(1981-2016)  
30 Years of Change in Bhutan 
A Personal Perspective 

*Bhutan Economic Forum for Innovative Transformation* 
*(24.05.2017)* 

Karma Ura
Public finance
Trend in government financing (1987-2016)

Value in Nu million

1987/88
1988/89
1989/90
1990/91
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
1999/00
2000/01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010/11
2011/12
2012/13
2013/14
2014/15 (r)
2015/16 (est.)

Data source: Statistical Year Books, NSB and Selected Economic Indicators, RMA

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Trend in the flow of grants (1987-2016)

- Domestic revenue
- Grants
- Grants as % of total resources
Trend of nominal GDP (1981-2015)

Data source: Statistical Year Books and National Accounts Statistics, NSB

Average annual nominal GDP growth rate: 15%
International reserves (1981-2016)

Average reserve growth between 1981-2016 is about 12%

Data source: Statistical Year Books, NSB and Selected Economic Indicators, RMA
Growth trend in international reserves (1981-2016)
Health and demographic indicators
Number of health workers by different professions (1985-2015)

Health workers also include non-nationals
Data source: Annual Health Bulletins, MOH

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Number of hospitals and BHUs

Source: Annual Health Bulletins, MoH: Thimphu

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The annual compounded growth rate of life expectancy in the last 32 years (1984-2016) was about 0.16%.

Crude birth rates, crude death rates, and fertility rates

- Crude Birth Rate (Per 1000 populations)
- Crude Death Rate (Per 1000 populations)
- General fertility rate (births per 1000 women 15-49 years)

Total Fertility Rate (children per woman)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fertility Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>5.6</td>
</tr>
<tr>
<td>2000</td>
<td>4.7</td>
</tr>
<tr>
<td>2012</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Data source: National Health Survey 1994, 2000 and 2012
Mother and infant mortality rates


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Gender and dependency ratio (%)

Dependency ratio: number of dependent (population below 15 and above 65 years) for every 100 working age group (15-64 years)

Education
Boy reading scripture (1973)

Nuns

Lay monks (1985)
Trend of student population and growth rate (1981-2016)

Data source: National Education Statistics, MoE, Thimphu

Note: student population does not include tertiary level education.

Average growth rate between 1981-1990 (7.1%), 1991-2000 (5.6%), 2001-2010 (4.4%), 2011-2016 (-0.1%). Student population growth became negative since 2012.
Till 2010 number of male students was more than female students. By 2011 gender parity in student population was achieved and the number of female students surpassed male students after 2014.
Trend of teacher population and student-teacher ratio

Student-teacher ratio

- Teachers

Student teacher ratio

- 1981: 2,208
- 1982: 1,422
- 1983: 1,520
- 1984: 2,785
- 1985: 3,026
- 1986: 4,790
- 1987: 4,206
- 1988: 4,746
- 1989: 5,772
- 1990: 5,772
- 1991: 6,094
- 1992: 5,829
- 1993: 6,559
- 1994: 6,705
- 1995: 7,553
- 1996: 7,932
- 1997: 8,542
- 1998: 8,572
- 1999: 8,605
- 2000: 9081

- 1981: 24/5/17
- Karma Ura
Primary enrolment rates

Data source: Annual Education Statistics

NER: number of right age students/number of population of right age
GER: number of students/number of population of correct age
1978

Father & son (1980)
Environment
The National Tiger Survey in 2015

103 Tigers found.. Up from the previous estimate of 75.
First Asian Country to conduct National Level Snow Leopard Survey
Non-agricultural, 20.6%
Agricultural, 8.8%
Tree cover, 63.9%
Other (Alpine pasture/meadows, scrubs & water), 6.6%

Land use survey_1983

Non-agricultural, 12.0%
Agricultural, 7.8%
Tree cover, 64.4%
Other (Alpine pasture/meadows, scrubs & water), 15.8%

Land use planning project_1995

Non-agricultural, 14.5%
Agricultural, 12.1%
Tree cover, 70.5%
Other (Alpine pasture/meadows, scrubs & water), 2.9%

Land cover mapping project_2010

Non-agricultural
Agricultural
Tree cover
Other (Alpine pasture/meadows, scrubs & water)
Households who reported that their family and properties were affected significantly by wildlife

Total land left uncultivated: 17,011 acres
Total affected households: 43%
Regional distribution of population and urbanization 2005

Western
(8311 sq.km)

P: 281,224 (2005)
(44.3% of national pop)
UP: 127,677 (2005),
(45.4% of regional pop)

Central-Western
(11449 sq.km)

P: 88,855 (2005)
(14% of national pop)
UP: 13,840 (2005)
(15.6% of region pop)

