constructing Bazam by integrating improvised and modern construction technology. The Hands-on-Training which started on March 20, 2015 was completed in September 2015. Within the time duration of little more than six months, the trainees were able to complete the construction of Bazam at Pangrizampa Lhakhang. The Hands-on-Training was conducted by the then Rural Infrastructure Service Division under Department of Engineering Services, MoWHS.



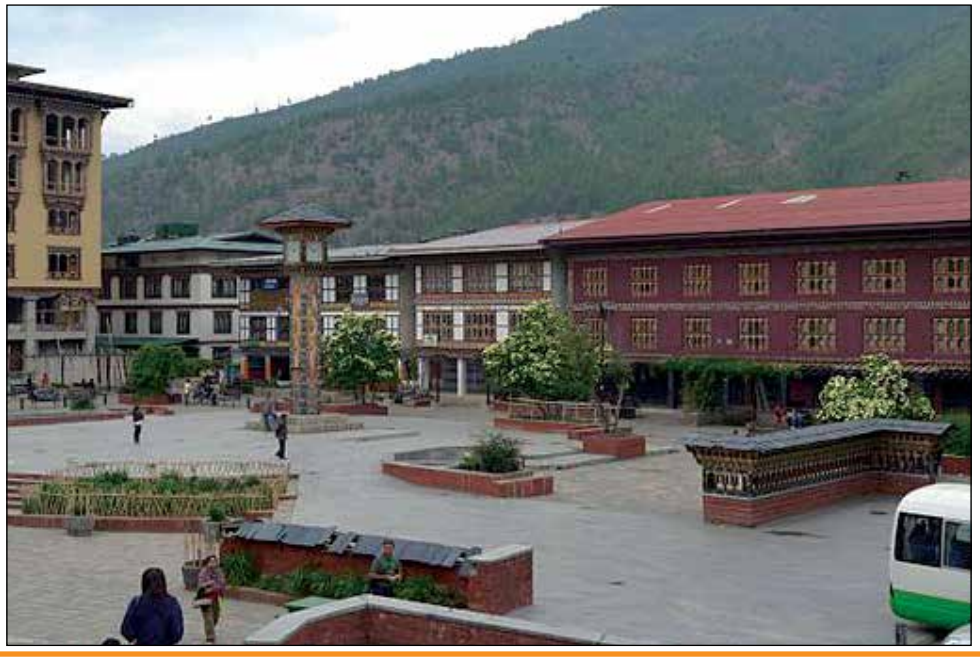
>> The Director General of Border Roads, Major General M.S. Gosain with His Majesty the Fourth Druk Gyalpo at Tashichhodzong (kuensel, November 10,1988)

Clock tower an icon for the capital



A structure plan was prepared for Thimphu (1986-2000) that gave vision to the development of the city. The objective of the structure plan included environmental conservation, promotion of tradition and culture, a balanced development and enhancement of quality of life. The planning team identified many development proposals including a clock tower in the centre of the town as a modern icon. It was constructed in 1986-87 and its surrounding was developed later. Today it serves as a recreational and exhibition ground for traditional and modern activities. The clock tower is constructed with traditional architectural features and has added to the landscape of the city.

Contributed by : Meghraj Adhikari Urban Specialist DHS/MoWHS



Promotion of environment friendly Housing

With the rapid pace of development it became increasingly clear that Bhutanese housing typology was changing with the advent of new architectural concepts and availability of new construction materials. The Fourth Druk Gyalpo instructed the NUDC to introduce environment friendly houses with the objective to enhance quality of life both in urban and rural areas. NUDC constructed prototype houses incorporating traditional Bhutanese architecture and using local construction techniques like rammed mud walls, adobe and improved materials like mud blocks with cement. Roofing was done with wooden Shingles (Shingleps) that were treated with creosote oil to increase the durability. These houses were designed and constructed using passive solar energy and better insulation mechanisms were incorporated to retain heat in the colder regions. Models of such houses were demonstrated during sixth five year plan discussions in all Dzongkhags. Along with such house models solar meat/vegetable dryers and solar water heaters were also demonstrated. His Majesty the Fourth Druk Gyalpo personally explained the concept, materials and construction techniques to the people. Such model houses were later constructed one each in all the Dzongkhags, During the construction of such houses in the Dzongkhag village artisans were trained on improved construction techniques, seasoning of timber and the importance of sawing the timber to reduce wastage.

Contributed by : Meghraj Adhikari Urban Specialist DHS/MoWHS



Reflection of changes

Housings



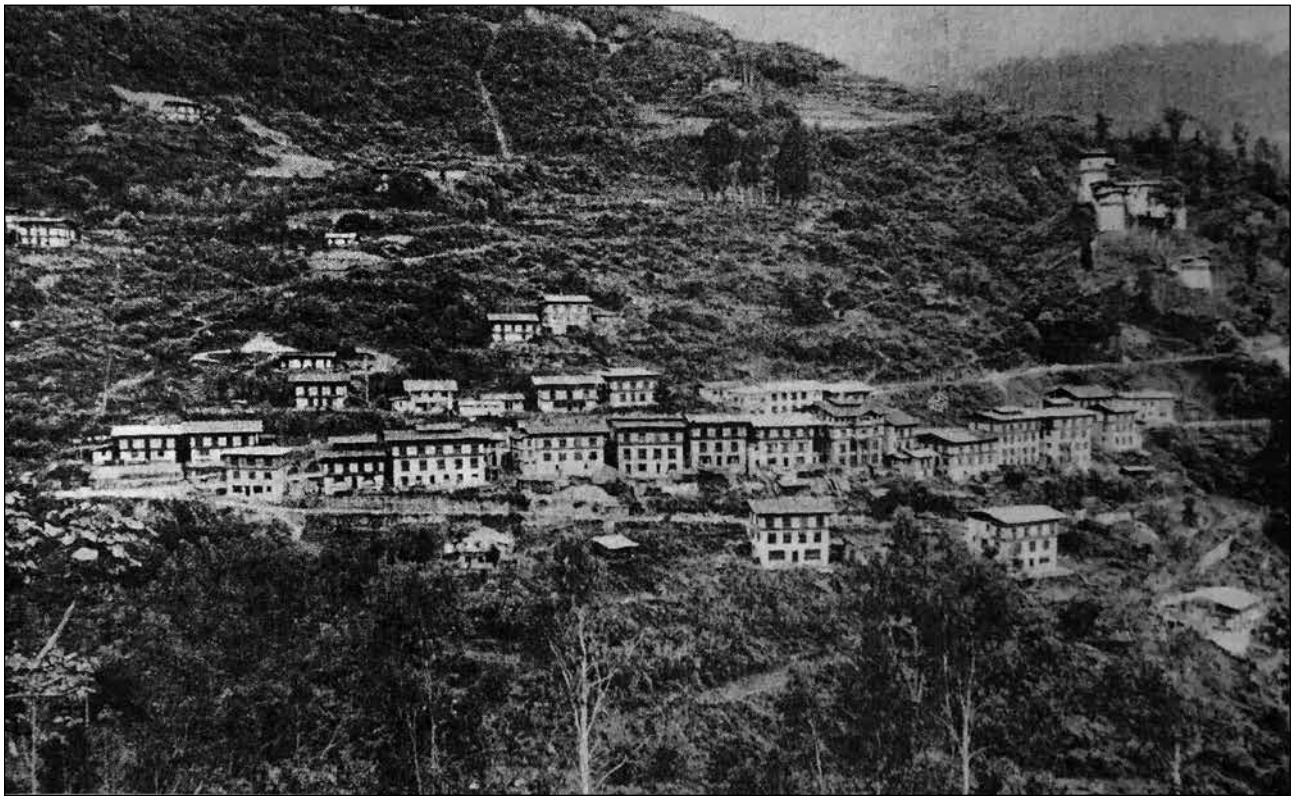












>> Tongsa town which is located on a steep and geologically unstable slope will be shifted to a more suitable location in Weilling above Thruepang (kuensel, May 11, 1991)



>> Monks cross the suspension bridge in Trongsa over Mangdechhu during innauguration ceremony. The new bridge serves the total of 200 households in Nabji Korphu Gewog and make the transportation of cash crops from the area much easier. An earlier bridge built in 1987 was washed away when the river was swallen by rain in 1989 (kuensel, July 18, 1992)



>> Rural settlements before 1970's



>> Under the National Policy, foot path construction was taken up as part of road building programme (kuensel, July, 1977)



>> Trainees on geological study exercise



>> A testimony to Bhutan-India Friendship : Thun Zam - "Bridge of Friendship" opened at the confluence of the Wangchhu and Pa chhu. (Thimphu and Paro rivers): Chief guest HRH Ashi Sonam Choden Wangchuck graced the occasion (kuensel, June 7,1991)

