



**Working Paper
20**

**The Uneasy Case
against Planning**

Yoginder K. Alagh
January 2016



**Sardar Patel Institute
of Economic &
Social Research**
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List of Abbreviations

Business As Usual	BAU
Disposable Waste	BOD
Central Bureau of Investigation	CBI
Calcutta Electric Supply Corporation	CESC
Efficiency Frontier Strategy	EFF
Food and Agriculture Organization	FAO
Foreign Direct Investment	FDI
Gujarat Electricity Board	GEB
Human Resource Development	HRD
International Crops Research Institute for the Semi-Arid Tropics	ICRISAT
International Crops Research Institute for the Semi-Arid Tropics	ICRISAT
International Monetary Fund	IMF
Long Range Marginal Cost	LRMC
Million Tonnes of Oil Equivalent. Modification Table of Organization and Equipment.	M t OE
Million Cubic Meters	MCM
Mahatma Gandhi National Rural Employment Guarantee Act	MNREGA
Ministry of Water Resources	MOWR
National Development Council	NDC
North Delhi Power Limited	NDPL
National Institution for Transforming India	NITI
Programmable Logic Controllers	PLC
Rural Load Management	RLM
Supervisory Control and Data Acquisition	SCADA
United Nation	UN
United Nations Development Programme	UNDP
United Nations Educational, Scientific and Cultural Organization	UNESCO
United Nations University	UNU

The Uneasy Case against Planning

Yoginder K. Alagh*

Abstract

This paper begins with a tribute to the academic contribution of the late Prof. Raj Krishna, in whose memory it was prepared and delivered as a Memorial Lecture. It begins with a discussion of the reform of the planning process and in that context gets into the need of Long Term Strategic Policy Modelling and the author's UN sponsored published work on India 2020. The future is not in economy level modelling but strategic modelling for the Demographic Dividend, Land, Energy and Water. Demographic dividends are largely derived from 'inevitable' consequences of fertility patterns, age structure of populations, labor force participation and saving consequences. Positive consequences need policy planning and are driven by nutrition, health and education programs linked with demographics. Employment programs in rural areas set a reserve price for labour and act as incentives and triggering mechanisms for widespread technological modernisation and better land use. Food Security and employment strategies are an integral part of a development strategy. Energy planning has to be based on fuel resources. Transmission and Distribution reform is critical and policies get dominated by vested interests. The paper builds a strong case for Nuclear Power. Sectoral Investment planning has to be integrated with economic reform. With regard to the demand for water, policy will need to be concerned with both the basic needs of water for the poor and the need of informed directions of water systems as markets play a larger role. To avoid severe water shortages, improvements in irrigation efficiency and cropping intensity will have to be much faster. Modern technology will have to be integrated with artisan and rural populations so that the benefits of national and global markets can intrude to the work force. Trade and globalisation will have to tackle these issues. Inter-sectoral linkages between demographics, energy, and water need to be established in concrete terms, for an enduring future.

Key Words: Long Term Modelling, Economic Reform, Demographic Dividend, Employment Policy and Technical Change, Energy, Land and Water

Note: This paper is the revised version of the Raj Krishna Memorial Lecture, delivered at the Department of Economics, Rajasthan University, Jaipur on 10 December 2014

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The Late Raj Krishna

I was a student of Economics at Rajasthan University, Jaipur. I studied here and started my research career here. The Late Prof. Raj Krishna joined here after I left for my doctoral work at the University of Pennsylvania. I met him briefly after returning back and he was keen that I rejoin the Department. As fate would have it I went to the IIM Kolkota, but in 1974 December I was invited by Prof Sukhoymay Chakravarty to head the then powerful Perspective Planning Division of the Planning Commission, having in it more than fifty interdisciplinary experts. Amongst economists, Dr. Vijay Kelkar was a Consultant, later the Late Prof. Manohar Rao of the Bombay School of Economics, Dr. Jayanta Roy, then with the IMF and Ajay Chibber who after a stint with the UNDP returned to the Planning Commission last year, all worked with us. Prof. Raj Krishna was to join the Planning Commission in 1977 and we worked for him for the next three years or so. It was a heady period.