Central-Eastern
(8935 sq.km)

P: 89,720 (2005)
(14.1% of national pop)
UP: 22,880 (2005)
(25.5% of national pop)

Eastern
(11382 sq.km)

P: 175,163 (2005),
(27.6% of national pop)
UP: 31,714 (2005)
(18.1% of regional pop)
Westward migration of population, as of 2005

Net-migration = In-migrants – Out-migrants

- Western
  - Net gain: 57,524
  - Net loss: 3,997
  - Net gain: 57,524
  - Net loss: 3,997

- Central-Western
  - Net loss: 7833

- Eastern
  - Net loss: 45,694

- Central-Eastern
  - Net loss: 28,122

In-migrants
- YYYY

Out-migrants
- XXXX
Economy and trade
Unemployment rates 2012-2016

Unemployment threshold: at least one hour work in the past one week

Karma Ura. BEFIT. 24.5.2017
Percentage share of GDP by sectors

Agriculture, livestock and forestry
Electricity and water
Mining and quarrying
Wholesale and retail trade
Transport, storage and communication (value)
Community, social and personal services
Construction
Manufacturing
Hotels and restaurants (value)
Financing, insurance and real estate

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Trend of nominal GDP (1981-2015)

Data source: Statistical Year Books and National Accounts Statistics, NSB
Livestock population (1980-2014)

Data source: GDP worksheet: used to estimate GDP figures, NSB
Estimation of labour productivity in agriculture sector

Annual GDP per farmer
# of employee
Hourly GDP per farmer
% of households owning power tiller across dzongkhags

% of households owning power tiller across dzongkhags

No. of households

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24.5.2017

total households
External debts (1994-2016)

Debt in Nu million

Total External Debt
External debt as % GDP

Data source: Selected Economic Indicators, RMA

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Current account balance estimates (1982-2016)

Data source: Statistical Year Books, NSB and Selected Economic Indicators, RMA

Current Account Balance (India)  Current Account (COTI)  Current Account Balance (Overall)

Druk air purchased aircraft
Tala hydroelectric plant commissioned
Tourist arrival and revenue

- Revenue (Nu Millions)
- Tourist arrival

Source: Statistical Yearbook, NSB.

- 2015 included high-end regional tourists in total tourist arrivals.
Electricity generation and export

- **Chukha**: 1986--88
- **Basochu I**: 2002
- **Basochu II**: 2004
- **Dagachu**: February 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity generation (MU)</th>
<th>Exports (MU)</th>
<th>Electricity generation growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986/87</td>
<td>346</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1987/88</td>
<td>1,476</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988/89</td>
<td>1,554</td>
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</tr>
<tr>
<td>1989/90</td>
<td>1,557</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990/91</td>
<td>1,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991/92</td>
<td>1,564</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992/93</td>
<td>1,684</td>
<td></td>
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<tr>
<td>1993/94</td>
<td>1,630</td>
<td></td>
<td></td>
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<tr>
<td>1994/95</td>
<td>1,972</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995/96</td>
<td>1,956</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996/97</td>
<td>1,883</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997/98</td>
<td>1,801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998/99</td>
<td>2,131</td>
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<tr>
<td>1999/00</td>
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<tr>
<td>2000/01</td>
<td>2,059</td>
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<td>2001/02</td>
<td>2,200</td>
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<td>2002/03</td>
<td>2,200</td>
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<td>2003/04</td>
<td>4,520</td>
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<tr>
<td>2004/05</td>
<td>6,562</td>
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<td>2005/06</td>
<td>6,961</td>
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<td>2006/07</td>
<td>6,998</td>
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<tr>
<td>2007/08</td>
<td>7,067</td>
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</tr>
<tr>
<td>2008/09</td>
<td>7,550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009/10</td>
<td>7,164</td>
<td></td>
<td></td>
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<tr>
<td>2010/11</td>
<td>7,747</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>6,824</td>
<td></td>
<td></td>
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<tr>
<td>2012</td>
<td>7,154</td>
<td></td>
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<td>2013</td>
<td>7,747</td>
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<td>2014</td>
<td>7,154</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>7,747</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data source: Statistical Year Book, NSB

- Department of Hydropower & Power Systems compiled power data Oll 2009/10 in fiscal format. From 2010, Bhutan Power Corporation (BPC) took over and compiled the power data in calendar year.
- Basochu Project does not export power directly to India. It sells its surplus power to CHPC.
The Chukha hydro-electric dam, commissioned in 1987, produces electricity for both export and domestic consumption.

The Penden Cement Factory, opened in 1980, is fitted with filters to prevent air pollution.
Length of road (kms.)

