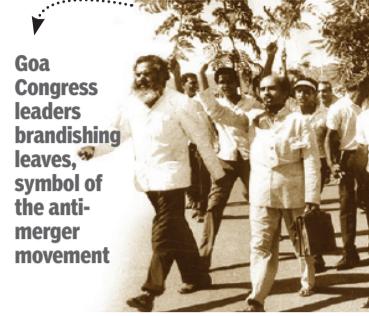


**It could have been difficult for Goans to think of a separate state if the Opinion Poll was not held.**  
— Late Chandrakant Keri, prominent author, who vehemently campaigned to make Konkani the official language



**Goa International Airport**, Dabolim, is a civilian and naval airbase. It was built in the mid-1950s by the Estado da India Portuguesa government. Goa had its own airline, the Transportes Aereos da India Portuguesa, which used the Dabolim airport as a hub till 1961. This airline connected Goa to Karachi, Mozambique and Timor

**Dabolim airport** was built by then governor general Paulo Benard Guedes at a cost of 30 million escudos, purely for urgent public utility after the economic blockade of Goa imposed by India in 1955

**Goa's comunidade system** of village administration, land ownership, usages and customs is almost 2,000 years old. It is based on the principles of ancient Hindu jurisprudence and is a living heritage of India

**The state emblem** bears the words 'Satyameva Jayate' meaning 'Truth Alone Prevails'. The symbol at the centre of the emblem depicts the Goan traditional lamp called 'Vriksha Deep', which symbolizes enlightenment through knowledge. The stylised circular design symbolises coconut leaves and the sun's rays, where the source of light and energy surrounding the halo, is suggestive of glory



# THE NEXT THIRTY YEARS

As Goa embarks on a journey to become a developed state in a developing nation, its development goals must align with paradigm shifts in science, education and industry

Raghunath A Mashelkar

**A**s we Goans proudly celebrate the 30th Statehood Day of Goa today, my mind goes back to the 26th Statehood Day—May 30, 2013.

I received Goa's highest civil honour, Gomant Vibhushan, on that day. While humbly accepting the honour, I expressed a wish that Goa should become 'a developed state in a developing nation'. This essay is about achieving this lofty dream!

I had the privilege of chairing the Goa Golden Jubilee Development Council. We submitted our Report on 'Goa 2035: Vision & Road Map' to the government, which was unanimously accepted.

In that report, we gave a seven-point agenda. First, creating 'suramya' or serene and beautiful Goa. Second, preserving our 'susanskrit' or cultured Goa. The third was about creating a 'samtulit' or balanced and sustainable Goa. The fourth was on building a 'suvidya' or a knowledge centric and enlightened Goa. The fifth was about creating a 'samrudha' or affluent Goa. The sixth was creating 'sushasit' or well governed Goa. The seventh was ensuring 'swanandhi' or happy Goa.

Five years down the line, I don't think these seven fundamentals have changed. What has changed is the world around us and, therefore, the context. Emergence of a new aspirational India, disruptive waves of digital technology, growing inequalities creating global disruptions...

