

Introduction

Engineers are backbone of all infrastructure development of the country. It is through our input that planned programs are realized and new successive plans are pledged. The 10th Five Year Plan, in comparison to 9th Plan, is a dramatic rise in the infrastructure development involving major capital activities for implementation. This means, engineers are handling more works, visiting more sites, spending more work hours in monitoring and assure better quality than it was before.

Introduction

In order to carry out the role in more specific approach, the civil engineer in particular, is given a task to manage only one engineering work. It could be building, road and bridges, irrigation and water supply or farm road. While the system is practiced in the ministries and DoR it is not so in Dzongkhag. The engineer there is put to multi-tasking, irrespective of the nature of work.

The general functions and responsibilities of the engineers are:

- Planning of annual works
- Surveying
- Drawing and Designing
- Preparing Estimate
- Technical Sanctioning
- Tendering, Evaluation of bid and awarding
- Monitoring of work sites like quality, technical specification, progress, etc
- Verification and Certifying the bills of the works

Infrastructure Development

- Construction of Schools
- Construction of Basic Health Units
- Construction of Farm Roads/Irrigation Channels
- Construction of Suspension Bridge/
Mule track/footpath/ Power Trailer track
- Construction of Rural Water Supply Scheme

Infrastructure Development

- Renovation of Dzongs/Lhakhangs
- Construction of Urban Infrastructures
- Rural Infrastructure Construction
- Reconstruction of infrastructures damaged by the earthquakes, floods, fire etc.

Engineering Services Division

```
graph TD; A[Engineering Services Division] --- B[Architecture Section]; A --- C[Design Section]; A --- D[Estimate Section]; A --- E[Electrical Section]; A --- F[Dzongkha Support Section];
```

