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Sustainable Economic Development in a Population Powerhouse

India

A population powerhouse with continuing rapid economic growth, India is gaining global recognition as a leading BRICs country. Because it is one of the world's largest agricultural countries and the single largest market for tractors, Kubota has been working hard to develop the type of tractors that match user needs in India. In 2015, Kubota succeeded with the introduction of the MU5501, a new type of multi-purpose tractor, as a part of its full-scale entry into this market. The MU5501 multi-purpose tractor was developed through the implementation of a thorough market-in approach to effectively meet user needs in a market where tractors are employed mainly in upland farming. The MU5501 is set to play an extremely important role in Kubota's future. Tackling the massive Indian market and establishing a presence means contributing to the sustainable economic development of this population powerhouse, including the agricultural sector, which will lead directly to the achievement of a priority Kubota goal - the provision of solutions to global food problems. Kubota's future dreams are riding on the new multi-purpose MU5501.

▲ A multi-purpose tractor being used for sugar cane transport. Power that surpasses its competitors is just one of many reasons for the MU5501's increasing popularity (in Pune, India).

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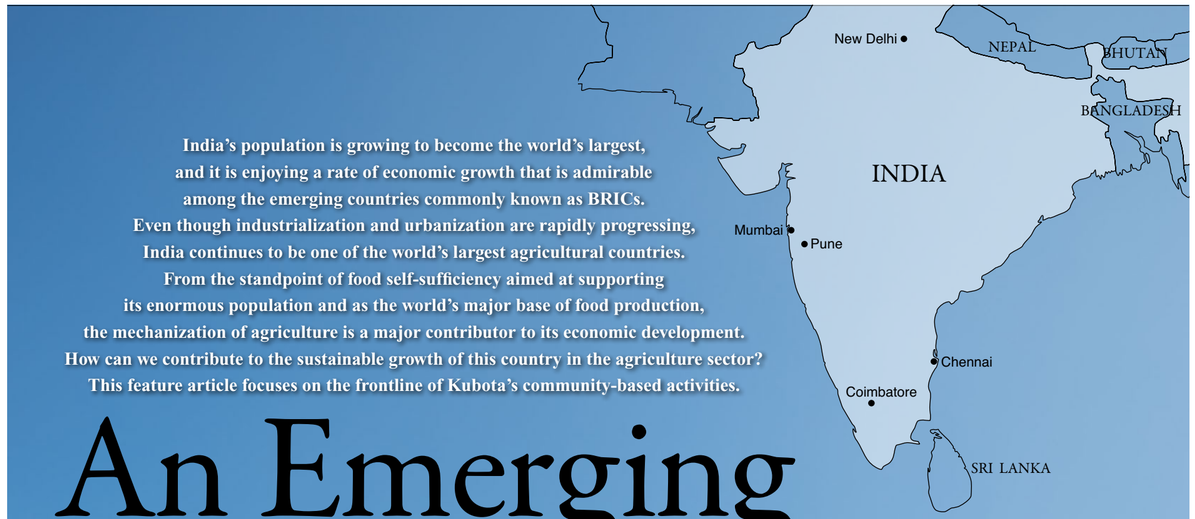
Oil & Petrochemical Business Dept. Takumi Sato
Farm Machinery Implements and Products Engineering Dept. Yasuko Washio
Materials Sales Dept. Goshi Nakao