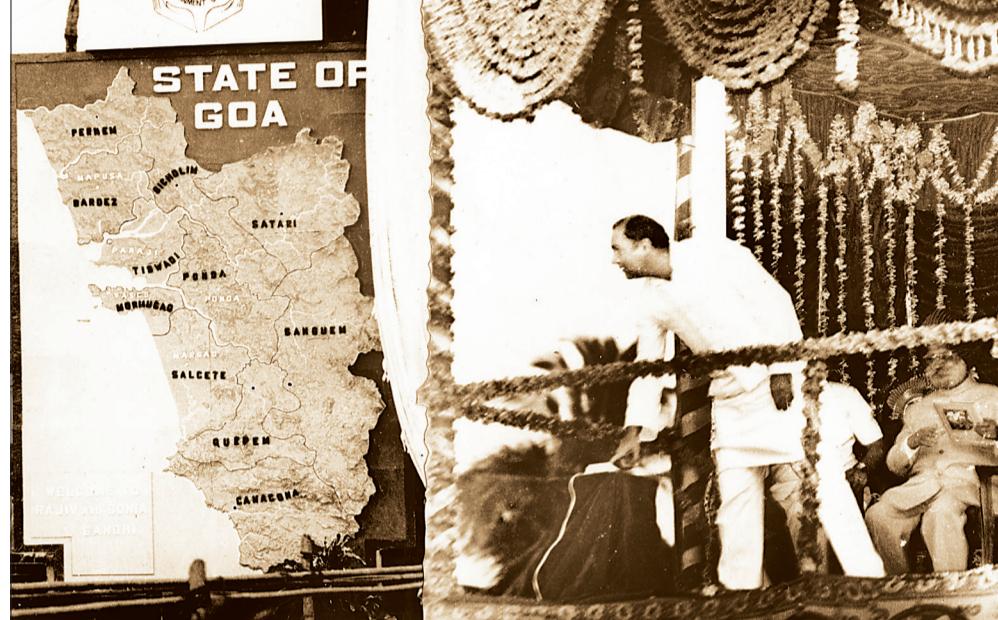
There is lot of good news for Goa. Goa's per capita income at Rs 2,71,793 is the highest in India—three times that of India. Its double-digit growth rate is higher than India's. Its human development indicators on education, health, etc., are well ahead of India.

While remaining aligned with national priorities, our benchmarks are higher than India's.

For instance, India has set up Swachh Bharat Mission. Goa wants to go even further, 'Garbage-free Goa'. And we are on our way.

Take the integrated solid waste management system introduced in Panaji by the corporation. It not only achieved 100% segregation but also a landfill-free and bin-free city. I was the chairman of the national committee for selecting Earthcare Awards 2016. Panaji won the award in the category of Leadership in Urban Climate Action for this Gaon achievement.

I am now the chairman of the recently constituted technology expert committee of ministry of urban development for dealing with the national challenge of



Photos: Raitilak Naik, Goa archives

**A NEW FUTURE:** Then Prime Minister Rajiv Gandhi inaugurating Goa as a new state at a rally on Campal Grounds, Panaji

solid and liquid waste management. In our last meeting, the discussion was on how such Goa-like models can be replicated everywhere in India.

In every endeavour, we can set up audacious goals and achieve them. What about 100% digital Goa, cashless Goa, paperless Goa, bureaucracy-free Goa, corruption-free Goa, beggar-free Goa, green growth Goa, indeed, carbon neutral Goa?

Goa cannot become a developed state unless its development goals are aligned with the paradigm shifts in science, education and industry, namely, Science 2.0, Education 3.0 and Industry 4.0.

Let's just consider Education 3.0. Ed-

**BY INVITATION**

ing 1.0 comprised gurukuls of India. Education 2.0 was broadcast plus assembly line model with mass enrolment, one to many information dissemination, a focus on rote learning and with one method to teach all. Now comes the revolution of Education 3.0. It is triggered by the prowess of distributed computing, big data infrastructure, machine learning and applied artificial intelligence. Information memorisation and brute force recall will become redundant. Problem solving, curiosity and innovation will be the key.

Goa, as is the case with India, is in the Education 2.0 mode. Can Goa pole-vault to Education 3.0 by a determined shifting to multi-format practice and simulation, personalisation and adaptive learning, and data driven continuous assessments.

Let's look at Industry 4.0. Industry 1.0 was driven by mechanisa-

tion and steam power. Industry 2.0 was driven by electricity, mass production and assembly line. Industry 3.0 was driven by computers and automation. Industry 4.0 will be driven by cyber physical systems.

Goa is in Industry 2.0/3.0 mode.

Can Goa jump to Industry 4.0?

Goa's economy is based more on services and less on manufacturing and agriculture. But we can make a steep jump in all these three by bold thinking and decisive action.

Take for example tourism. We must diversify from the 'sun, sea and sand' type of tourism. Should we not expand into ecotourism, hinterland tourism, heritage tourism, health tourism?

We have to aim for job-led growth. But there has to be a shift in the mindset of young Goans—namely from job seekers to job creators through entrepreneurship. That's where we have to create a vision of 'Start-up Goa'.