Architecture Section

Design Section

Estimate Section

Electrical Section

Dzongkha Support Section

DZONGDHA

DZONGRAB

EDUCATION
SECTION

AGRICULTURE
SECTION

ENGINEERING
SECTION

ANIMAL HEALTH
SECTION

HEALTH
SECTION

LAND RECORD
SECTION

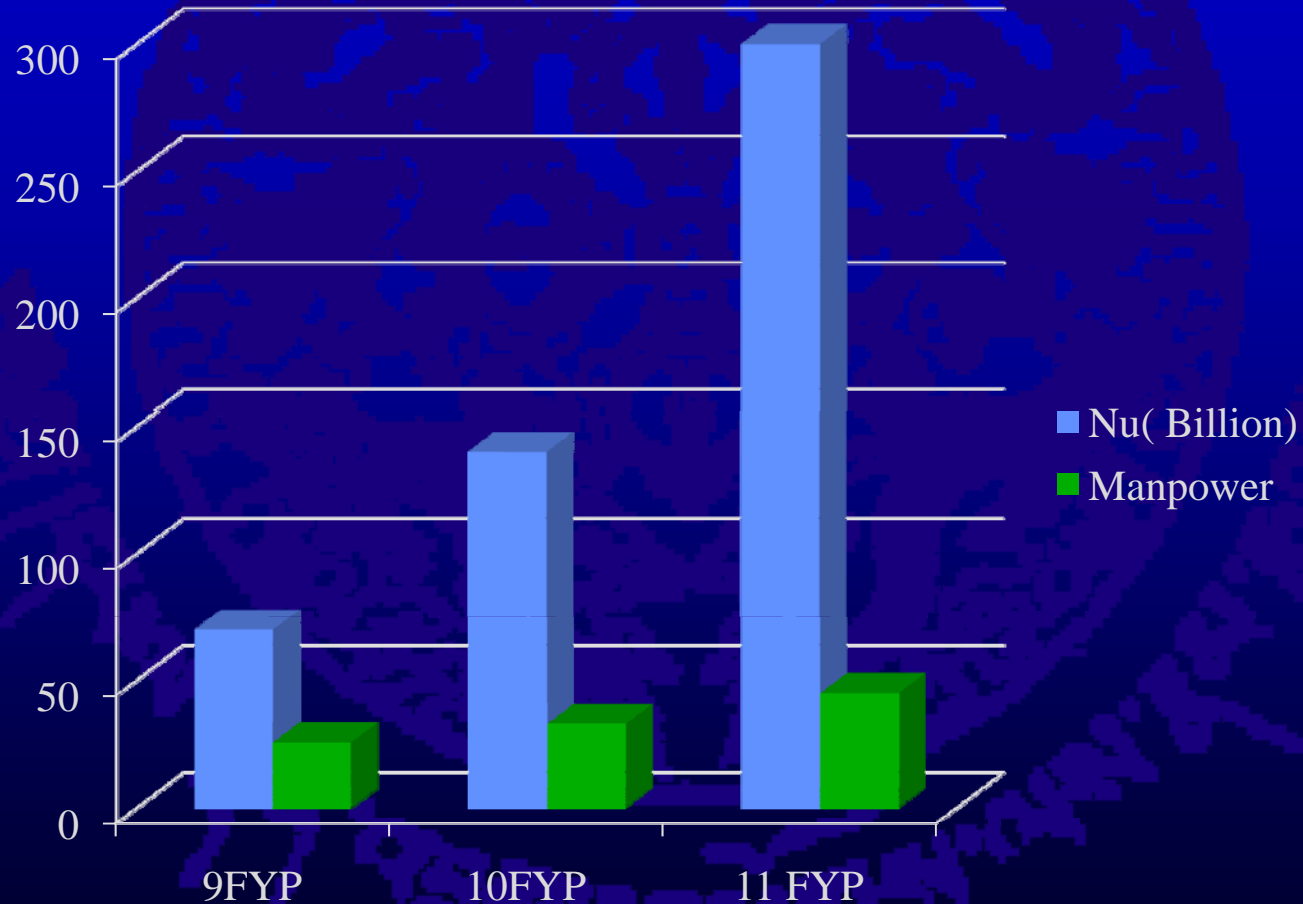
MUNICIPAL

GEOWOG
ADMINISTRATION

**District
Engineer**

**POOL OF ENGINEERS CONSISTING OF AE-I,
AE-II, JE AND TECHNICIANS**

For 10th 5 year Plan Plan outlay Vs Manpower



SI No.	Dzongkhag/ Gewog	Approx. total no. of activities in 10th FYP	No. of engineers in 10th FYP	Total no. of work sites each engineer need to take up in 5 years period	Total no. of work sites each engineer need take up in one financial year