The late Prof. Raj Krishna was a great economist and a modeller. In subjects like marketable surplus and supply functions in agriculture his contribution is seminal and advanced text books or papers begin with his work anywhere in the World. He was also a plan modeller and made important contributions to planning theory and practice in Basic Needs Planning, Employment in Plan Models and Project Evaluation Techniques introducing employment as an objective. Like all civilised and live professionals we would have long arguments. After a particularly long session I once told him “*Aapbaki sab divisions ke sath to dus minute main kaam khatam kardete ho. Khali hamare kaam par he itni charcha hoti hai.*” He looked at me and said “Babu nobody else here excites me. I tell them what to do and that is it. You make me work. I know that if I don't convince you, you won't change a word of your drafts or numbers. Convincing you takes time.” When he left the Planning Commission, the then Deputy Chairman, Prof. D.T. Lakdawala told me that he had left in writing that I should succeed him. Of course it is another matter that by that time I, like Raj Krishna had also decided that I had enough of Government and must go back to my Professorship in Ahmedabad to recharge my intellectual batteries which I did.

Planning the Models

I would have liked to give this lecture on Economy Level Plan Models. A paper I had written on Development Modelling in India was published in Sankhya Series A which as you know is the theoretical journal of the Indian Statistical Institute. It was updated later (Y.K. Alagh, in N. Jayaram and R. Deshpande, ed., 2008). I would have liked to review that work, update it and let that as my tribute to Raj Krishna to appear there. But it has been decided to close down the Planning Commission and that would have been the snobbishness of a Don but of little public interest and policy value.

To be fair the Government on August 24th called some twenty so called experts and asked them what should we do instead of the present Planning Commission? Being one of them, a number of us argued that reform of the Planning Commission was an on-going issue, in an economy following the Manmohan Singh 1991 liberalisation path. A more focused body concentrating on issues like energy, water and demographics which have a long term perspective should be the agenda of the new body as in China after the State Planning Committee was replaced by the National Economic and Social Development Commission. The Planning Secretary put all this in a two pager which we understand is to be discussed in the NDC. That's good because as I write this, it is ChachaNehrus 125th birth anniversary and speculation on planning was loved by him, even during the freedom movement. And so he said: "The more we thought of the planning business, . . . the fascination of this work grew on me.. but at the same time a certain vagueness and indefiniteness crept in..". So I will in this Raj Krishna Lecture look at what the work of the new body looks like if it is not decided to abolish planning. This will be in my opinion, amongst others, in Demographics, Energy and Water and I will speak on these. *

*As I write this for publication these concerns have been listed as a function of NITI the new planning agency but that agency has no funds allocation role.

Demographic Dividend

The IMF and Bank Indonesia had asked me a few years ago to speak on the Demographic Dividend in India in the long run at their Annual Conference for Central Bank Governors at Bali. Working on the algebra of projection models it was clear that they derived demographic dividends from 'inevitable' consequences of fertility patterns, age structure of populations (see GOI, 2006a) and labor force and savings consequences. Structural differences were high but economic consequences were not so striking. For example in India four workers would support one retiree but in Japan only one (Table 1).

Table1: Scenarios 2050

Country	Dependency Ratio	Support Ratio	Ageing Index	Growth Rate%
India	22.6	4.4	105.1	0.4
USA	34.9	2.9	144.9	05
UK	73.3	2.1	226.7	(0.3)
Japan	71.3	1.4	338.2	(0.6)
Singapore	50.0	2.0	258.8	(0.6)
Spain	73.8	1.4	386.4	(0.6)
China	37.2	2.7	183.3	(0.3)

Source: Yoginder K. Alagh, 2006c, published in IskandirSomringkar, 2008, ADB, IMF and Bank Indonesia.

But which of the results are robust and why? Some consequences may turn out correct, but for wrong reasons. The future is not inevitable, even though the perception of population and human resource development issues as central is correct. I argued at Bali that dividends will be garnered by the brave who have an operating strategic vision of HRD parameters (Alagh, 2006b). If you don't have a good nutrition, health or education profile demographic consequences could be a nightmare.