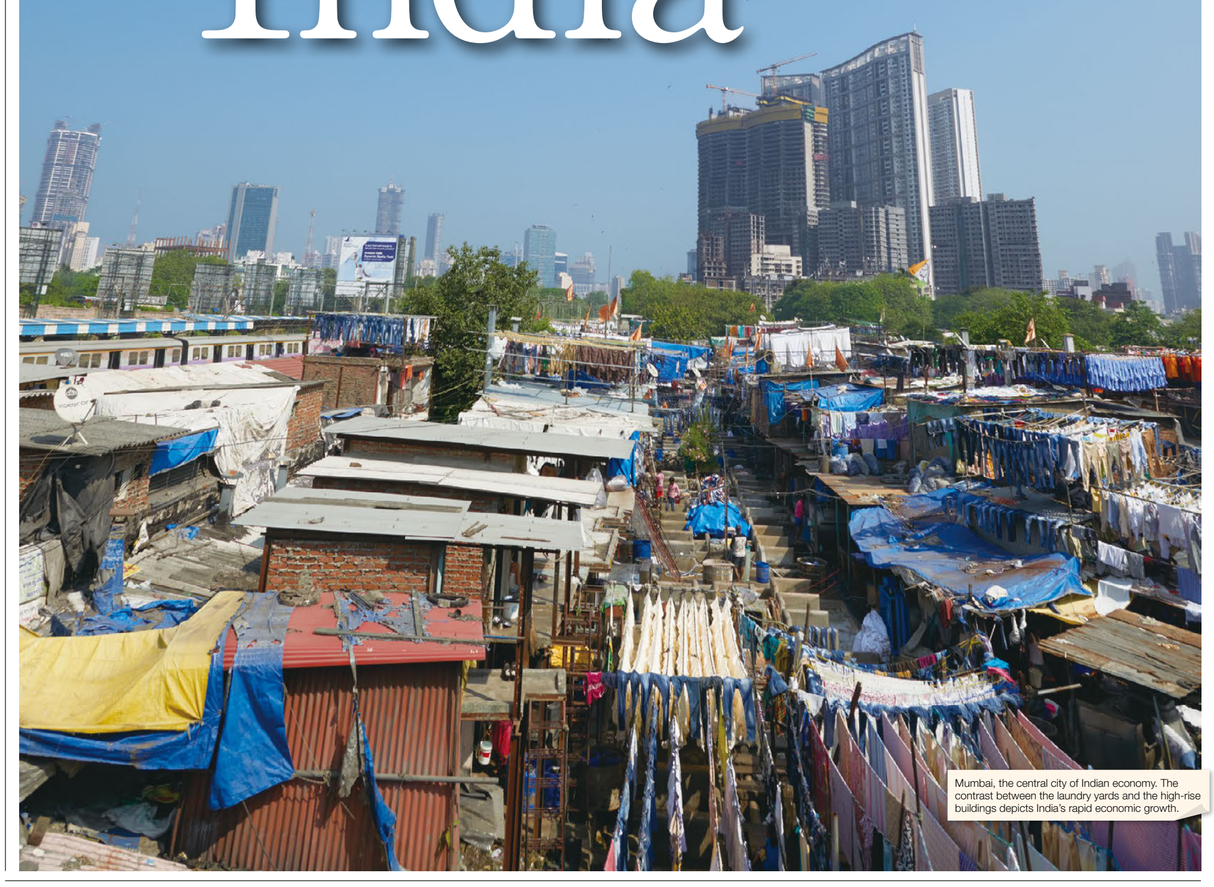



FEATURE "Republic of India"



India's population is growing to become the world's largest, and it is enjoying a rate of economic growth that is admirable among the emerging countries commonly known as BRICs. Even though industrialization and urbanization are rapidly progressing, India continues to be one of the world's largest agricultural countries. From the standpoint of food self-sufficiency aimed at supporting its enormous population and as the world's major base of food production, the mechanization of agriculture is a major contributor to its economic development. How can we contribute to the sustainable growth of this country in the agriculture sector? This feature article focuses on the frontline of Kubota's community-based activities.

An Emerging Global Power India



Mumbai, the central city of Indian economy. The contrast between the laundry yards and the high-rise buildings depicts India's rapid economic growth.

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India: Achieving significant economic development One of world's largest agricultural countries and a major food production base

India's long history dates back to the Indus civilization. Gaining independence from Britain in 1947, the country has now grown into a major nation with the largest land area in South Asia and the second largest population in the world. In line with the economic liberalization policy that has been in place since the 1990s, India has implemented economic measures centered on deregulation and aggressive utilization of foreign currency. As a result, India has achieved a significant economic growth. The Modi administration, which came to power in 2014, implemented policies with an emphasis on the economy, represented by the slogan, "Make in India." Now, the country is attracting the world's attention as a new production hub (node). India's rate of economic growth for 2015 was 7.6%, as it maintains a rate that is high even among the economically emerging countries known as BRICs (Brazil, Russia, India, and China).