1	B/thang	273	13	22	4
2	Chhukha	455	25	18	4
3	Dagana	587	16	37	7
4	Gasa	216	9	24	5
5	Haa	389	16	24	5
6	Lhuentse	781	15	53	11
7	Mongar	812	22	37	7
8	Paro	399	19	21	4
9	P/gatshel	531	13	42	8
10	Punakha	632	17	37	7
11	Samtse	509	19	26	5
12	Sarpang	346	11	30	6
13	S/jongkhar	431	17	25	5
14	Thimphu	476	15	32	6
15	Trongsa	293	17	17	3
16	Trashigang	961	25	38	8
17	T/yangtse	386	13	31	6
18	Tsirang	376	15	25	5
19	Wangdue	997	17	58	12
20	Zhemgang	370	16	23	5
	Total	10220	329	31	6

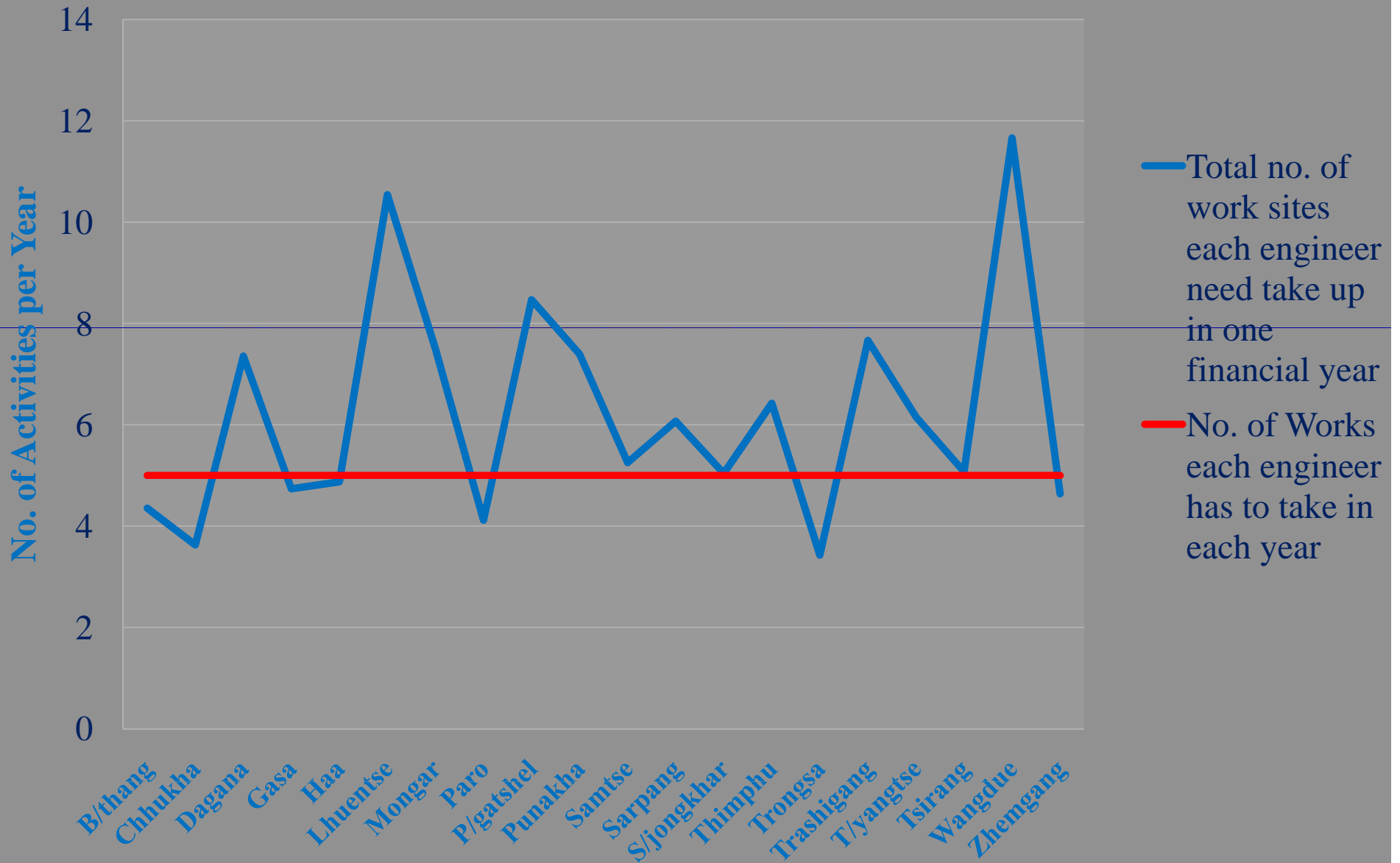
Note:

Number of engineers in the 10th Plan has been assumed to be constant as in 2008-2009FY.
This is based on the RCSC approved strength of the engineers within the parent Ministry which is likely to remain same.

Work load:

The limitation of works for engineers to five work sites need to further asses based on the type of infrastructure ,the cost of the works, distance, magnitude etc. For instance, the cost of the works may vary from few hundred thousand to millions of Ngultrum.

10th Five Year Plan Activities per Year Versus 5 works per Engineer per year

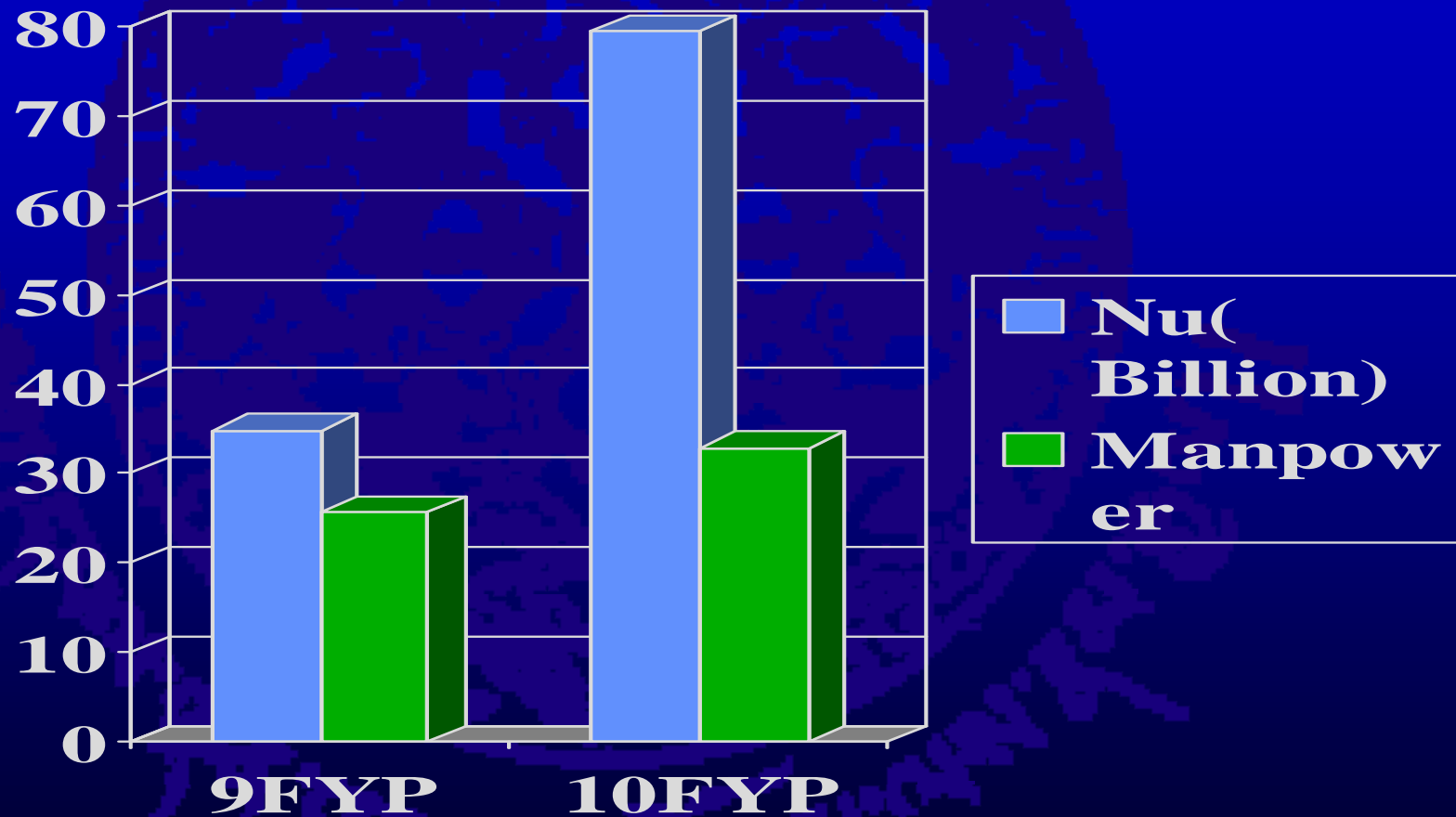


Work load

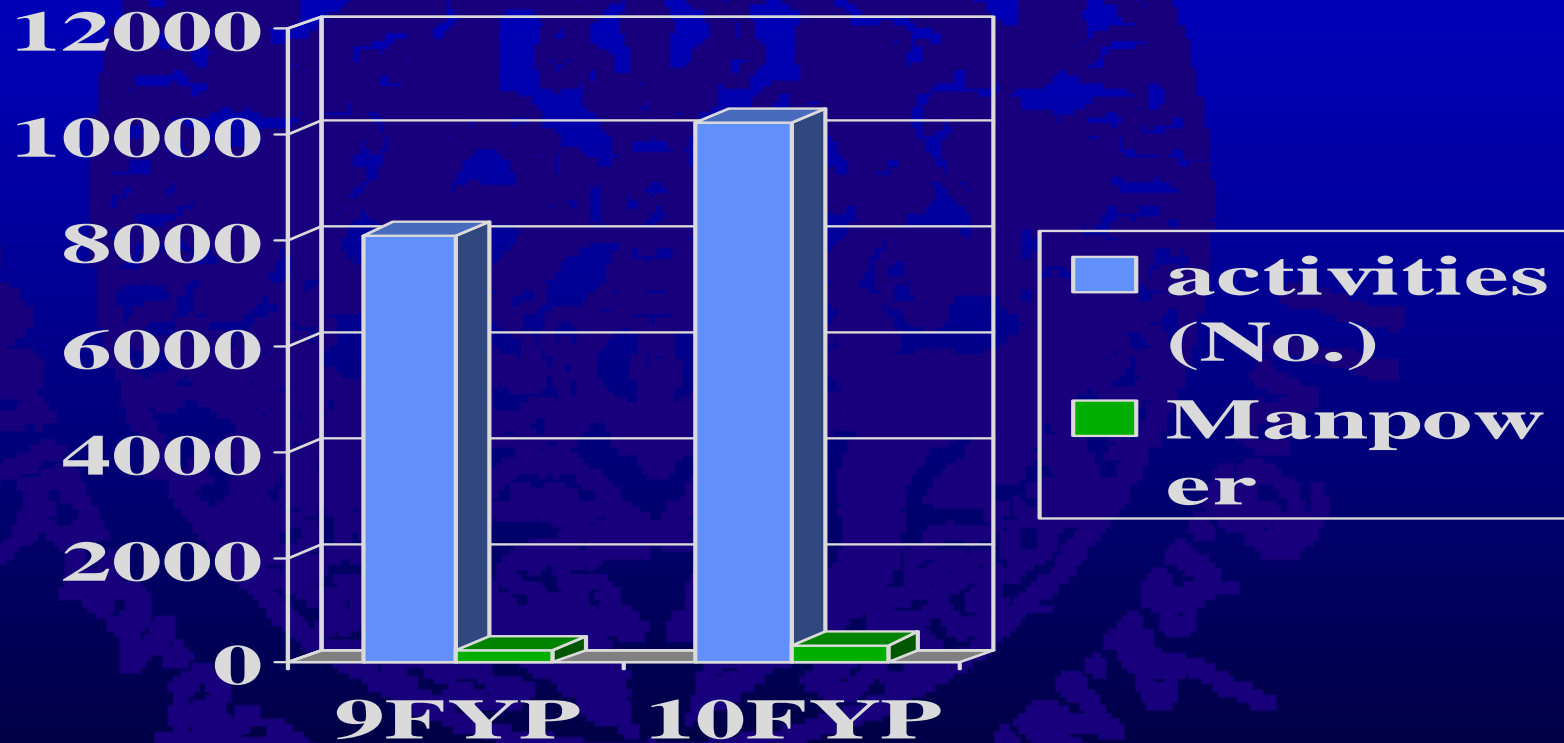
The rule on maximum number of works carried out by each site engineers needs to be followed stringently in order to minimize the workload and maintain the quality of works.

Dzonkhags

Plan outlay Vs Manpower



Activities Vs Manpower



Overview of Present Situation

- Works Converging Point in dzongkhags
- Manpower shortages
- High expectations from the engineers
- Engineers are over loaded
- No criteria available to assign the work load to an engineer
- Lack of qualified engineers
- Lack of planning and coordination
- Inadequate TA/DA Budget
- Lack of mobility
- Lack of tools and equipment

Overview of Present Situation (con't)

- Due to work overload engineers could have committed procedural lapses on many occasions
- Quality suffers due to lack of regular supervision, fresh graduate in the site with out adequate mentoring.
- Unfounded allegations against the engineers
- Allegations divert staff from planned work in order to address accusations