But there is one possible Bonus which pleases my heart. That is that women would add to the growth rate in a higher manner if we have sound policies. Box 1 states this.

Box 1

Working Women: A Bonus?

During demographic transition, another kind of bonus, normally ignored can accrue. The time spent by women in bearing and raising children falls while mortality decline lengthens the life span remaining after the cessation of child bearing. Mari Bhat estimates that when the demographic transition nears completion, in India the age at first birth would be 21-22 years (less than 20 now) and the age at last birth would be around 28 years (38 now). Women could then be expected to enter the labour force in large numbers. Consequently, the growth rate of labour force would remain higher than the growth rate of total population for an extended period of time. The significance of this 'deferred bonus' of the demographic transition could be higher than the immediate bonus resulting from the dividend from age structure changes.

This dividend would be intertwined with structural changes in the economy like agricultural diversification and rural-urban migration.

Source: *ibid.*, as in Table 1

The late Raj Krishna is in a sense one of the early women studies pioneer and would have, like me, loved to work for this bonus.

An Employment Guarantee was close to his heart. It was to be integrated with A Minimum Needs (now Basic Needs) Strategy (GOI, 1980). There is for example the argument that employment guarantees should be there only in poor Districts and not in agriculturally developed Districts. This is wrong. A Wage Floor in rural areas acts as an incentive for widespread technological modernisation and better land use in rural areas. It is not accidental that the agricultural revolution in Europe took place only as real wages started rising in the Nineteenth Century. A recent example in our Punjab is a small machine which removes the chaff and prepares the soil for the next crop in a matter of days. It has become necessary after the Bhaiyyas are coming in smaller numbers from the East.

More widespread and compelling evidence is there in recent studies done in India. In fact a lot of the recent discussion on MNREGA is misplaced. A recent fairly large ICRIASAT field survey shows that in Developed Districts successful MNREGA

programs have led to a flurry of investment on the farm. (Madhusudan Bhattarai, ICRISAT, 2014). That Food Security and Employment Strategies are an integral part of a development strategy was a bee in the bonnet of Raj Krishna as it were.

Modelling 2020

I will discuss Energy and Water. But the backdrop has to be a look at the future. In 2002 on request from the UN, I had modelled India 2020 in a project in which different experts were asked to look ahead for Large Countries on a global plane. Both for energy and water Business As Usual means unacceptable outcomes by 2020. Unacceptable, not in moral or ethical terms but the growth process itself becomes unviable or not feasible.

The Tinbergen Theory of Economic Policy would like us to build a structure where we go from objectives through the structure to the instruments to be worked on. These instruments would tell us what we should do and what we should not do in unambiguous terms. Apart from Brahma, there has to be Vishnu (What to do) and Mahesh (What not to do) or what to kill.

The Problematic

The illustrative quantitative magnitudes showed the sharp breaks in many indicators and unmanageable problematic emerging in major concern areas. Solid waste disposal levels of more than 100 million tonnes, slum population of around 100 million persons, acute water shortages and air and noise pollution of a severe kind, all manifested themselves. The serious environmental implications of burning poor quality coal were apparent underlining the critical energy situation in the country. The glaring magnitudes indicated the long-haul for improving the living standards in the country. This also brought into sharp focus the hazards of following an unbridled consumerist path and to underline this at the global levels.

Table 2: Projections for the Year 2020

Population	1330 million
Urban Population	Low : 465 million; High : 590 million
Slum Population	Low : 85 million; High : 130 million
Solid Waste Disposal	100 to 110 million tonnes
Demand for Coal for Power Generation	Low : 817 million tonnes; High : 2016 million tonnes
Cropping Intensity	More than 1.5
Net Area Sown	Constant at 141 million hectares since the nineties
Irrigation Intensity	Around 1.75
Water Shortage	Around 10% to 25% between the years 2020/50
Noise Levels	Twice the norms in trend forecast
Air Pollution	Two to two and a half times the norms in trend forecast

Source: Y.K. Alagh, *Sustainable Development India: 2020*, Tokyo, UNU, 2000, as quoted in, Y.K. Alagh, *Global Sustainable Future and Developing Countries*, in Fu chen Lo, et.al., ed., 2000; also see Y.K. Alagh, 2006a.