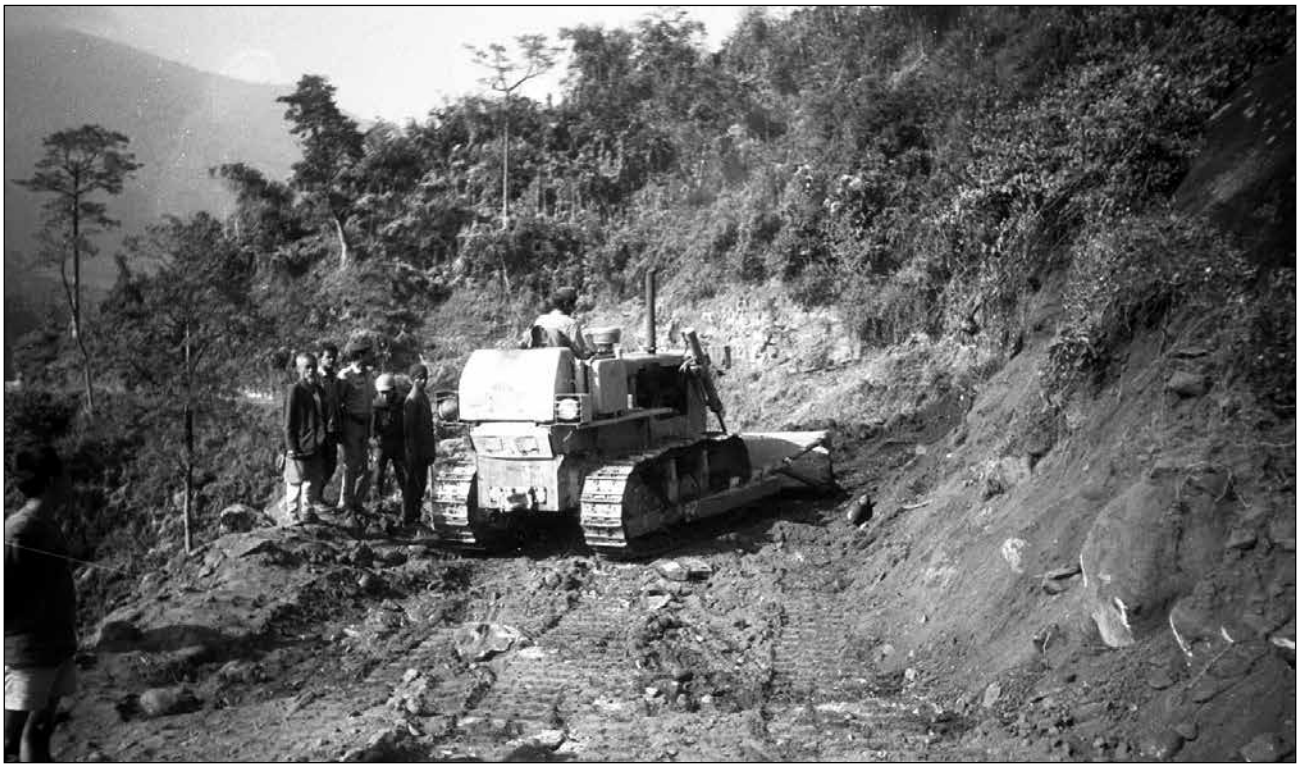


>> Mr. Thang discusses the latrine with villages.
A UNICEF UN Technical Officer found that many people who had constructed latrines in Haa had not used them because they were waiting for official approval (kuensel, Sept. 12, 1992)



>> HRH the Crown Prince with Lt. General Maharaj Singh, guests and senior officials at the opening of the Bondey bridge (kuensel, July 16, 1993)

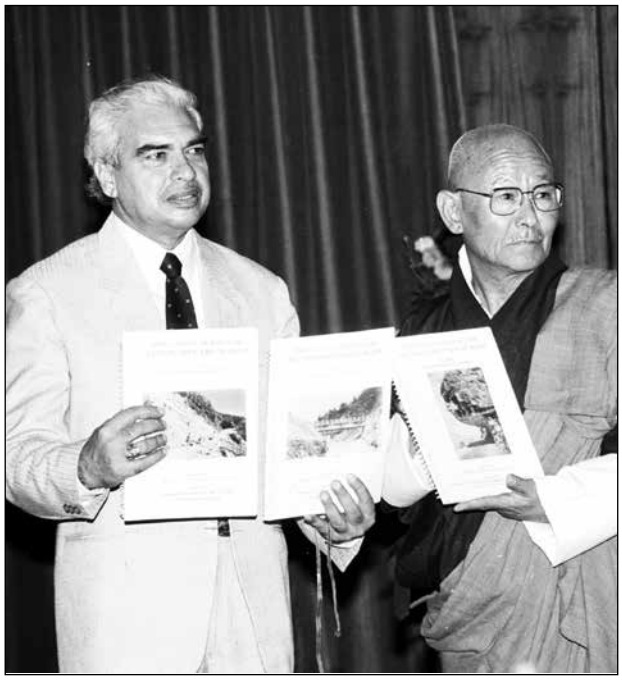
HRH the Crown Prince, Jigme Khesar Namgyel Wangchuck inaugurated the Bondey Zam while Lt. General Maharaj Singh, the Director General of Border Roads inaugurated the Isuna Zam, both in Paro on July 16, 1993.



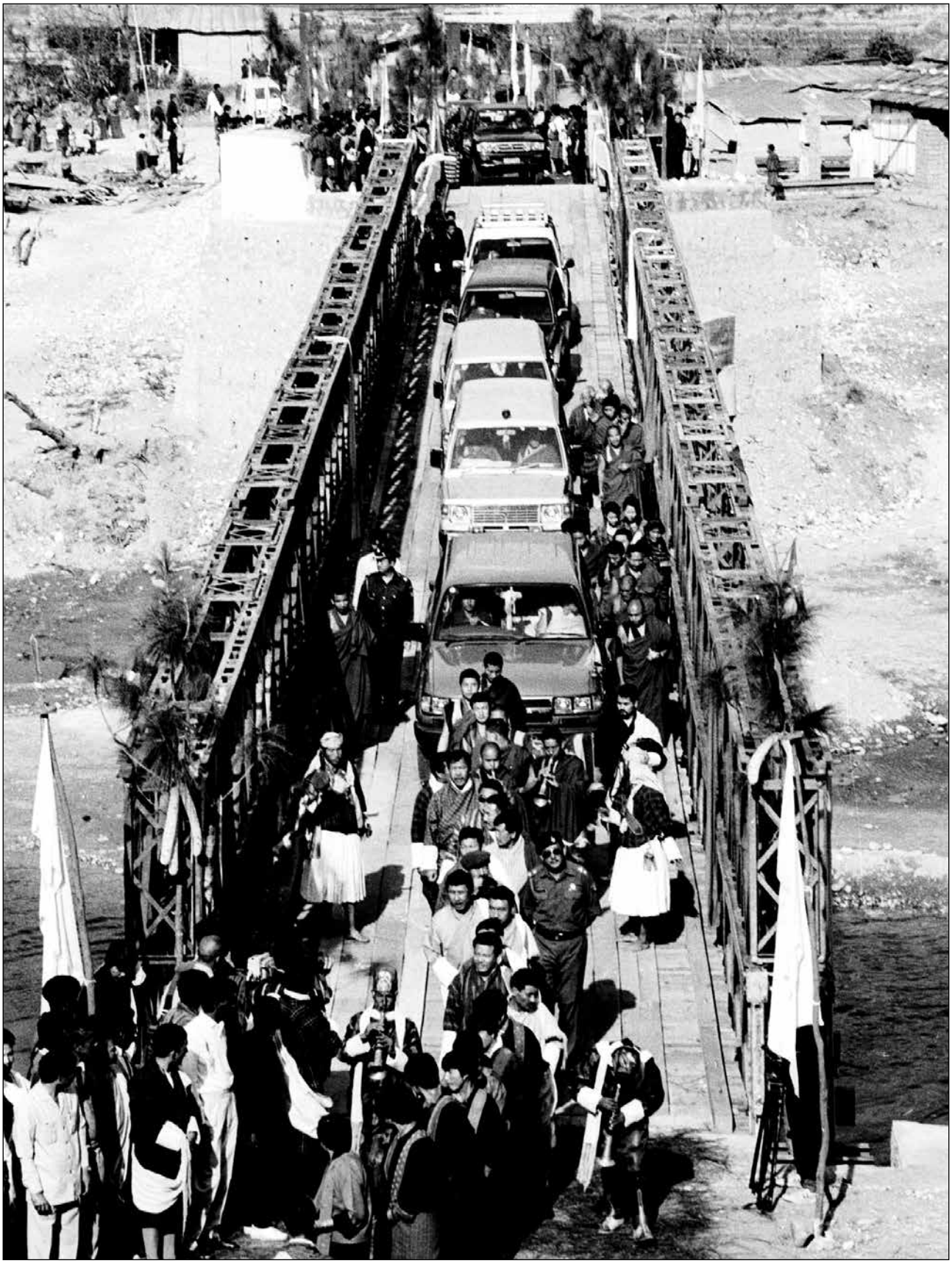
>> Feeder road to Link Sibsoo and Tendu. The construction of a 24 kilometre feeder road from Sibsoo to Tendu in Samchi had started by project DANTAK. The road which runs through the villages of Deorali, Berutar, Khopitar, Lamitar, Dzongsar, Lower Khochin and Tendu (Kuensel, December 11,1993)



