SPEECH OF H.E GEN JJ SINGH, PVSM,AVSM,VSM (RETD) GOVERNOR ARUNACHAL PRADESH ,INDIA AT INDIA BUSINESS FORUM,SIWW ON 25 JUN 2009

His Excellency Minister Yaacob Ibrahim, Hon'ble Chief Minister of Manipur Sh Lal Thanwala , Distinguished Guests, Business Leaders , Ladies and Gentlemen.

It gives me great pleasure to speak on the aspect of Sustainable Growth from the Indian Point of view. Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives.

Growth process and the expansion of economic activities inevitably lead to increasing demands for water for diverse purposes: domestic, industrial, agricultural, hydro-power, thermal-power, navigation, recreation, etc. So far, the major consumptive use of water has been for irrigation. While the gross irrigation potential is estimated to have increased from 19.5 million hectare at the time of independence to about 95 million hectare by the end of the Year 1999-2000, further development of a substantial order is necessary if the food and fibre needs of our growing population are to be met with. The country's population which is over 1027 million (2001 AD) at present is expected to reach a level of around 1390 million by 2025 AD.

General introduction on water resources in India

India is the world's largest democracy. With a landmass of 3.29 million square kilometers and a population of just over a billion, India is a mosaic of pluralistic diversity in terms of culture, religion and language. ***India possesses 16 per cent of the world's population but just 4 per cent of its water resources***.

- The average annual rainfall in the country is 1170 mm, which corresponds to annual precipitation, including snowfall of 4000

billion cubic meters (BCM). Out of this volume of precipitation, only 1869 BCM appears as average annual potential flow in rivers. Due to various constraints, only 1123 BCM is assessed as the average annual utilisable water.

- The present total water use is 690 BCM of which 89% is for irrigation. ***This source of water is unevenly distributed both spatially as well as temporally***. Most of the rainfall is confined to the monsoon season, from June to September, and levels of precipitation vary from 100 mm a year in western Rajasthan to over 9,000 mm a year in the northeastern state of Meghalaya. India's rivers carry 90 per cent of the water during the period from June-November. Thus, only 10 per cent of the river flow is available during the other six months.

- National level statistics for water availability mask huge disparities from basin-to-basin and region to region. ***Thus, while India is considered rich in terms of annual rainfall and total water resources, its uneven geographical distribution causes severe regional and temporal shortages.***

- **The Indian National Water Policy 2002 prioritizes the various uses of water as follows:**

    - Drinking water
    - Irrigation
    - Hydro-power
    - Ecology
    - Agro-industries and non-agricultural industries
    - Navigation and other uses

In the five decades since independence, India has witnessed phenomenal development of water resources and has largely successfully met the demand of water for many of the diverse uses in the

country. However, there remain significant challenges in providing sustainable services, especially for the poorest and hard to reach. India's irrigated agriculture sector has been fundamental in its economic development and poverty alleviation. ***The President of India, in February, 2005 announced a major plan for rebuilding rural India called Bharat Nirman.*** The Government has, identified Rural Drinking Water Supply as one of the six components of Bharat Nirman.

Climate change is expected to change hydrological regimes in the country and affect the water sector in a number of ways. We need to take advance action at appropriate time. The water infrastructure would need to be designed to account for such changes. **India's National Action Plan on Climate Change (NAPCC), was by unveiled in Jul 2008** by the Hon'ble Prime Minister of India which importantly focuses on the following critical areas concerning us:

i. Enhancing solar energy contribution in total energy mix,
ii. Introducing energy efficiency steps,
iii. Promoting sustainable habitats,
iv. Saving Himalayan glaciers,
v. Water resource management,
vi. Protecting mountain eco-systems,
vii. Improving eco-system services

The National Water Mission which is a part of **National Action Plan on Climate Change has** set five crucial goals:

i. Comprehensive water data in public domain and reliable assessment of impact of climate change on water resources.
ii. Promotion of citizen and state action for water conservation, augmentation and preservation.

iii. Focused attention for over exploited areas.
iv. Increasing water efficiency use by 20%
v. Promotion of basin level integrated water resource management.

I will like to touch upon few important issues facing us.