India has already become the third fastest growing startup nation. Goa should have the aspiration to lead.

How? By first creating an aspiration amongst the Goan youth. Setting up incubators, accelerators. Linking them up with mentors. Connecting them with investors, both in India and abroad. Raising the bar on innovation driven startups.

I just read an IBM Institute-Oxford study that shows that 90% of current startups in India are liable to fail due to lack of innovation. Goa can set for itself an ambitious target of 90% success, by emphasising on

great innovation. Goa must scan the horizon for seizing new opportunities. The world has moved from agricultural economy to manufacturing economy to knowledge economy to creative economy. They say Big Data is new oil. Information is new currency. Artificial Intelligence (AI) is new electricity. Let's seize the 'exponential' opportunities that are opening up in all these new economies.

Finally, we must preserve the 'essence' of Goa at any cost. Our harmoniously balanced polycentric spatial spread is our strength. Our unique social, cultural and ecological values are our strength.

The world is becoming a digitally disrupted VUCA world—meaning volatile, uncertain, complex and ambiguous. In sharp contrast, Goa must become a non-VUCA state—meaning a calm, certain, simple and clear state. On a lighter side, I can't help observing that our present CM has precisely these qualities!

In keeping with my well known reputation as a 'dangerous optimist', looking ahead-beyond thirty years in the TEAM Goa spirit, we should all work to make Goa a 'developed state within a developing country' and that too sooner rather than later.

(Raghunath A

Mashelkar is a national research professor and chair-

man of the Goa Golden Ju-

bilee Development Council

that submitted the report:

Goa 2035: Vision &

Road Map)

ment, and steam power. Industry 2.0 was driven by electricity, mass production and assembly line. Industry 3.0 was driven by computers and automation. Industry 4.0 will be driven by cyber physical systems.

Goa is in Industry 2.0/3.0 mode.

Can Goa jump to Industry 4.0?

Goa's economy is based more on services and less on manufacturing and agriculture. But we can make a steep jump in all these three by bold thinking and decisive action.

Take for example tourism. We must diversify from the 'sun, sea and sand' type of tourism. Should we not expand into ecotourism, hinterland tourism, heritage tourism, health tourism?

We have to aim for job-led growth. But there has to be a shift in the mindset of young Goans—namely from job seekers to job creators through entrepreneurship. That's where we have to create a vision of 'Start-up Goa'.

India has already become the third fastest growing startup nation. Goa should have the aspiration to lead.

How? By first creating an aspiration amongst the Goan youth. Setting up incubators, accelerators. Linking them up with mentors. Connecting them with investors, both in India and abroad. Raising the bar on innovation driven startups.

I just read an IBM Institute-

Oxford study that shows that

90% of current startups in

India are liable to fail due to lack

of innovation. Goa can set for

itself an ambitious target of

90% success, by emphasising on

great innovation. Goa must scan the horizon for seizing new opportunities. The world has moved from agricultural economy to manufacturing economy to knowledge economy to creative economy. They say Big Data is new oil. Information is new currency. Artificial Intelligence (AI) is new electricity. Let's seize the 'exponential' opportunities that are opening up in all these new economies.

Finally, we must preserve the 'essence' of Goa at any cost. Our harmoniously balanced polycentric spatial spread is our strength. Our unique social, cultural and ecological values are our strength.

The world is becoming a digitally disrupted VUCA world—meaning volatile, uncertain, complex and ambiguous. In sharp contrast, Goa must become a non-VUCA state—meaning a calm, certain, simple and clear state. On a lighter side, I can't help observing that our present CM has precisely these qualities!

In keeping with my well known reputation as a 'dangerous optimist', looking ahead-beyond thirty years in the TEAM Goa spirit, we should all work to make Goa a 'developed state within a developing country' and that too sooner rather than later.

(Raghunath A

Mashelkar is a national research professor and chair-

man of the Goa Golden Ju-

bilee Development Council

that submitted the report:

Goa 2035: Vision &

Road Map)

ment, and steam power. Industry 2.0 was driven by electricity, mass production and assembly line. Industry 3.0 was driven by computers and automation. Industry 4.0 will be driven by cyber physical systems.