The UN Country case studies on large countries also brought out the severity of constraints being faced and the need to make a beginning to “favourable” paths immediately. China and India were two examples. The Sherpa to the Prime Minister for the G20 meeting in Brisbane Shri Suresh Prabhu has argued that India should disassociate from China in the Climate warming issue. This view needs careful discussion. The US and China signing an agreement on climate change puts India outside this G2 on this critical issue. A decade ago India and China, both members of the G 20, were invited together to be permanent invitees to the G 8. This was on account of the efforts of the then Canadian PM, Paul Martin, who was so dedicated to this outcome that in the week of his election, which he lost to Mr. Harper, he flew down to the G 8 meeting in the Bahamas to argue that India and China should be permanent invitees to the G 8 for their economies were in the top eight, as shown by the Canadian policy analyst John Kirton, head of the G 8 Institute in the Munk School in Toronto (John Kirton, 2002/04). I invited Kirton to the G 20 meeting in Delhi last year.

It was the Canadian Jim Basillie, Chief of Blackberry located at Waterloo who spearheaded that effort and the book L20; Leadership from the Top; was the bible. In this book John English, Andy Cooper and Ramesh Thakur (2005) editing a set of papers made the case of direct diplomacy at the high table to solve global problems. Anna Marie Slaughter, then Dean of the Woodrow Wilson School at Princeton pushed the agenda and is now Adviser to the US State Department. Juha Jokela in his well-known Chaillot Paper-125; 2011 of the European Institute of Strategic Studies of the European Union tracing the history of the G8 since then, documents the role that India played in bringing to the high table the need to develop the potential of developing countries. As an Indian my argument in a paper cheekily called Sherpas and Coolies in the L 20 volume (Alagh, 2005) was that supping at the high table was productive only if India's concerns on water, energy, nutrition and trade were taken on board and Jokela referring to Sherpas and Coolies traced it through the decade, as well as the Chinese contribution.

The position stated by our Sherpa recently is that India's views on climate change and therefore on energy are different from China. The received position is that energy and emissions issues have to be looked at in per capita and not absolute magnitudes. This is important the argument goes because poor countries must develop and policy both within country and globally has to be designed to make the path sustainable. Emissions on account of say a large cattle population in India are there in history and it is the change that is important. In per caput terms both India and China are way below the developed world in energy intensity, although India's per capita figures are below China. In absolute terms of course India may burn half a billion and China more than three billion tonnes of coal for example. The Chinese, taking the cue as it were, have in a sense already decoupled and formed the G2 with the US. Interesting days lie ahead.

Energy

A model outcome if we grow at 6 to 8% annual and have a consumerist ethos becomes

that our low demand of coal is around 8 lakh tonnes and the high version was two billion tonnes. The projections we had made in 2000 have been reiterated in a later Planning Commission Report (Government of India, Planning Commission, 2006). The Base had slipped but the increments were as earlier and so now the range was 6 lakh tonnes to a billion tonnes.

**Table 3: Alternative Energy Scenarios for 2031/32
(as Visualized by Planning Commission Expert Group in 2006)
(M t OE)**

S.No.	Fuel Requirements	Scenario	
		Coal Dominant BAU	Scenario EFF
	Demand Side Management	Coal/Transport/ Rail Transport	Nuclear, Hydel, Gas, Renewable
0	1	2	3
1	Crude Oil	486	350
2	Natural Gas	104	150
3	Coal	1022	632
4	Hydro	13	35
5	Nuclear	76	98
6	Renewables	2	87
7	Non Commercial	185	185
	Total	1887	1536

Source: Planning Commission, 2006, p.44

We have almost unlimited reserves of power grade coal and so mining and transporting it is not impossible if the corporate and public sector is transparent and reasonably efficient and the politicians and CBI leaves them alone. But our lungs won't be able to take it. Long before billion tonnes the Supreme Court and NGOs will stop it. So either lower growth, or different life styles or different forms of energy use (The EFF or Efficiency Projection in Table 3), will be the options. All easily said but difficult to practise.