Data source: Statistical Year Book, NSB; 25 Years A King (p.26), 1st Five Year Plan

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Vehicle population by type

Data source: Statistical Year Book, NSB

- Road Safety & Transport Authority compiled registered vehicle data from 1997. Before then, it was done by Department of revenue and customs.
- Since 1993, only vehicles in running condition were included
- In 1996, two-wheelers included from 1994-June 1996
- Medium vehicles included in heavy category. Others include earth moving equipments, power tiller, electric cars, etc.
Electricity generation and export

<table>
<thead>
<tr>
<th>Hydro power plant</th>
<th>Year of commissioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chukha</td>
<td>1986-88</td>
</tr>
<tr>
<td>Kurichu</td>
<td>2001</td>
</tr>
<tr>
<td>Basochu I</td>
<td>2002</td>
</tr>
<tr>
<td>Basochu II</td>
<td>2004</td>
</tr>
<tr>
<td>Tala</td>
<td>2006-07</td>
</tr>
<tr>
<td>Dagachhu</td>
<td>February 2015</td>
</tr>
</tbody>
</table>

Data source: Statistical Year Book, NSB

- Department of Hydropower & Power Systems compiled power data till 2009/10 in fiscal format. From 2010, Bhutan Power Corporation (BPC) took over and compiled the power data in calendar year.
- Basochu Project does not export power directly to India. It sells its surplus power to CHPC
Revenue from hydro (Nu million)

**Hydro power plant** | **Year of commissioning**
--- | ---
Chukha | 1986-88
Kurichu | 2001
Basochu I | 2002
Basochu II | 2004
Tala | 2006-07
Dagachu | February 2015
About 52% of vehicles are in Thimphu

Data source: Annual Info-Comm and Transport Statistical Bulletin, MOIC, Thimphu
Sectoral credits by financial institutions (2005-2015)

Data source: Monthly Statistical Bulletins, RMA

24/5/17

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% sleeping less than 7 hrs across age groups
% sleeping less than 7 hours by area

Rural - Urban

Karma Ura. BEFIT. 24.5.2017

CENTRE FOR BHUTAN STUDIES & CNH
% sleeping, watching tv, socialising and reading among population aged 15-24 years
Time spent on cooking and eating by area

- Karma Ura
- BEFIT
- 24.5.2017
Daily calorie consumption from food groups per person per day

The food poverty line is based on the estimated cost of a single national reference food bundle providing an average subsistence diet of 2,124 Kcal per day. The food bundle consists of 53 food items. Food poverty lines in 2007 was Nu.688.96/

Source: Bhutan Poverty Analysis 2012 (Data of 2007), NSB & WB, 2012
Wonder drug called… “protects us from heart attacks, strokes, Diabetes, obesity, cancer, Alzheimer’s disease and depression. It even Boosts memory…” Andy Coghlan.
Physical exercise by occupation

**Graph:**
- **X-axis:** Occupation
- **Y-axis:** Percentage (%)
- **Z-axis:** Mins

- **Farmer:** 5,428 Mins
- **Housewife/househusband:** 3,108 Mins
- **Trader/shopkeeper/bus:** 2,578 Mins
- **Private employee:** 1,564 Mins
- **Corporate employee:** 1,993 Mins
- **Civil servant:** 5,436 Mins
- **Unemployed:** 2,749 Mins
- **School student/trainee:** 9,989 Mins
- **RBA/RBP/RBG:** 3,979 Mins

**Legend:**
- Blue bar: Physical exercise
- Green line: Mean time

**Source:** Karma, Ura, BEFIT. 24.5.2017
Physical exercise (includes games/sports and physical fitness)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Physical Exercise Mean</th>
<th>Mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>7,702</td>
<td>28</td>
</tr>
<tr>
<td>20-24</td>
<td>7,113</td>
<td>18</td>
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<tr>
<td>25-29</td>
<td>4,463</td>
<td>10</td>
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<tr>
<td>30-34</td>
<td>4,312</td>
<td>8</td>
</tr>
<tr>
<td>35-39</td>
<td>3,811</td>
<td>9</td>
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<tr>
<td>40-44</td>
<td>3,363</td>
<td>10</td>
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<tr>
<td>45-49</td>
<td>2,743</td>
<td>7</td>
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<tr>
<td>50-54</td>
<td>1,560</td>
<td>6</td>
</tr>
<tr>
<td>55-59</td>
<td>1,149</td>
<td>7</td>
</tr>
<tr>
<td>60-64</td>
<td>73</td>
<td>2</td>
</tr>
<tr>
<td>65-69</td>
<td>496</td>
<td>4</td>
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<tr>
<td>70-74</td>
<td>513</td>
<td>2</td>
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<tr>
<td>75+</td>
<td>396</td>
<td>3</td>
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</tbody>
</table>
Physical exercise by age and gender