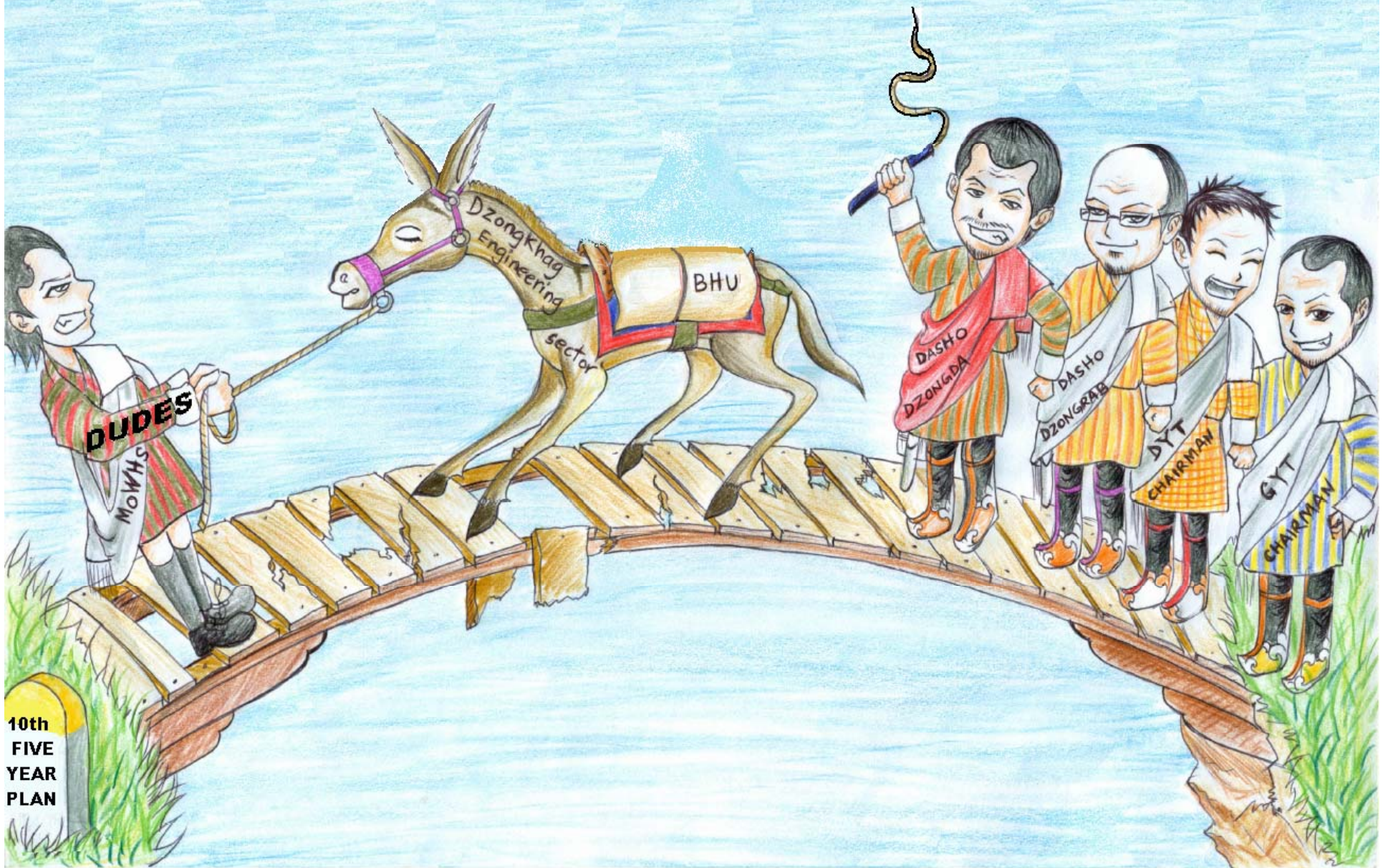
Overview of Present Situation (con't)