At the August meeting I referred to earlier a senior economist currently advising the Government made the point that there was no need for planning as we should let anybody who wants to invest in energy or other infrastructure sectors do so and there were enough funds for good projects. This was an interesting case against planning. I may mention that when I was doing my MA here the first topic in Development Theory was 'Why Planning'. Now some would like it to be 'Why Not Planning' Everything Changes! Nothing Does!

In the Energy Sector there is also the problem of slow reform and FDI in Transmission and Distribution (For details see, Alagh, 2009). The honourable Suresh Prabhu, now Railway Minister, has in a Report submitted before he joined the Cabinet, correctly reiterated both the need and the structures of Transmission and Distribution reform in the power sector designed two decades ago, which was before he was Power Minister. What we now need to address is the question as to why these reforms have failed and how does one remedy that. As regards transmission and distribution, India has the largest capacity in High Voltage DC lines in the world as also very large capacities in conventional lines. There are mild critiques of the great technical achievements in augmenting grid capabilities and applying smart techniques, the latter on a best practice basis. But by now the sector is on the go. The question is replicating best practices on a large scale.

Regarding investment in augmenting transmission capacity, The Prabhu Committee wrote a report says based on his experience, but the problem predates him. Five years ago the Planning Commission said “Although the power transmission segment has been opened to private investment in 1998 there has been only a limited success in attracting private investment. The only public-private partnership project – the Tala transmission system – has been operational since May, 2007. In 1998 I was the Power minister. I got the contentious Transmission Bill finally approved through a Parliamentary committee under Jagmohan unanimously. In 1998, the draft legislation on the Central Regulatory Authority was also introduced in the Lok Sabha. These pieces of legislation clearly laid down the structure of smart grids and

alternative distribution channels. This must be done the Prabhu Committee correctly says two decades later. The question is how.

In fact Tala was not the first project approved and implemented in the late Nineties, but once that reform was given up, the memory of that investment seems also to have vanished and Suresh Prabhu cannot be blamed for that. In 1997 FDI approvals reached Twenty Five billion rupees from less than a tenth of that earlier and actual inflows reached around Ten billion rupees from nothing earlier, The Express journo KandulaSubramaniam a good historian of the power sector in India writes in a book published by the University of Pennsylvania 'The framework of this draft legislation (Parliamentary Committee approval to the Transmission Bill discussed above; parenthesis added) was used to approve the first major private transmission private sector Mangalore project in India in 1997, by Y.K. Alagh as Minister. (K. Subramaniam, 2004, p.40-41) Subramaniam notes that 'The National Grid of the UK, which was to execute the Mangalore transmission project, is the only foreign utility company in India maintaining operations to date. That (the legislation) was cleared only in 1998, and to date there have been no private investments in the transmission sector (p.41)'. Foreign Direct Investments (FDI) dried up in the period 1999/2005 and already by 2001 was close to zero. Approvals declined to less than a tenth by 1998 and reached close to nothing by 2004 and so did actuals. The legislative policy failures and management of the political fallout has tremendous consequences. So do successes in political management.

In energy it is terrible that the only transmission project completed with FDI was the Karnataka Mangalore Transmission Line by the National Grid of UK sanctioned when I was Power Minister in 1997 (see Alagh, Indian Express, 2014). I found it very encouraging that after I wrote this in a newspaper piece the Power Ministry issued an impressive note stating that Transmission Project clearance was high on their agenda and eight new Projects worth Rs 53000 crores were to be released for bidding (Alagh, 2014 ; for Government quote Economic Times, 2014). Good Luck.