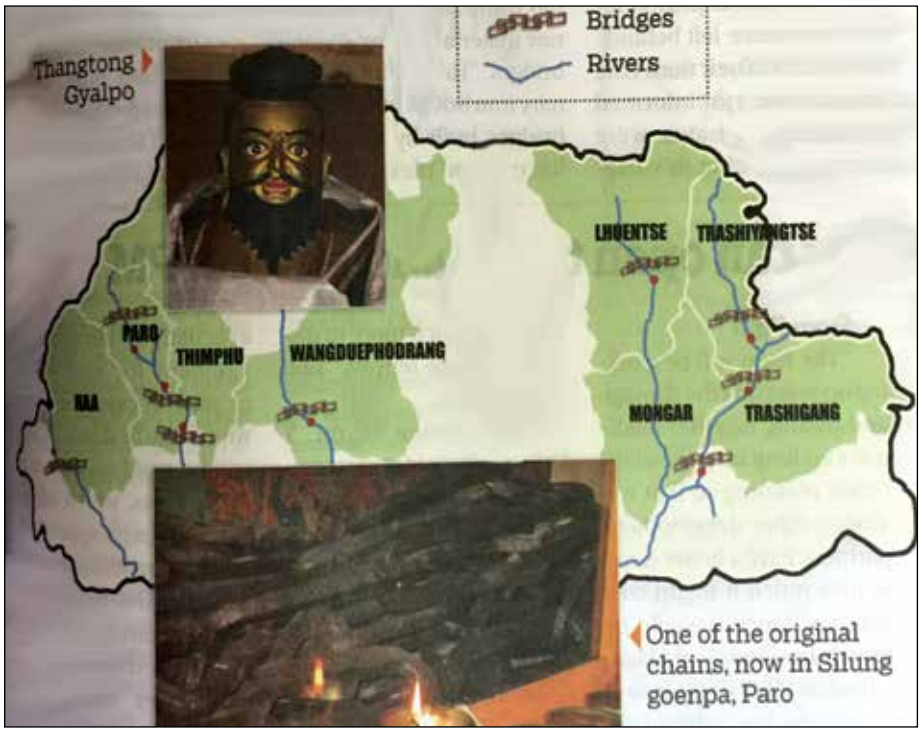
>> Col. R. P. Singh hands over the road to Dasho Dorji Tenzin (kuensel, June 26. 1994)



>> Induction course for section officers: Lyonpo. T. Tobgyel and Director Mr. Saxena display books on road construction and maintenance at Banquet Hall, Thimphu (kuensel, August 2, 1993)



>> The completion of the new Bailey bridge at Changyul in Punakha (kuensel, April 22, 1995)



Suspension Bridge

In the 15th century, the Tibetan saint Thantong Gyelpo (Iron Bridge Builder) started building iron chain bridges.

In 1971, the Pubic Works Department started a country-wide bridge construction programme with support from UNCDF.

In 1985, the Government of Switzerland through the Swiss Development Cooperation (SDC) agreed to finance the bridge programme.



>> New bridge built near Tachoe Lhakhang, Paro using original iron chains

General Information



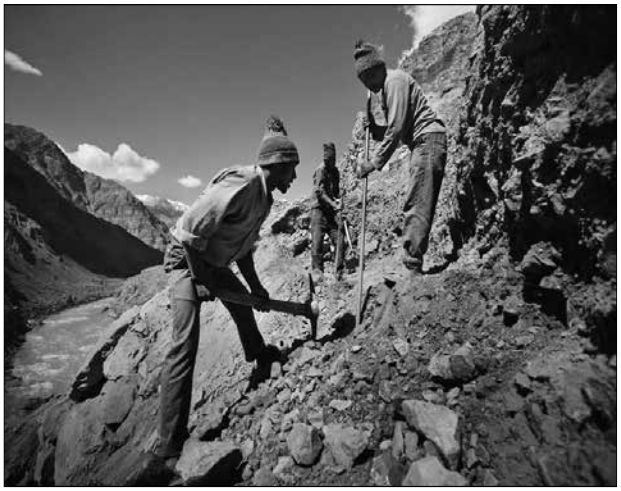
BITULUNG BAILEY BRIDGES (a) 100 feet Double Single reinforced and (b) 70 feet Single reinforced construction has been completed at a cost of Nu.4.00 million and 2.00 million respectively over Bitulung on Sunkosh-Daga Highway. The launching of these two bridges were started on 12th June 1998 and completed on 16th instant, by the combined efforts of the Bridge Division at Thimphu and Maintenance Section, Sarpang, DOR. Along with the bridges, extensive river training works upstream of the bridges are also completed through contractors costing nothing less than Nu.6.00 million. These ancillary works are necessary to safeguard the investments from floods damages during monsoons, by containing the waters within the confines of the channel, avoiding changes in the course of river flow causing otherwise untold damages.

Superintending Engineer (Bridges)
Road Bridge Division
Department of Road, Thimphu

>> An announcement made in National Newspaper, Kuensel, in 1998

Reflections of changes

Infrastructure Development Technology


















SL-02
WANGDUE





Shaping Infrastructure Development in the 21st Century

The 1990s was the decade when the nation saw rapid economic growth. The economy was then projected to grow at an annual rate of at least 9 percent. To achieve this growth, efficient and reliable infrastructure services, sound macro-economic policies, and a strong domestic revenue base were required.

The Department of Roads attempted to move away from direct involvement in the execution of road works, including road maintenance and concentrate increasingly on design, supervision, quality control and regulatory role.

During the eighth plan, in the later part of the decade, national contractors were increasingly involved only in construction and resurfacing activities, and the Department of Roads was responsible for the execution of routine maintenance programmes.

Mechanisation of the road works have been a key strategy in the decade and it was continued during the next decade to further enhance productivity, overcome labour shortages as well as to create employment opportunities for school leavers. Towards this, earth moving equipment and machineries are still being used in constructions. Up-gradation of skills among operators and managers to complement automation strategy were also envisaged in the road sector HRD programmes.

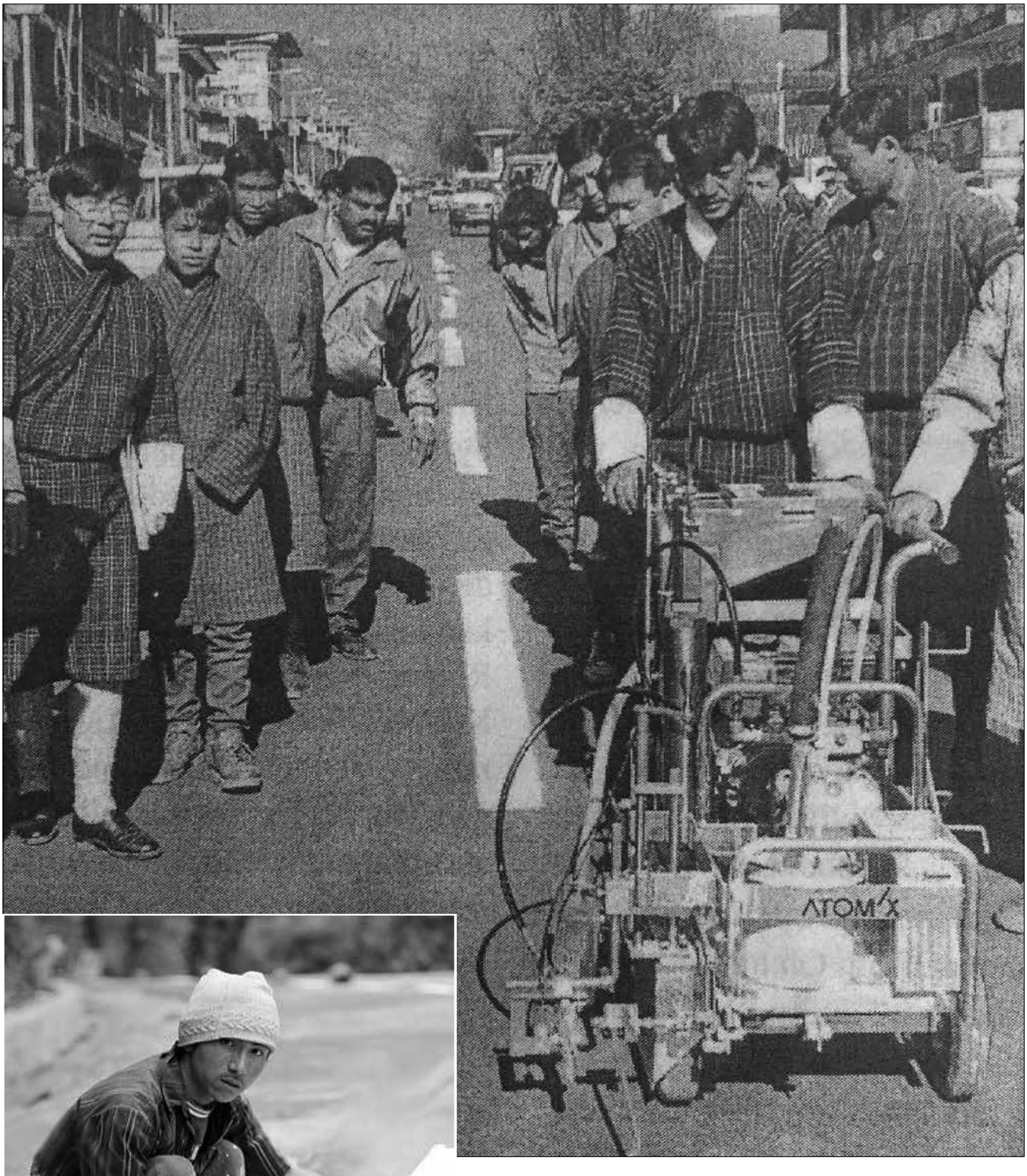
In this decade, adoption of Environment Friendly Road Construction (EFRC) techniques was introduced for environment sustainability. Important highway connectivity both lateral and north-south highway constructions were initiated. Apart from 77 km national highway that was constructed in the decade, the Ministry took up construction of more feeder roads between various points.