Storage

Our present surface storage capacity is limited and is low compared to other countries on per capita as well as per hectare of cultivated land basis (Figure 1a below on slide). ***However, we have one of the highest irrigated areas in the world. This is because ground water storage is even larger than surface storage.***

Storage of water behind dams or in lakes or underground is thus inescapable as water needs to be carried from one season to next and one place to another. **Nevertheless, we should give highest priority to artificial recharge and watershed development to assess an optimum strategy for storage between ground water and surface reservoirs.**

Irrigation

Irrigation, critical for agriculture, has expanded dramatically since independence both from surface as well as underground sources. Out of 102.8 Million Hectare (Mha) of developed irrigation potential in 2008, 56.66 Mha is from surface water and 46.11 Mha is from ground water.

Of the total potential of 76.8 Mha of surface irrigation only 56.7 Mha have been developed till March 2008. Thus, a lot still remains to be developed. **Ground water irrigation** has grown rapidly and now is comparable to surface water in area irrigated. However, ground water is an open access resource. **These have lead to overuse of ground water in many parts of the country, more water is used than recharged and water tables are falling. Exploitation of ground water needs to be**

made sustainable. Irrigation through drip irrigation and sprinkles wherever feasible can save water without reducing yields.

Domestic Water

The share of requirement of domestic water is projected to grow from 7% in 2025 to 9% in 2050 reflecting larger urbanization. Currently we have a low norm of 40 lpcd (litres per capita per day) water in rural areas and 150 lpcd in urban areas. It is estimated that by the year 2011, urban areas would contribute about 65 per cent of gross domestic product (GDP). *However, this higher productivity is contingent upon the availability and quality of infrastructure services.*

Here is a quick look at how the shortfall is across our most important cities. In Delhi its roughly 636 million litres a day, in Mumbai its 850 million litres, in Chennai its 165 million litres a day, and experts believe that this could go up to 1200 million litres a day by 2020. So why is there such a shortfall?

Rain water harvesting hasn't taken off and deforestation, massive urban migration and urbanization has meant the loss of ground water and increasing pressures on existing supplies. Fresh water, sourced from the big lakes near metros is also running thin because it's used for everything including industrial use. Yet water conservation is not seriously practiced in India. The Central government in Dec 2005 started a comprehensive programme of urban renewal named as Jawaharlal Nehru Urban Renewal Mission (JNURM). In the first prong of this strategy, JNURM has been sanctioned to provide extensive financial support to about 60 cities for up gradation and improvement of infrastructure in a planned and integrated manner.

This is the time when we can use the ingenuity and inventiveness of science and society to find ways to 'leapfrog' to the future. The example of Chewang Norphel comes to my mind. Ladakh

in the northern region of India is a cold desert with an annual rainfall of 7mm. The biggest problem for villagers is the perpetual shortage of water. Chewang Norphel, a retired civil engineercam e up with an innovative solution in the first known technique of its kind: **creating *"artificial glaciers"*** to capture and channel precious ***snowmelt*** that otherwise would be wasted. The technology, basically a network of pipes, laid over the slopes which release the water into small depressions, water collects here and freezes over, the cycle is repeated many times and a thick sheet of ice forms resembling a glacier. He has built six such artificial glaciers including one at the altitude of 15700 ft. Although the experiment in Ladakh is still small and site specific, word about its success is spreading. Some observers think the technique may one day bring relief to many other water-starved villages around the world that face similar conditions.

It is clear that these new answers will lie in learning the frugality and rationality of societies. It will need us to re-learn technologies once again. Today, water management is the starting point for getting rid of poverty in the world. Water security is the starting point for food security. This requires an integrated approach to management of Water. Integrated water management calls for significant increase in scientific, technical and managerial capacities at all levels and especially at local levels. It also requires a mindset change from project based thinking to a holistic approach.

I am sure this conference will be able to come out with appropriate recommendations for solving the looming global water crises and ensure sustainable development and management of this precious resource.

Before I thank you all for your patient hearing let me leave you with a small glimpse of my State Arunachal Pradesh, which has 32% of the North Eastern State landmass and a low population density of 11 Km per km with 82% forest cover. It alone constitutes 93% of hydropower potential of North East and 37% hydropower potential of India. However, this future powerhouse of India has only tapped 1% of this

potential. As, the region grows towards development and prosperity a small glimpse of the States rich flora, fauna, water resources and the multi ethnic tribal society stands as an invitation to visit India and this pristine State in the lap of Nature.

Thank you for your attention.