To the best of my knowledge a study done for the GEB by my Institute (Alagh, J. Shah and V. Shah, 1998) in the Nineties gave the first proposal for an unbundling arrangement for services such as metering, billing and revenue collection. Studying the Kheralu line, it said the present system at the 11KVA level has to be supplemented, not replaced, with an efficient system which delivers power continuously for a price. Pachauri wrote a preface endorsing it. This became the reform mantra. The many successful distribution cases like the original Kheralu feeder in Gujarat, Karnataka, Bhiwandi, Kanpur and Agra and others using IT technologies should now become the norm rather than remain as examples. A number of them use smart techniques. The major cities, where distribution has been privatized are Kolkata, Mumbai, Delhi, Greater Noida (UP), Ahmedabad, Surat and Orissa. By now there are more than twenty such cases. T&D losses in the cities managed by private companies are noticeably lower than the publicly managed utilities. The reported loss levels in these cities by the last decade were: CESC Kolkata 14.3per cent; AEC, Ahmedabad 11 per cent; NDPL, Delhi 18.5 per cent, CESC, Noida 8.0 per cent (only distribution losses). More recent experience suggests that initial results of the franchising process in difficult areas with large scale power thefts like the earlier experience of Bhiwandi are encouraging. They use smart techniques and real time communication between the customer and the supplier. UP had decided to hand over distribution in Agra and Kanpur to a private company on a franchise basis. The Ahmedabad based company Torrent was awarded an input based franchisee management contract of a kind implemented in Delhi. To me the break between describing these as best practices and a new trend was Bhiwandi and Agra.

Some of the best practices adopted by various utilities in the distribution sector include IT based application designed to provide comprehensive and centralized records of the billing and revenue recovery from various consumer segments: Limited Distribution, Management Franchise: rural consumers provided with quality supply and quality services through rural distribution franchisees operating on behalf of the competing distribution companies: Rural Load Management (RLM) - Irrigation pumping loads controlled by Programmable Logic Controllers (PLC).

PLC is used for alternate switching in or out IP loads as per demand schedule to facilitate continuous 3-phase power supply to non-IP loads.(See GOI, 2008). Those who would rubbish generation projects and nuclear power including the Fast Breeder based on thorium, the only way of ensuring energy security for India in the long run, remember 2020 is only five years hence. My views on Nuclear power are straightforward and as follows:

Economics of Nuclear Power in India

"Nuclear Power is a genuine economic option in terms of Long Range Marginal Cost (LRMC) advantages for power supply at locations far remote from coal reserves, particularly if hydel sources are not available in these areas (Prof. Y K. Alagh, the then Union Minister of State for Power, Govt. of India)."

There are therefore many interesting applications underway, in spite of the slow process of reform at the macro level. There is now need at the political level for a song and dance on the accelerated reform program to make progress faster. The larger point I am making is that investment planning has to be integrated with economic reform. This is the reason to have an economy level view on critical sectors like Energy. When the Chinese abolished the State Planning Committee and set up the more Focussed National Economic Reform and Development Commission, they also in sectors like energy and infrastructure gave it fund allocation powers.

Water

Shortage is ten to twenty five per cent of the projections of demand with high growth is seen as we saw earlier with economy level projections. Table 4 summarizes the findings on water requirements and water availability under alternative scenarios. Extrapolations of demand from different sectors show that if business as usual continues, quantitative shortages of water are likely to emerge. Declining water use efficiency in agriculture, increasing urbanization and unregulated industrialization pose significant challenges for the water sector in the future. Shortages, either of

ground or surface water or both are likely to be pronounced in the states of Andhra Pradesh, Gujarat, Haryana, Punjab, Tamil Nadu and Maharashtra.

Table 4: Water Requirements: Different Scenarios
(in BCMs in 2020)

	BAU	HG	SS (%)
Households	67.52	67.52	45.01 (4.66)
Power	8.19	12.29	5.00 (0.5)
Industry	27.91	41.58	27.72 (2.87)
Agriculture	677.30	804.20	768.37 (79.69)
Evaporation	42.00	42.00	42.00 (4.33)
Ecological	78.00	78.00	78.00 (8.09)
TOTAL	920.92	1005.59	964.09

Source: Y.K. Alagh, 2006a; also see GOI, 1998, 1999

This just makes the business as usual stuff impossible- for water is literally life. Arable area has stopped growing and so the land constraint is far more severe. Growth will now have to be sourced from double cropping and yields. To avoid the unfeasibility problem most projections assume a vastly improved performance on the land and water management frontiers. It needs to be remembered that the balance ground water reserves are now more limited. Tushar Shah has shown that groundwater use in a hundred Districts is the problem and needs a special program of replenishment and I would suggest link with surface water use. I have been pushing this both at the Planning Commission and I hope the next budget would address the problem. Interesting work includes sensitivity of estimated resource flows of water available with integration of surface flows with local small storage projects. Alagh (2000) has reported an augmentation to the extent of 14% of estimated water availability as follows:

Table 5: Tank Storage in Shedhi System

Year	No. of Tanks	New Capacity	Range of Deepening
	(Progressive)	MCM	(m)
Season 1993/94	150	3.5 (6.0 to 9.9)	1 to 6
By June 1994	254	6.0	0.25 to 9.3

Source: Same as above

Fourteen per cent(14%) additional water cannot be considered trivial in a water short context. It is interesting that the Shedhi Branch of the Mahi system was planned on the basis that there are no tanks in the system. Another way of looking at the severe land constraint is to see that a net area sown per person will go down from around 0.17 hectare to around 0.10 hectares. Gross area sown per person currently around 0.2 hectares will even, if cropping intensity increases very rapidly, go down to around 0.15 - 0.18 hectares.

The Minister of Water Resources has recently placed emphasis on solving River water disputes between States. At the beginning of the century I was asked by UNESCO to study water as an interdisciplinary problem. The paper I wrote had a section on solving river valley disputes (Alagh, 2001). Earlier asked to arbitrate in a season's dispute on water sharing in the Cauvery river basin, following the Apex Courts directive, I had also suggested that a three layer system implemented in the Mekong Basin amongst nations which had actually gone to war with each other be designed. This system, at the highest level political, at the second level coordinative and at the third level a delivery apparatus, was implemented and has worked reasonably well. These problems need constant attention. I find that this work has applications all over the World. For example that 2001 paper was used recently as a reference paper in solving a dispute between the USA and Mexico (see A.H. Pritchard and C.A. Scott, March 2014, paper's reference to it in the solution of the water dispute in the border city of Nigales Sonora). But in India problems endure I believe partly because we leave them to lawyers rather than solve them in the Mekong sense.

Regarding interlinking of rivers, I planned Sardar Sarovar, which linked the Narmada with the Mahi and Sabarmati and the rivers of Saurashtra. Gujarat has finally tendered the computerised canal systems, we planned. The pilot Project of Canal Automation, a SCADA based Remote Monitoring and Control System, has been revived and its scope has been extended to include the entire Narmada Main Canal beside the Vadodara and Skarda branch canals. But when the Ken Betwa link was to flood for paddy, soils not suitable for it as documented by its own planners I opposed it in that form.

Getting back to the basic problems of the water sector they lie in great vagueness on rights to water, responsibilities and powers of different actors and a lack of a structure for planning, and as we saw dispute resolution. In view of this when the MOWR asked me to chair a Committee to develop a Draft Framework Law for the Water Sector I accepted the daunting task. The draft (Government of India, 2013) was the National Water Framework Law of the Government of India. In an initial draft Shri Mohan Kumar, then Additional Secretary, later Special Secretary, MOWR, used a very convenient expression: 'Appropriate Government'. The Framework was meant to provide the larger structure for organizing the support mechanisms to States and communities in their governing institutions at the levels that matter, the Local Government, CBOs (Community Based Organisations), the Management of ponds, water bodies, watersheds, aquifers, and river basins. To the best of my understanding the only aspect in which the Draft Framework was prescriptive at the National level, was its requirement that a minimum amount of life giving water must be the right of every Indian. For the rest it only designed a structure to, empower in detail and support the State Governments, Local Governments and governing institutions of the water sector to play their ordained role. I am confident that once it is understood it will get a good hearing.

Action on solving water problems will be at the local, watershed, aquifer, State and river basin level. This was the guiding mantra of the Draft National Water Framework Law. But it was not allowed to remain just a Mantra. The Draft

suggested the mechanisms to give strength to the local and State, watershed and river basin levels. Chapters I, II and IV dealt with these aspects. It is these that need dissection, scrutiny and strengthening. Once these mechanisms are fully in place, as appropriate structures, the National role is largely that of support. But these support mechanisms can be critical for the Appropriate Government. Cutting edge frontier technology in water delivery and development projects has to be developed at home and accessed in the World and made available. Working best practices must be known and diffused. Development and applications of success stories will require data and information support. The framework attempts to set up the systems to aid the State Governments, local bodies and the appropriate Government in these support mechanisms.