On the Phuentsholing-Thimphu Highway, realignment of 25km road between Damchu and Chhukha was proposed. This was expected to shorten the distance between the two places by 23 km. It is expected to be completed by the end of 2016. Construction of double-lane highways and improvement of critical stretches of roads, including the maintenance and stabilisation of national highways was a priority.

Development of urban centres with proper drainage, safe drinking water, proper sanitation and sewage system, pedestrian pathways, encouragement of green and safe urban housing was a major emphasis. In 2002, the ministry revised the Bhutan Building Rules, which was followed by the approval of National Housing Policy in 2003, after which National Housing Development Corporation (NHDC) functioned as a government corporation for constructing the rental houses for civil servants was established in september 2003.

The mandate then was to provide the housing for low-income civil servants as private sector didn't cater such facility.

In this decade, Thimphu's Structural Plan was approved, followed by the approval of structural plan for Phuentsholing.





>> The Japan International Cooporation Agency (JICA) presented two road markers to the Road Division. The machines, to be used for all kinds of road markings such as lanes, parking lots and zebra crossings, will save labour and time, ease traffic and reduce accidents (kuensel, Jan 1, 2000)

"In this decade, adoption of Environment Friendly Road Construction (EFRC) techniques was introduced for environment sustainability. Apart from 77 km national highway that was constructed in the decade, the ministry took up construction of feeder roads between various points."

Reinforcement of Infrastructure development and engagement of private sector

Construction and maintenance of road networks, strengthening the standards, specifications and improvement of geometrics and safety of the road user was the focus of this decade.

Construction and upgradation of Primary National Highways (PNH) and incorporation of EFRC continues. Participation of private sector in road construction and maintenance through Public Private Partnership (PPP) model is yet to be started. However, a bulk of construction and road maintenance works are being carried out by private sector.

Bridges were constructed and replaced to improve access. Replacement of 3 bridges between Wangdue –Trongsa highway is under progress. Three more bridges on the same highway are to be replaced under JICA grant aid in 2016.

The achievements of road sector in this decade is further improving the road networks in terms of travel time, safety and environmental consideration. These have improved access to socioeconomic benefits, enhanced connectivity in all regions of Bhutan.

In the area of architectural engineering, the idea of Bhutanese architecture and aesthetics is given due importance in order to preserve and promote our age-old culture and tradition while adopting the modern construction technology. Building designs and drawings have to comply with Bhutanese Traditional Architecture Guidelines and Bhutan Building Rules with eco-friendly and disaster resilient construction. In addition, the Ministry has been making efforts to maintain the rural settlements in their original settings to preserve and promote the traditional architecture. Studies on human settlements in Merak, Khini, Khoma, among others have been conducted.

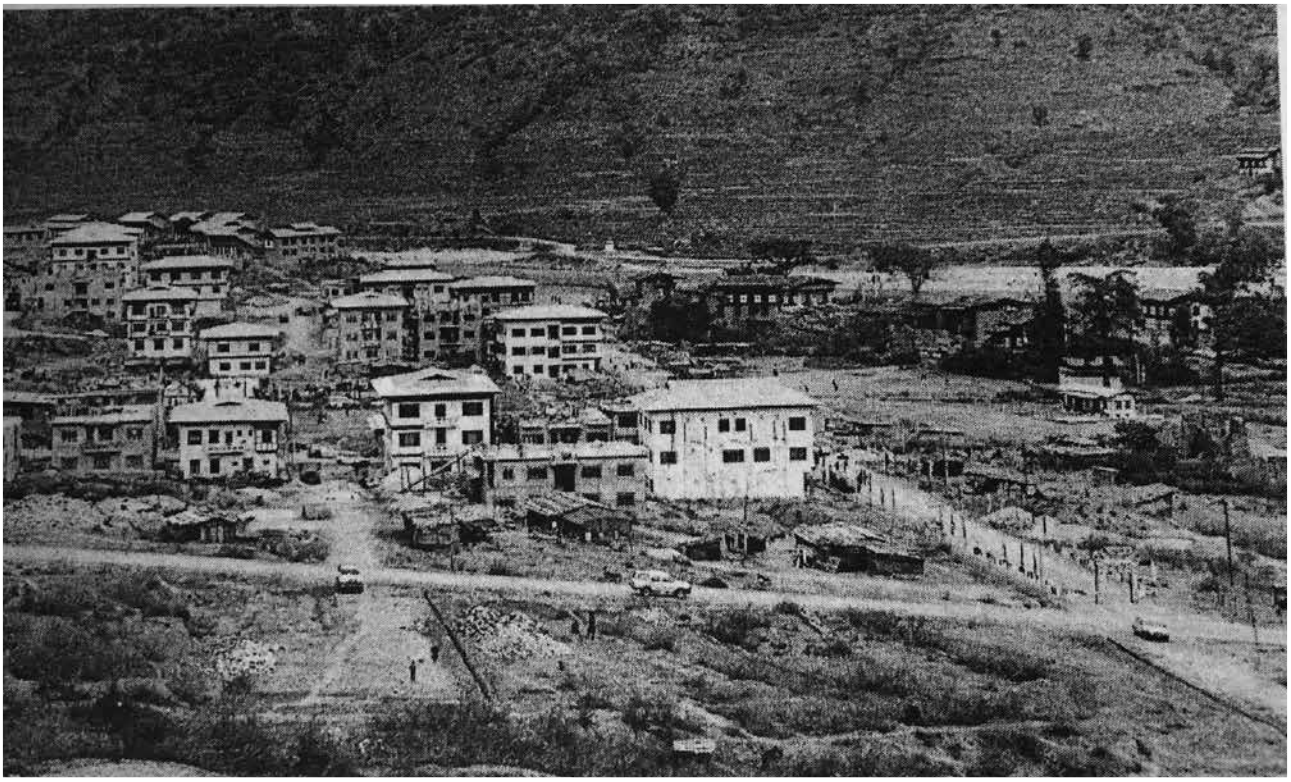
It has now become very important to have innovative and good quality construction along with improved quality of infrastructure facilities and services. Thus, the idea of Green Building evolved and the Guidelines are being published.

Earthquake-resilient stone masonry construction technology has been disseminated to all 20 dzongkhags. The efficiency level and quality-based construction is being enhanced with efficient and effective public service delivery.

In this decade, the ministry's focus is on the human settlement and housing, to improve the quality of infrastructure facilities and services for both urban and rural settlements. More recently, 18 Yenlag Thromde and 19 Dzongkhag Thromdes were declared by Parliament. This will further enhance balanced regional development, and improve quality of life and strengthen socioeconomic development in the country.

Standards are being developed and incorporated in government infrastructures for the differently-abled people making the future safe for the disabled population. The final draft of Design Guidelines for Differently-abled Friendly Construction will be ready by next year.

"It has now become very important to have innovative and good-quality construction along with improved quality of infrastructure facilities and services. Thus, the idea of Green Building evolved and the Guidelines are already being published."



>> The Minister of Trade and Industry, Lyonpo Khando Wangchuk, inaugurated new town of Khuruthang, Punakha on January 10, 2000 (kuensel, Jan 15, 2000)



>> Bajothang town, Wangdue



>> His Majesty The King takes part in a football match with the employees of the Ministry of Works and Human Settlement at Changlingmethang stadium



From the Newspaper Archives

- Kuensel

A comfortable city closest to the nature

Planners draw grand vision for the capital city (13/04/2002)

The Department of Urban Development and Housing's US $1billion structural plan for Thimphu for the next 25 years was presented to the government in June 2002. It covered the geographical area from Changtagang in the north to Nabi Rongchhu in the south.

The plan divides the new Thimphu municipality, extended under a directive of the council of ministers in 1999, into 21 precincts or zones with a total area of 26.5 square kilometers

The DUDH Director General, Tshering Dorji said that about 20-30 percent of the new municipal area will be developed to accommodate the projected population growth in the next 25 years, and the remaining 70 percent will be kept as open space and green areas.

DUDH officials said that the city's traditional and cultural heritage will be kept intact, including the places like Changangkha, Trashichhodzong and Dechenphodrang that will be protected and promoted as heritage precincts.

It was expected that the existing traditional buildings within the municipal boundary and the surrounding regions be preserved and traditional architecture will be promoted while all new buildings will be required to incorporate the elements of traditional architecture.