- Limited planning time
- Accountability and responsibility without authority

Present Scenario

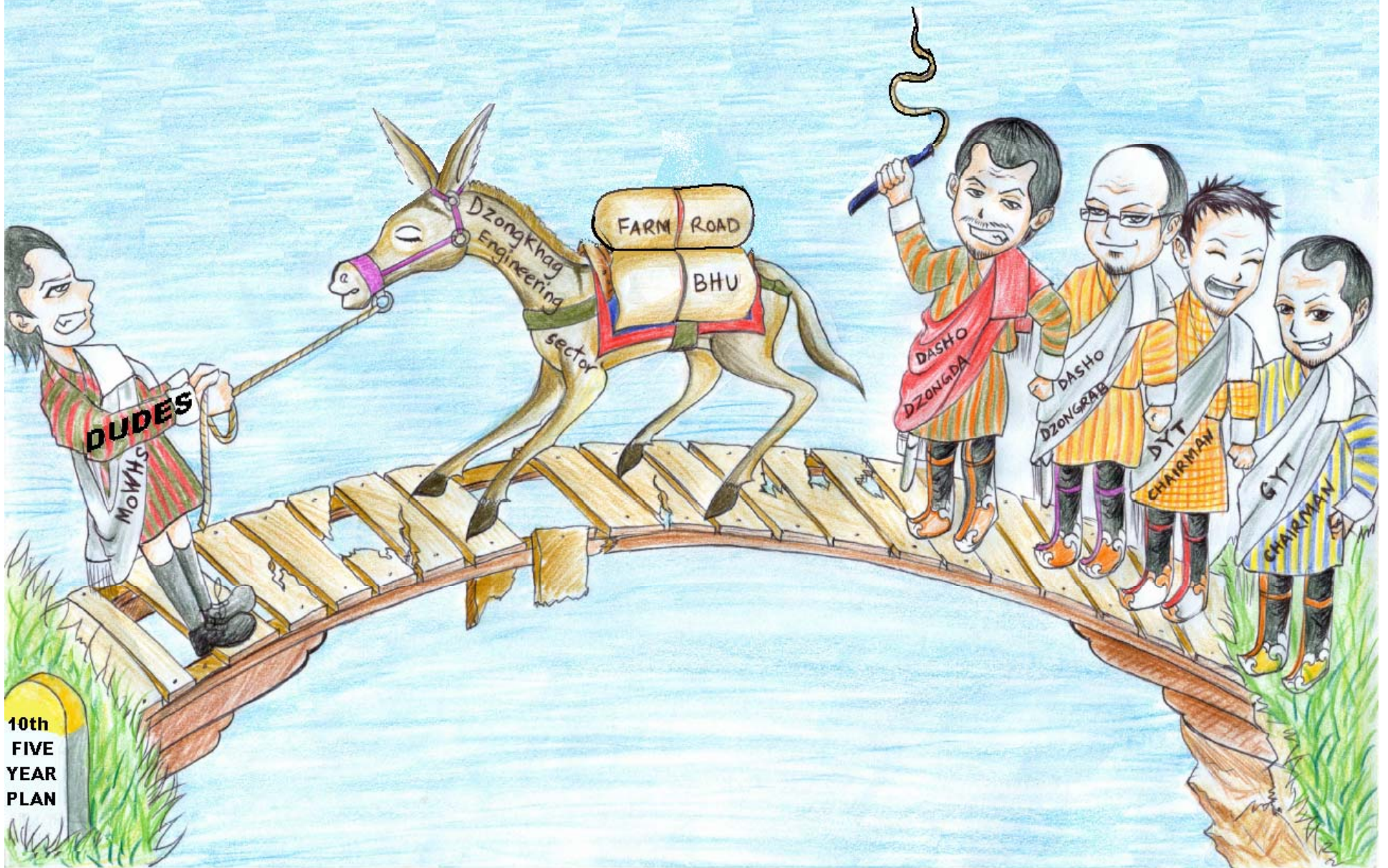


Present Scenario



10th
FIVE
YEAR
PLAN

Present Scenario



10th
FIVE
YEAR
PLAN

Present Scenario



10th
FIVE
YEAR
PLAN

Present Scenario



10th
FIVE
YEAR
PLAN

Present Scenario



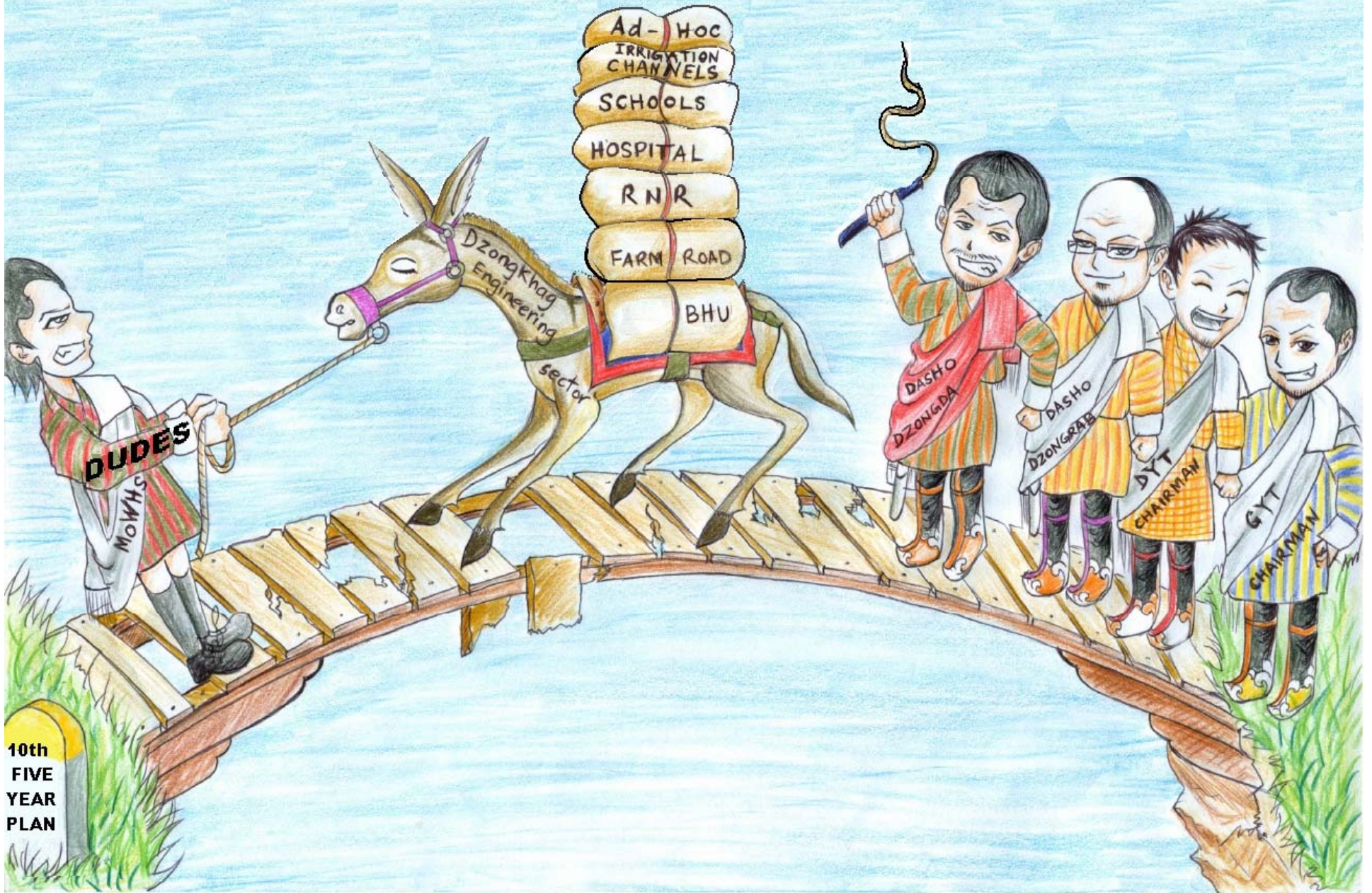
10th
FIVE
YEAR
PLAN

Present Scenario



10th
FIVE
YEAR
PLAN

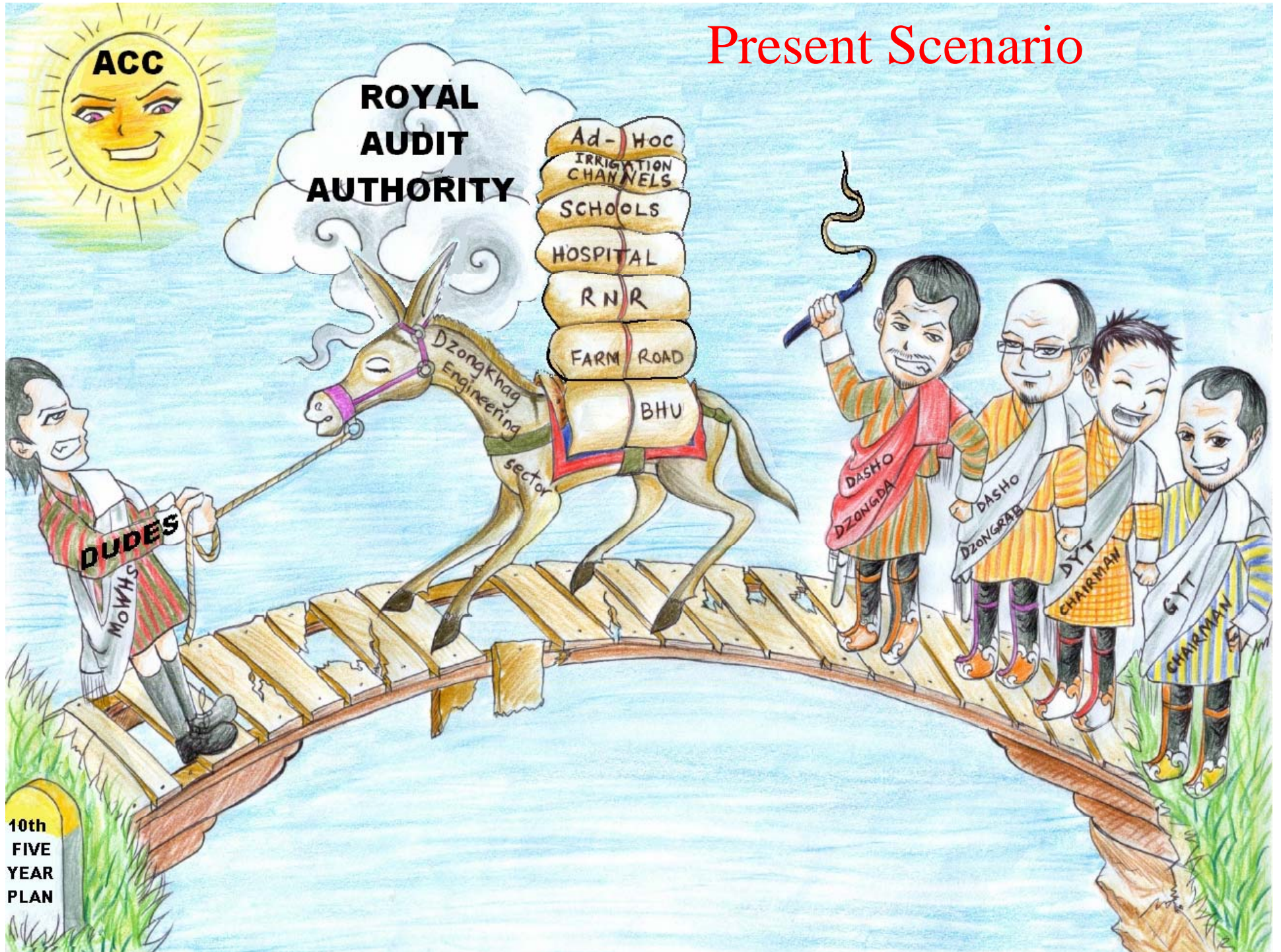
Present Scenario

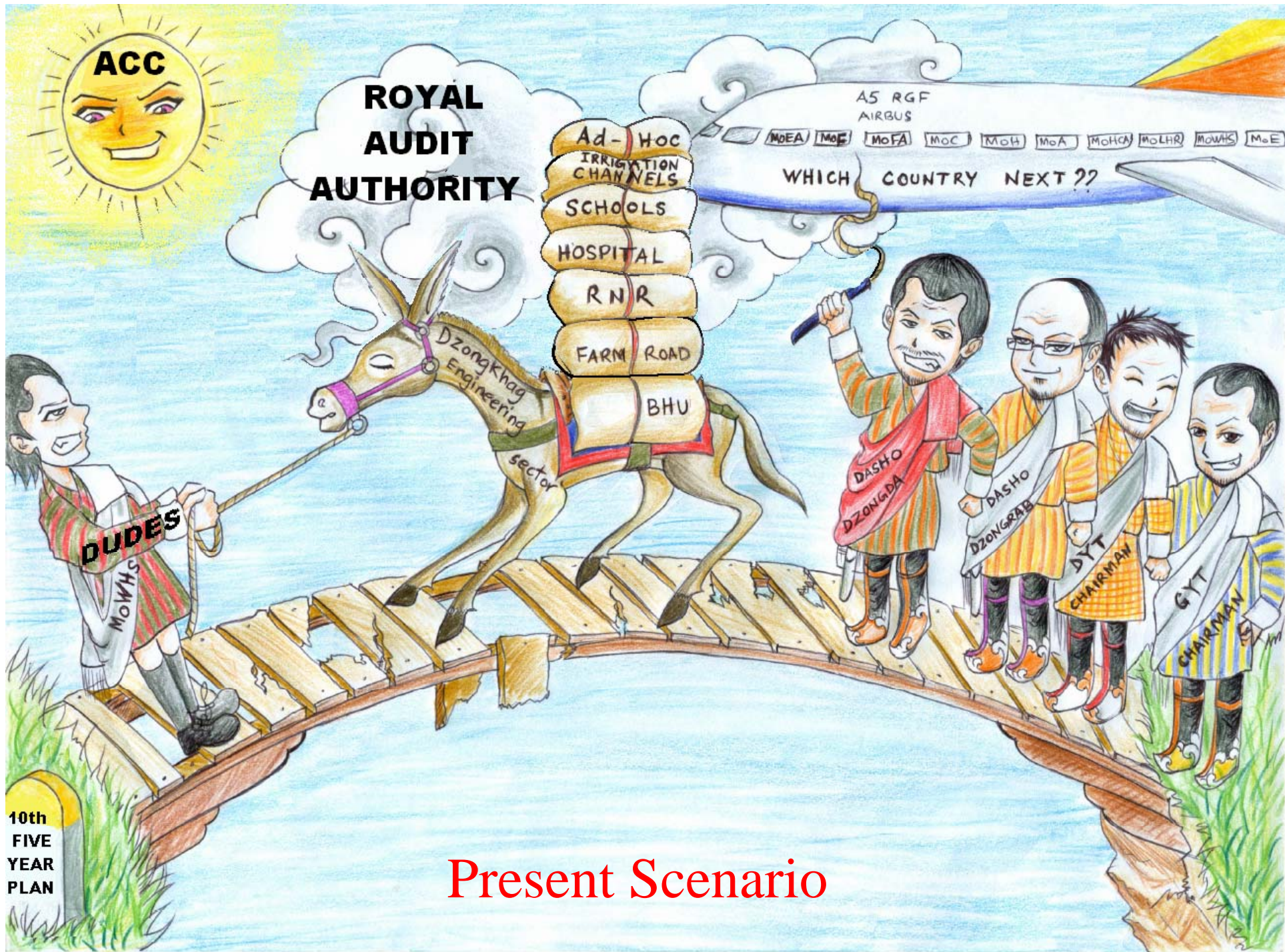


Present Scenario



Present Scenario





Present Scenario



Where is the **QUALITY ASSURANCE**?

Where is the **TIME MANAGEMENT** ?

Where is the **Cost Control** ?



All Engineers under One Umbrella

???



All Works under One Umbrella

???

National Building Corporation of Bhutan ???



Road Map for Capacity Building of Dzongkhag Engineers



Road Map for Capacity Building of Dzongkhag Engineers

1. Coordination among sector heads/ministries for planning and programming
2. Pooling of engineers from the concerned ministry
3. Recruitment of engineers from the project fund
4. Training from the concerned Agencies
5. Internship with foreign construction firms
6. Familiarization of BSR and its Specifications
7. Training on PRR and SBD
8. Induction Course for fresh engineers

Road Map for Capacity Building of Dzongkhag Engineers

9. HRD component at the central
10. Out sourcing of works
11. Design and Built (Turn key projects)
12. Job Remapping (PCS)
13. Scarcity allowance
14. Property Management (ownership)
15. Ethics



THANK YOU

AND

TASHI DELEK