- **Males: doing physical exercise**
- **Females: doing physical exercise**
- **Males: mean Ome**
- **Females: mean Ome**

Data from Karma Ura. BEFIT. 24.5.2017
Meditation for Mindfulness and Knowing the unconscious

THE MARVELLOUS LAMA, DUBTHOB PEMA TENCHONG
% of people praying in rural vs. urban areas

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Praying (Rural) vs. Praying (Urban)

Befit. 24.5.2017
% of people with choesham and daily prayer recitation across dzongkhags

<table>
<thead>
<tr>
<th>Dzongkhag</th>
<th>% Owning Choesham</th>
<th>Recite Prayer at least once a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dagana</td>
<td>1,697</td>
<td>1,212</td>
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<tr>
<td>Zhening</td>
<td>4,595</td>
<td>4,957</td>
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<tr>
<td>Tashigang</td>
<td>3,207</td>
<td>1,315</td>
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<td>Samtse</td>
<td>2,973</td>
<td>1,878</td>
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<td>Trongsa</td>
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<td>Samdrup Jongkhar</td>
<td>3,743</td>
<td>2,678</td>
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<td>Sarpong</td>
<td>4,135</td>
<td>8,659</td>
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<td>Tashi Yangtse</td>
<td>4,928</td>
<td>1,982</td>
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<td>Mongar</td>
<td>6,397</td>
<td>1,339</td>
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<td>Punakha</td>
<td>2,766</td>
<td>2,766</td>
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<td>Chukha</td>
<td>3,392</td>
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<td>Tsirang</td>
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<td>Gasa</td>
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<td>5,055</td>
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<td>Wangdue Phodrang</td>
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<td>Lhuntse</td>
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<td>Paro</td>
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<tr>
<td>Bumthang</td>
<td>2,075</td>
<td></td>
</tr>
</tbody>
</table>
Frequency of anger by Occupation

- Monk/Anim/Gomchen: 10.4%
- GYT/DYT member (LG of): 18.0%
- Others: 18.3%
- RBA/RBP/RBG: 18.3%
- Unemployed: 21.0%
- Corporate employee: 21.0%
- Farmer: 22.5%
- Private employee: 23.6%
- No need to work: 23.9%
- Trader/shopkeeper/bus: 26.3%
- Housewife/househusband: 26.9%
- Civil servant: 27.3%
- School student/traine: 30.7%

'Angry 'few times a week''
Mean anger by age group (normalized mean 0 to 1)

- **2008**
- **2010**
- **2015**

Age groups: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, >75
Change in percentage of people enjoying sufficiency between 2010 and 2015

- Life satisfaction
- Positive emotions
- Negative emotions
- Spirituality
- Self-reported health status
- Healthy days
- Disability
- Mental health
- Work
- Sleep
- Literacy
- Values
- Schooling
- Knowledge
- Artisan skills
- Speaking native language
- Cultural participation
- Driglam Namzha
- Government performance
- Fundamental rights
- Services
- Political participation
- Donations (time & money)
- Family
- Safety
- Ecological issues
- Wildlife damage (rural)
- Urbanisation issues
- Assets
- Housing
- Household per cap. income
- Resp. towards environment
- Change in percentage of people enjoying sufficiency between 2010 and 2015

- Time
- Education
- Cultural

- Use
- Diversity

- 3***
- 4***
- 0
- -1
- -1
- -1
- 20***
- 12**
- -8***
- -13***
- -23***
- -17***
- 46***
- -9***

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GNH

Psychological Wellbeing
- Life satisfaction
- Positive emotions
- Negative emotions
- Spirituality

Health
- Mental health
- Self reported health status
- Healthy days
- Disability

Living Standards
- Assets
- Housing
- Household per capita income

Time Use
- Work
- Sleep

Education
- Literacy
- Educational Level
- Knowledge
- Value

Ecological Diversity and Resilience
- Ecological Issues
- Responsibility towards environment
- Wildlife damage (Rural)
- Urbanization issues

Community Vitality
- Donations (time & money)
- Community relationship
- Family
- Safety

Good Governance
- Gov't performance
- Fundamental rights
- Services
- Political Participation

Cultural Diversity and Resilience
- Speak native Language
- Cultural Participation
- Artistic Skills
- Driglam Namzha

Karma Ura BEFIT 24.5.2017
How are men GNH-wise happier than women

- Living Standard
- Ecological Diversity
- Community Vitality
- Good governance
- Cultural Diversity
- Education
- Time Use
- Health
- Psychological Wellbeing