National rules on land and building property (27/09/2003)

Urban Area and Property Regulations 2003, introduced in 2003 had not only rid most of the complications but create mobility in the market for properties and streamlined its transactions in a "systematic way".

According to planners the new regulations were clear, simple, standard and uniform and would be followed by all the municipalities in the country while dealing with land and building property.

Secretary of the Ministry of Works and Human Settlement, Tshering Dorji, said that new rule was introduced to address the emerging urban issues and for proper administration of urban services and properties.

On the transfer of ownership, the regulation is based on the right of a person to own property and transfer ownership. The municipal corporation would process transfer of ownership if, among others, application and documents are filled in and information given are valid. Approval would be given within 90 days from the day complete documents are received.

NHDC to look after government housing (31/01/2004)

The National Housing Development Corporation (NHDC) under the ministry of Works and Human Settlement has taken over the Changjiji Housing Project in Thimphu from Department of Urban Development and Housing (DUDH) as part of its mandate as the sole implementing agency of the government residential housing in the country.

Established in September 2003, the corporation started to implement the construction of the second phase of 44 blocks of the project and will do the allocation of the 468 units. The corporation received a Nu 602 million grant from the Government of India to develop low cost housing facilities in eight dzongkhags.

Government stops allotting land in urban areas (01/01/2005)

The Ministry of Works and Human Settlement has put a nationwide stop on the allotment of government land - either for hire or sale - in urban areas for public corporations, NGOs and commercial organisations since the government land has been exhausted in urban areas.

A facelift for Changlimithang (14/10/2006)

The concept of revamping Changlimithang National Stadium, which was built in 1974 to celebrate the coronation of the Fourth Druk Gyalpo, was planned.

The Ministry of Works and Human Settlement conceived one of the main venues for the celebrations in 2008, in conjunction with the National Steering Committee for the Coronation Celebrations (NSCCC).

Two additional wings were added to the Royal Pavilion to accommodate 80 more guests. The entrance to the stadium will be from the Chang Lam. The space between the riverbank and the Changlimithang parking lot was converted into a park complete with lights, greenery and park benches named as the Coronation Park.

Resuscitating the construction development board (24/04/2005)

To overcome the constraint and challenges of Construction Development Board (CDB) efforts were made in 2004 to revamp and overhaul the image of the board. Under a new ministry, the Ministry of Works and Human Settlement, the board has been reconstituted with 11 board members who know the job and with Lyonpo Kinzang Dorji as the chairman.

The board secretariat has been renewed with nine professional staff and a new board Executive Director appointed by the Royal Civil Service Commission. Besides executive engineers and assistant engineers a legal officer and data managers were part of the Secretariat Team.

Its mandate is still the same, which is to create an environment that will allow the growth of quality and professional builders in the industry. After the establishment of new secretariat it has started streamlining records.

Standardising the bidding document (16/04/2005)

Making bid documents available for sale up to the last minute prior to the opening of sealed bids was one of the several new clauses that had been added to the standard bidding document.

Construction Development Board revised and standardised the bid document to make the bidding process easier for both the contractors and procuring agencies and at the same time address some prevailing corrupt practices.

Sale of bid documents up to the last minute, for example, was aimed at addressing 'collusion' among the bidders which is believed to be rampant in the construction industry. A "corrupt or fraudulent practices clause" was added that makes a bidder liable for punishment if he is caught cheating in the bidding process.

The document also requires contractors to specify the names of engineers and equipment to be used in the bidding documents.



>> *The bridge over the river Sunkosh (kuensel, November 24, 2007)*



>> HRH the Crown Prince Jigme Khesar with Mr. Kuelling, dignitaries and officials responsible for the construction of new bridge over Punatshangchhu river at Wangdue (kuensel, September 21, 2002)



>> Kuru Kuenphen zam opened (kuensel, June 26, 2003)

Reflection of changes

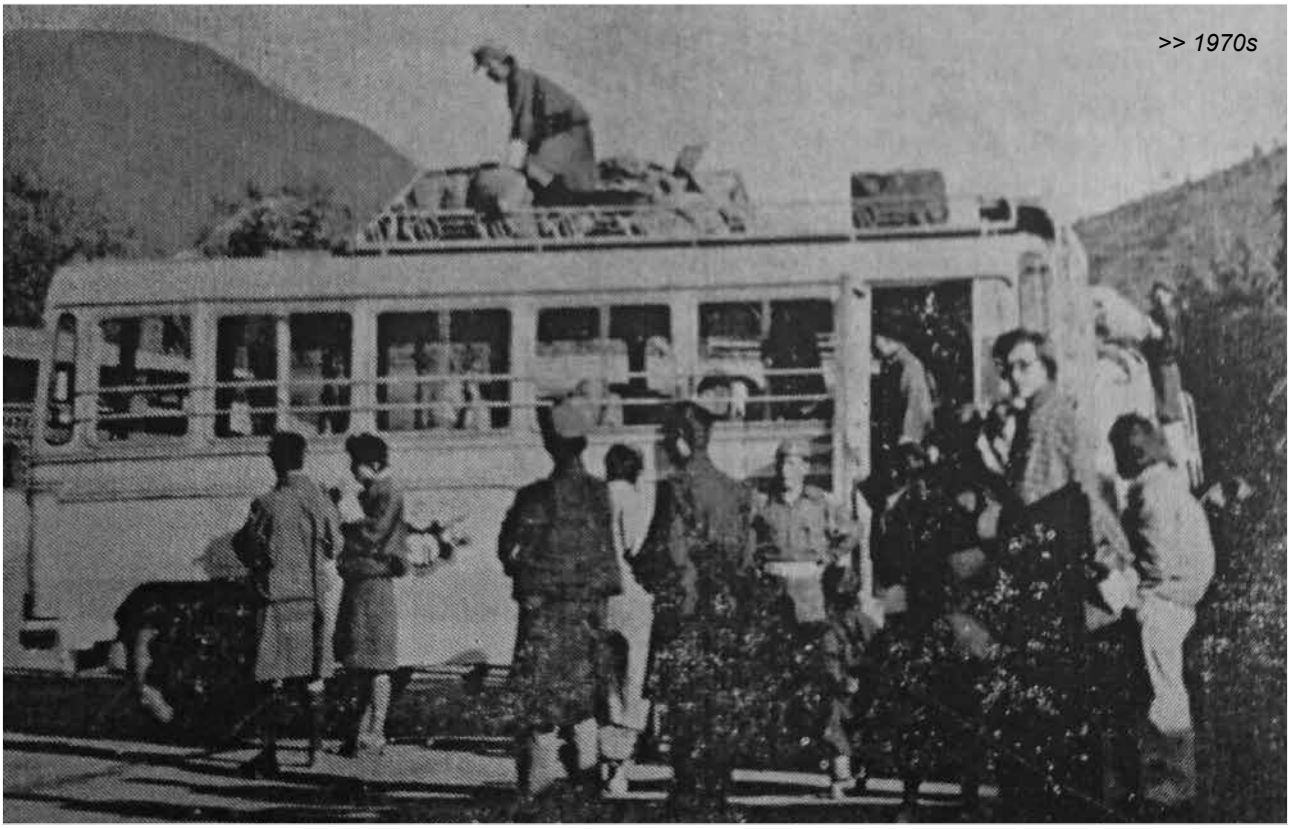
Facilitating the transportations



>> Early 1960s



>> <1990s



>> 1970s



>> His Holiness the Je Khenpo consecrated the Namgyal khangzang choeten built at the landslide prone Rothpazhong on the Mongar-Lhuentse highway. His Holiness also renamed Rothpazhong as Dorjilung (kuensel, April 12, 2011)



>> Cabinet ministers, architects and engineers discuss the issue of attics (kuensel, October 21, 2011)



>> His Majesty The King inaugurates the 152-metre Panbang bridge in Zhemgang (kuensel, April 10, 2014)



>> Visit: Dantak's chief engineer, Brigadier KC Panchanthan briefs LyonchhoenTsheringTobgay on the progress of the Damchu-Chukha road alignment. (kuensel, September 13, 2014)



>> Besides terraced fields and crops, winding farm roads are increasingly becoming part of rural landscape in Bhutan
(kuensel, June 6, 2014)



>> Pantang bridge, Zhemgang



>> Ringtibi bridge, Zhemgang



>> Inauguration of the Yhuri Bridge (Modular Steel Truss Bridge) on Tseber-Mekuri road under RNP II (kuensel, December 22, 2014)

Strong Bhutan in India's interest: President Mukherjee



>> President of India Pranab Mukherjee inaugurates Yelchen Central School

It is in India's interest to see a strong, vibrant, and prosperous Bhutan, President Pranab Mukherjee pointed out in his address at the convention centre in Thimphu, on Saturday. Likewise, the President said that friends in Bhutan had told him that a strong, united, and economically dynamic India is in Bhutan's interest as well. "There is a deep confidence and trust between our governments and peoples, and we've ensured that we remain sensitive, as closely cooperating neighbours, to each other's concerns and vital interests," said the president, who was in the country for a two-day state visit.