Goa is in Industry 2.0/3.0 mode.

Can Goa jump to Industry 4.0?

Goa's economy is based more on services and less on manufacturing and agriculture. But we can make a steep jump in all these three by bold thinking and decisive action.

Take for example tourism. We must diversify from the 'sun, sea and sand' type of tourism. Should we not expand into ecotourism, hinterland tourism, heritage tourism, health tourism?

We have to aim for job-led growth. But there has to be a shift in the mindset of young Goans—namely from job seekers to job creators through entrepreneurship. That's where we have to create a vision of 'Start-up Goa'.

India has already become the third fastest growing startup nation. Goa should have the aspiration to lead.

How? By first creating an aspiration amongst the Goan youth. Setting up incubators, accelerators. Linking them up with mentors. Connecting them with investors, both in India and abroad. Raising the bar on innovation driven startups.

I just read an IBM Institute-

Oxford study that shows that

90% of current startups in

India are liable to fail due to lack

of innovation. Goa can set for

itself an ambitious target of

90% success, by emphasising on

great innovation. Goa must scan the horizon for seizing new opportunities. The world has moved from agricultural economy to manufacturing economy to knowledge economy to creative economy. They say Big Data is new oil. Information is new currency. Artificial Intelligence (AI) is new electricity. Let's seize the 'exponential' opportunities that are opening up in all these new economies.

Finally, we must preserve the 'essence' of Goa at any cost. Our harmoniously balanced polycentric spatial spread is our strength. Our unique social, cultural and ecological values are our strength.

The world is becoming a digitally disrupted VUCA world—meaning volatile, uncertain, complex and ambiguous. In sharp contrast, Goa must become a non-VUCA state—meaning a calm, certain, simple and clear state. On a lighter side, I can't help observing that our present CM has precisely these qualities!

In keeping with my well known reputation as a 'dangerous optimist', looking ahead-beyond thirty years in the TEAM Goa spirit, we should all work to make Goa a 'developed state within a developing country' and that too sooner rather than later.

(Raghunath A

Mashelkar is a national research professor and chair-

man of the Goa Golden Ju-

bilee Development Council

that submitted the report:

Goa 2035: Vision &

Road Map)

ment, and steam power. Industry 2.0 was driven by electricity, mass production and assembly line. Industry 3.0 was driven by computers and automation. Industry 4.0 will be driven by cyber physical systems.

Goa is in Industry 2.0/3.0 mode.

Can Goa jump to Industry 4.0?

Goa's economy is based more on services and less on manufacturing and agriculture. But we can make a steep jump in all these three by bold thinking and decisive action.

Take for example tourism. We must diversify from the 'sun, sea and sand' type of tourism. Should we not expand into ecotourism, hinterland tourism, heritage tourism, health tourism?

We have to aim for job-led growth. But there has to be a shift in the mindset of young Goans—namely from job seekers to job creators through entrepreneurship. That's where we have to create a vision of 'Start-up Goa'.

India has already become the third fastest growing startup nation. Goa should have the aspiration to lead.

How? By first creating an aspiration amongst the Goan youth. Setting up incubators, accelerators. Linking them up with mentors. Connecting them with investors, both in India and abroad. Raising the bar on innovation driven startups.

I just read an IBM Institute-

Oxford study that shows that

90% of current startups in

India are liable to fail due to lack

of innovation. Goa can set for

itself an ambitious target of

90% success, by emphasising on

great innovation. Goa must scan the horizon for seizing new opportunities. The world has moved from agricultural economy to manufacturing economy to knowledge economy to creative economy. They say Big Data is new oil. Information is new currency. Artificial Intelligence (AI) is new electricity. Let's seize the 'exponential' opportunities that are opening up in all these new economies.

Finally, we must preserve the 'essence' of Goa at any cost. Our harmoniously balanced polycentric spatial spread is our strength. Our unique social, cultural and ecological values are our strength.

The world is becoming a digitally disrupted VUCA