The Framework provides for a Web Based Information System (WRIS). It will be state of art, comprehensive and user friendly. Geographic mapping systems, satellite based technologies; all aspects in which India is good but has not used for decentralized systems like water will be developed at the national level. The Andhra Pradesh Farmer Managed Information System I had highlighted in my Evaluation of the FAO in South Asia has now been introduced as a major instrument of water management in the Twelfth Plan. These kinds of systems are inter-disciplinary, farmer and user friendly and well-honed to solve problems. In the 100 distressed ground water Districts information through real time to each farmer on water levels can be a major instrument for evolving better systems. For example if you and me know how each of us is impacting exactly on the common aquifer, we can better evolve working systems. Similar examples abound of technology based solution systems in ground water, river basins, watersheds and other water bodies recognized in the Framework. The Draft has been criticised as leading to centralisation. The only point where it is so is the requirement that every Indian must have access by law to a minimum amount of water. Para 4 in Chapter III states:

'(1) Every individual has a right to a minimum quantity of potable water for essential health and hygiene and within easy reach of the household. (2) The minimum

quantity of potable water shall be prescribed by the appropriate Government after expert examination and public consultation, provided that the minimum quantity of potable water shall not be less than 25 litres per capita per day.'

In the Framework it is provided that this minimum can be provided free of cost but after meeting this pre-emptive need available water will be subjected to allocation and pricing on economic principles to avoid waste and ensure supplies. As regards demand for water, therefore policy will need to be concerned with both the basic needs of water of poor people and the need of informed directions of water systems as markets play a larger role. As we implement these the role of hybrid systems (dual pricing) which can illuminate transitional paths will be particularly rewarding.

The implications of these trends are not being realized with the urgency they deserve, since at a basic level resource constraints of a more severe kind faced by certain East Asian economies are now being approached in India. Organizations, communities, households and individuals will have to grasp this fact and live with it. The severity of the blow will take time to sink in. But time India does not have. A few years ago I had warned that we are getting close to the kind of land and water shortage East Asian societies like China, Japan and Korea have grappled with, but have built up institutions through the centuries to cope. I had argued that we need to hasten. We would we hoped harvest water and improve irrigation deliveries.

Conclusion

The year 2020 is still five years away but determined communities can do a lot. Quantum jumps must be faced. Avoiding severe water shortages, improvements in irrigation efficiency and cropping intensity will have to be much faster. Bad coal of over a billion tonnes will not be burnt if alternative energy life and management styles are implemented and hydel and nuclear plants completed, in addition to a major focus on renewables. BOD disposal to be kept in reasonable limits from slums will need a strategy of decentralised urbanisation. Modern technology will have to be

integrated with artisan and rural populations so that the benefits of national and global markets can percolate to the work force. Trade and globalisation will have to grapple with these questions. If these kinds of links cannot be established in concrete terms, the concept of an enduring future will remain an empty box. If communities are out of balance with their resource endowments, there can be no question of significant advance in the areas of global concern like carbon sequestration or biodiversity.

As India takes its place in the sun in this century as a major global entity it does so with a high rate of growth and a young restless population on the move, very little, can hold it back. But water, energy and other non-renewable resources like land will set the eventual limits of high growth. In spite of all the hiccups and the fact that in some regions we are already very stressed, I believe we have the civilizational and given our federal democracy, institutional strength to use water well. A group I chaired underlined the need to give our people a legal right to drinking water, create a legal structure for water accounting and planning beginning with local aquifers going into River Basins and integrate with agro climatic plans. The Center has the major role of preparing a Water Resources Information System for this, framework legislation for supporting the States and local bodies in state of the art project and planning techniques. It is not enough to talk of interlinking. We must start local and go up to the River Basin in a practical manner. Notice all the arguments made in this paper are based on many activities outside the sector. I am of course a planning type, but hope I have made you think a fresh on the subject.

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