He also said that, while the paths of Bhutan and India are interlinked, the two countries are distinct and independent in their pursuits of many similar developmental priorities. In his address to an audience comprising the Prime Minister, Cabinet ministers, Parliamentarians, senior government officials, and other prominent members of society, the President spoke about the status of relations between Bhutan and India, and the way forward. The President described Bhutan-India relations as an "exemplary bilateral relationship" of mutual benefit. He attributed the good relations to the roles



played by the leaderships of both countries. He said that the roles played by His Majesty the King and former Druk Gyalpos have and continue to strengthen a relationship that benefit the citizens of both countries. He added that it must be ensured that the relationship was continually strengthened to reach its full potential. The President said India could learn much from the way of life and development philosophy of Gross National Happiness (GNH). He said that, in India, he has been stressing the need for Indians to evoke and rekindle in themselves intrinsic Indian values of dharma and sanskaras. India is ready to assist Bhutan in the realisation of the four pillars of GNH, the president said. The President also spoke about India's expanding role in the Bhutanese education sector. The Indian government has committed almost Nu 3.5M for the School Reform Programme, of which almost Nu 868.9M was handed over on the day of his address. The reform programme is expected to improve quality and efficiency of the education system. The President also announced that India has doubled the Indian ambassador's scholarship fund to Nu 20M annually. He pointed out that the scholarships will place promising but financially challenged Bhutanese students in premier education institutions in India to study ayurveda and law, among others. The Indian government has also committed to building more educational institutions in Bhutan, the president announced. In the present Plan period, the Indian government will assist in expanding infrastructure at Sherubtse college, he said. Following the president's address, two memoranda of understanding (MoUs) for the education sector were signed. The Royal University of Bhutan (RUB) signed an MoU with the National Innovation Foundation to enhance the role of innovation in the education system and economy of Bhutan. RUB also signed another MoU with the English and Foreign Languages University of Hyderabad for the latter to provide academic and consultancy services in English language learning, teaching, and training. Student and faculty exchanges will also become available. On Friday, Bhutan signed an MoU on the establishment of Nalanda University in Bihar. "We'd welcome the collaboration and support of Bhutan in rejuvenating and reviving this ancient university," said the president. The President also briefly spoke about two areas of cooperation that can be improved. He pointed out that the large and growing Indian market holds much potential for Bhutanese exports like agro-foods and cement. "India can absorb whatever surplus Bhutan chooses to share," he said. The other area is to expand tourism, he added. "As we move into the 21st century, I'm confident that the core values of our relationship will continue to strengthen our bonds further," said President Mukherjee. "We both agree that our success, so far, indicates the tremendous future potential of our cooperation that we can and must realise."

(From the kuensel archive, November 10, 2014)

Contributed By: Gyalsten K Dorji

Home Ownership

The rapid pace of urbanization has increased the demand for improved infrastructure and housing. Majority of urban dwellers are living in rented housing. The private sector is active in housing that caters to the need of higher and middle income groups. However, those falling in the lower income bracket are increasingly finding it difficult to rent affordable houses. The Ministry of Communications (MoC) had developed a housing policy in 2002 with an objective to provide shelter for all. In pursuance to this objective the MoC constructed 700 units of low income housing at Changjiji, to be hired to civil servants. A pilot housing scheme consisting of 32 units with the concept of hire purchase was constructed under DANIDA assistance at Changjiji. These semi-detached houses are owned by civil servants falling in the low income group particularly drivers and clerical staffs. The houses are constructed on a leased land and the occupants are proud owners. Their self esteem is high and they are not affected by the frequent raising of house rents.

(Contributed by : Meghraj Adhikari, Urban Specialist DHS/MoWHS)



Traditional architecture of Bhutan

Evolving architecture with change in designs and introduction of new construction materials

Bhutan has been rigidly protecting and preserving its tradition and culture. Promotion of traditional Bhutanese architecture is a manifestation of the rich culture but a written policy to promote traditional architecture was lacking. The framing of Bhutan Building Rules 1983 indicated all constructions in urban areas to have architectural control.



Initially, there was some reluctance among the builders as the façade of the buildings are only decorative. However, over a period of time, people have understood the value of it and started incorporating the rich architectural elements.

In the recent past, the builders have made rich contributions to the architecture that has helped promote tradition and culture. The Bhutan Building Rules 2002 mandates that Bhutanese traditional architecture be maintained at all cost.



In order to promote traditional architecture it was not only essential to document the rich architectural heritage of Bhutan. The NUDC was given the specific mandate to preserve the unique architectural heritage of the kingdom as there were symptoms of erosion of culture.

Thus, NUDC initiated to document the architecture of dzongs, monasteries, and Temples, chortens and bridges, among others. A Dutch architectural expert Jose Maseland was recruited under UNHABITAT to document architectural history from 1987 to 89. A book *An Introduction to Traditional Architecture of Bhutan* was published by Department of Works, Housing and Roads in 1993.

The book served as guide to practicing architects and artisans for construction with new materials like steel, cement, glass and corrugated galvanised iron (CGI) sheets. With a view to support the professional architects and the technicians, the DUDH organised a workshop of planners, architects, engineers, technicians, craftsmen and artisans to develop a guideline.

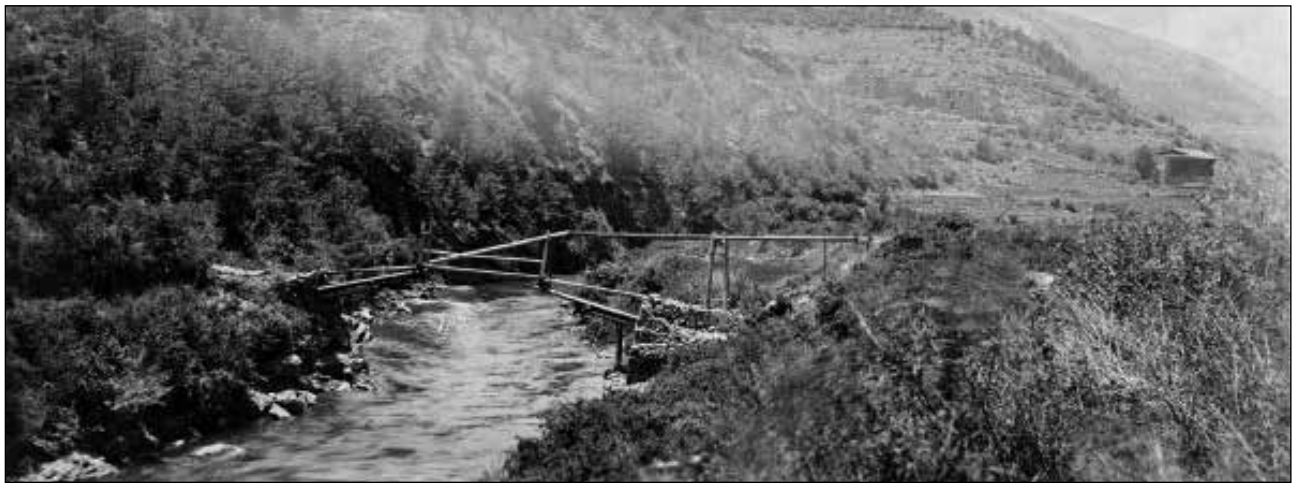
DUDH also published *Traditional Architectural Guideline* in 2002 and encouraged the professionals to design and construct houses that are rich in traditional architecture. The practicing professionals and technicians considered this guideline inadequate. The Ministry, therefore, revised the book in a similar approach in 2014.

A new book *Bhutanese Architecture Guidelines* is more elaborate and it is made available to all both online and in hard copy. Ministry pursues the policy of continuous research and innovative approach in the field of architecture and human settlements.

(Contributed by : Meghraj Adhikari, Urban Specialist DHS/MoWHS)

Reflection of changes

Drinking Water Supply











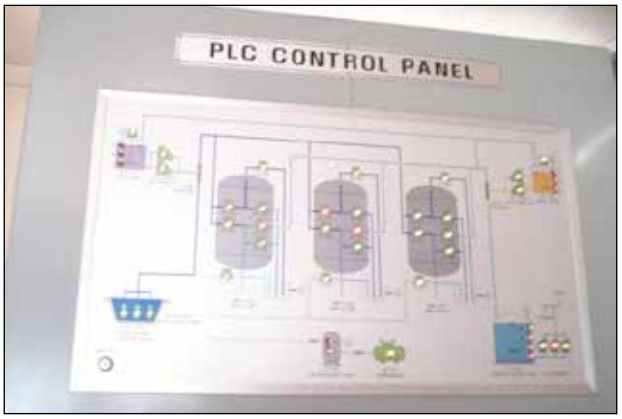




URBAN WATER SUPPLY PROGRAMMES

Today Department of Engineering Services under the Ministry of Works and Human Settlement is the central government agency responsible for executing urban water supply programmes. Urban water supply projects are planned and designed by the central agency but are often implemented and managed by the respective Thromdes or dzongkhag administrations with technical backstopping from the central agency. Service oriented Thromdes that provide municipal services including water services to the urban residents have been established in all the urban towns.

New schemes are being planned and implemented including introduction of new and innovative treatment technologies and mechanised systems. Over the years many external agencies such as DANIDA, World Bank, ADB and Government of India supported urban water supply programmes in the areas of institutional development and provision of infrastructure services.





>> Bio-ball pressure filters installed along with online monitoring system for Gelephu municipal water supply scheme





>> Mechanised disinfection systems for urban water supply

Bhutan has now come a long way in the water supply programme since it started in 1974. The country now has over 5000 rural water schemes covering 94% of the rural population and urban water supply scheme for every urban town covering almost 100% of the urban population with piped water supply. The national coverage stands at 97%.



>> His Majesty with the producers of local materials who exhibited their products during the engineering conference (October 24, 2014)

The 8th National Engineers and Architects Conference

The 8th National Engineers and Architects Conference (NEAC) was held from October 22 to 24, 2014 with the theme "Professional Development of Engineers and Architects: Rising to the Needs of Changing Society".

The conference discussed issues related to implementation of policies and guidelines in construction sector; structural and systemic changes required to meet the growing needs in construction sector; changing scenario in construction industry in relation to innovations and technologies; and sharing of best practices and experiences.

At the opening of the conference, the Hon'ble Zhabtog Lyonpo stressed, among others, that:

1. Infrastructure building has to be responsive to the changing needs and growing expectations in terms of quality, comfort and safety, while also being cost-effective and sustainable with considerations to preserve the cultural heritage and environment.
2. Engineers, architects and planner to have high level of commitment to raising professionalism and strengthening ethical conduct.
3. Contractor and construction firms will need to specialise and build professional capacity.

His Majesty The King Jigme Khesar Namgyel Wangchuck graced the closing of the conference. In His Majesty's address, He reminded that engineers, architects and planners have enormous responsibility of successfully implementing the 11th Five Year Plan programmes and activities in the construction sector (with more than 50% of the total capital budget), and that professional groups of engineers, architects and planners cannot afford to fail, the implications of which would be colossal for Bhutan and its future.

During the conference, professionals in the construction sector/industry were recognised for their contributions. (***Picture in page 80***)

An exhibition to promote local construction materials was also held.

The conference was attended by engineers, architects, urban planners from the Ministry of Works and Human Settlement, dzongkhags, and professionals from private firms.





>> His Majesty granted audience to the participants of National Engineers and Architects Conference (October 24, 2014)

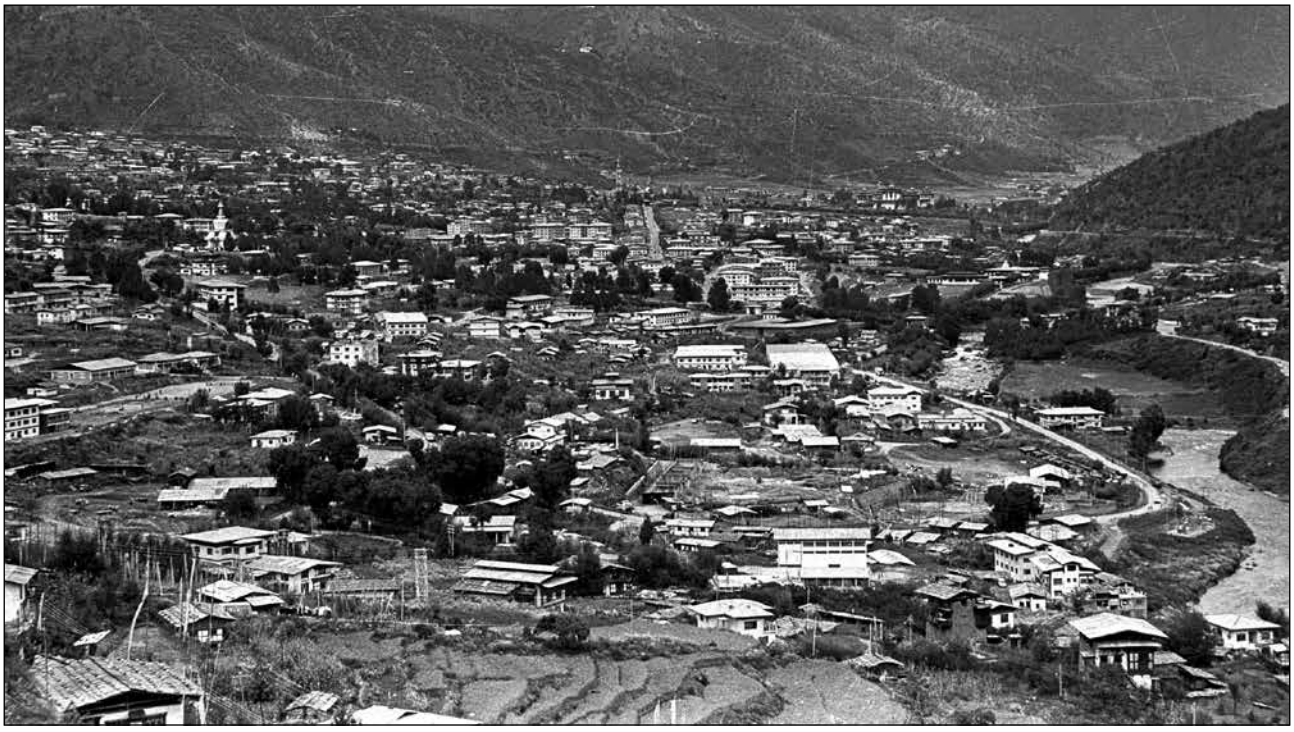
The Glimpse of Change...



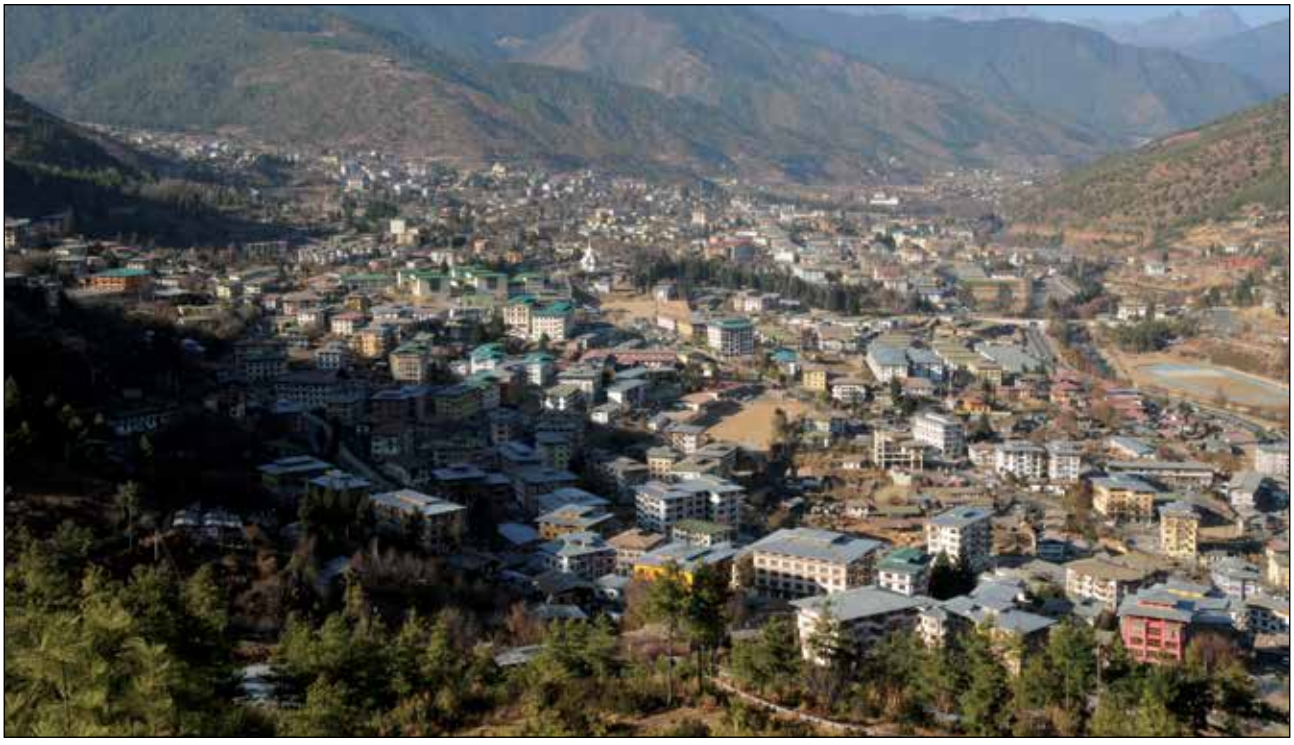
>> Thimphu valley, 1955



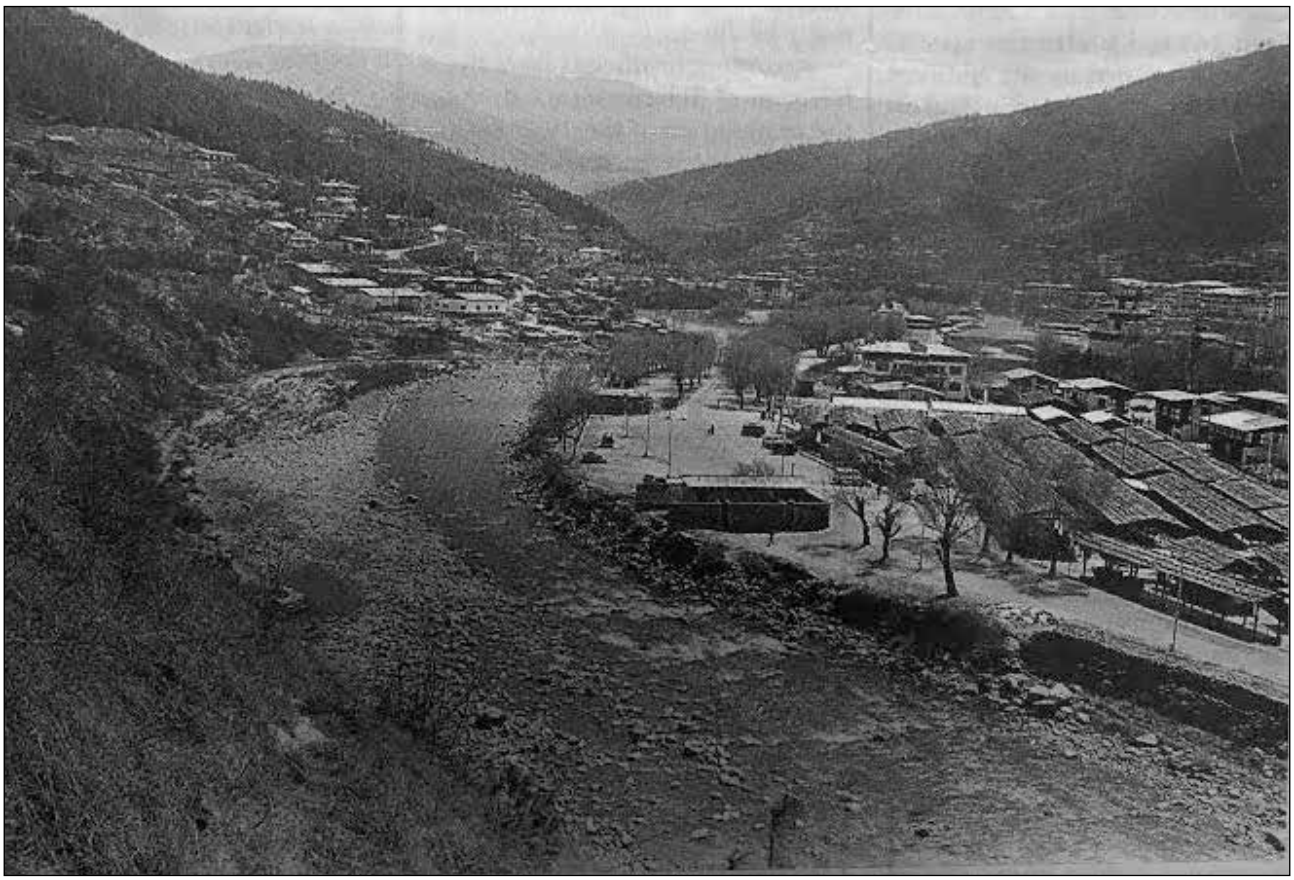
>> Thimphu valley, 2015



>> Thimphu, October 1, 1992



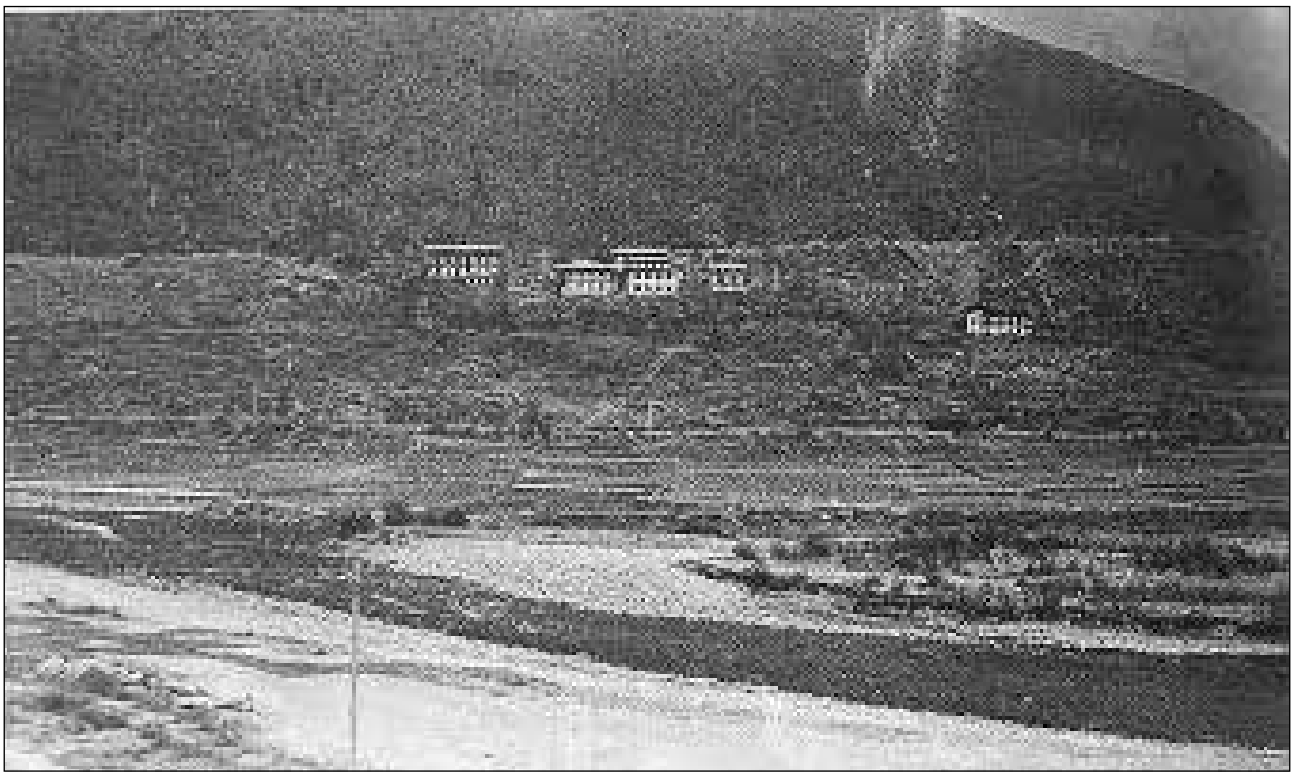
>> Thimphu, September 1, 2015



>> Vegetable market in Thimphu then



>> Vegetable market in Thimphu now



>> Changjiji , Thimphu before housing colony



>> The housing colony at Changjiji, Thimphu in 2015



>> Trashigang town in 1980s



>> Trashigang town now



Connecting gewogs, from mule track to motorable roads





Acknowledgement



Infrastructure Development in Bhutan – A journey through time is a publication that documents the story of infrastructure development in the country since the first day of the first five-year plan.

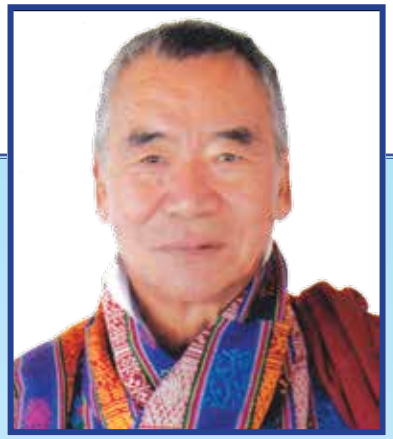
In the short span of less than 60 years, Bhutan has achieved tremendous socioeconomic progress at the foundation of which lie development of strong communications infrastructure. Over the years, as the development needs of the country increased, expansion and inclusion of project priorities and mandates became inevitable. The ministry had to incorporate within its mandate development of human settlement and provision of safe drinking water.

As we document our contributions and success, we would like to acknowledge the highly valued cooperation of our valued development partners and close friends, Government of India, World Bank, Asian Development Bank, USAID/UNDP, Austrian Development Cooperation, The Netherlands, DANIDA, UNCDF and UNIDO who have all given the ministry generous and extensive support it needed to implement some of the bigger and vital national projects.

Today, the Ministry of Works and Human Settlement is a leading organisation in the country in infrastructure development for human settlement and transportation and stands confident to provide safe, reliable and sustainable infrastructure for human settlement and transportation to help nation achieve balanced regional development with Bhutanese values.

All these and more would not have been possible without the vision and dynamic leadership of our beloved Kings.

First professionals of Bhutan



Dasho Dorji Norbu
First male engineer -1965



Lyonpo Dorji Choden
First female engineer (1985)
and First female Minister
(2013-)



Meghraj Adhikari
First male urban planner - 1984



Karma L Dorji
First male architect- 1991



Tashi Wangmo
First female urban planner- 2005



Rebecca Gurung
First female architect- 1991

Recognising innovation and excellence



>>***From left to right:*** *Pema Dorji in appreciation for enhancing traditional skills and good practices in masonry in construction sector; School Planning and Building Division, MoE in appreciation for their pioneering engineering technologies in the construction of schools in the country; Dechen Yangzom in appreciation for enhancing traditional skills and good practices in masonry in construction sector; Management of Samdrupjongkhar Initiative in appreciation for their innovative approach to Waste Management*