India's population currently tops 1.21 billion and continues to increase with a growth rate of 17.68% over the last 10 years (*1). Promoting a "green revolution" that includes plant breeding, effective irrigation facility maintenance and the safe use of agricultural chemicals, India has become a self-sufficient country despite having such a large population. In 2013, the self-sufficiency rate of crops (cereals) reached 111% (*2). India's approximately 180 million ha of agricultural land accounts for roughly 55% of the total nation's land area, and agriculture workers account for roughly 50% of the total population (*3). India ranks No.1 in the world in crop acreage of rice, wheat and sugar cane, the country's major crops (No.2 in the world in production volume of each crop) (*4). In addition to being one of the world's agricultural giants, India is also a major food production base with the No.1 spot in rice exports in 2012 (*5).

*1 Website of the Ministry of Foreign Affairs
*2 Estimate by the United Nations Food and Agriculture Organization (FAO)
*3 Ministry of Agriculture and Fisheries official website
*4 FAO statistics
*5 United States Department of Agriculture (USDA) Supply and Demand Statistics

Forecasted to become the largest population giant by 2028 Stable and sustainable food production is the challenge

Although India is achieving remarkable development as a leading BRICs country, its agricultural sector continues to face many challenges. It is forecasted that nation's population will reach 1.5 billion by 2028, and that it will overtake China to become the world's largest (*6). Although India currently enjoys food self-sufficiency, it is unclear whether the nation can sustain itself in the future. India's food production efficiency is not high, as is evident from the fact that India is No.2 in the world in crop production despite having the world's largest crop acreage. Underlying factors include the fact that although irrigation systems have been developed by the "Green Revolution," an estimated 63% of cultivated area is unconnected to an irrigation system (*7), the fact that many farmers still depend on human power because of cheap cost of labor, and; the fact that the agriculture industry throughout the country retains an outdated farming system.

Another concern is that along with the advance of economic development, the ratio of farmers is decreasing while the number of people employed in the industrial and construction industries is increasing. Can the world's largest population powerhouse sustain stable food production? The challenge facing Indian agriculture is also connected to the question of whether or not it can sustainably continue to play its role as the world's food production base. In addition to this, although India has achieved food self-sufficiency, the number of undernourished individuals is close to 200 million (*8), and poverty remains a major issue. As the country's population continues to increase, improving the efficiency of food production and yield through the mechanization and advancement of agriculture is an urgent task. Further, the fostering of industries and the expansion of employment are also urgently required to support sustainable economic growth in the future.

*6 Estimate by the United Nations Population Division
*7 CNN News, USA
*8 "The State of Food Insecurity in the World 2015," jointly published by FAO, International Agricultural Development Fund (IFAD) and United Nations World Food Program (WFP).

Rice is an important foodstuff that supports India, the population powerhouse.

India is synonymous with spices. A wide variety of spices displayed at a storefront.

India is the world's largest tractor market Kubota's challenge began in 2008

Tractor use in Indian agriculture has a long history, with full-scale adoption beginning in the 1960's, about the same time it did in Japan. In a global tractor market estimated to be around 2 million units, India is the largest market with roughly 600,000 units, or roughly 30% of the global market (*9). Of these 600,000 units, 99% is manufactured in India, and tractors made by Indian manufacturers account for roughly 70% of the market. In 2008, Kubota entered this massive tractor market with the opening of Kubota Agricultural Machinery India Pvt. Ltd. (hereinafter "KAI") in Chennai, southern India.

"India is a base for tractor export to Europe, North America and emerging markets. As our competitors are producing and exporting low-price tractors by taking advantage of cheap labor and parts, production in India is essential to ensuring that Kubota can leverage its experience and know-how as a major brand to provide solutions to the food problems facing India and the world. With the initial aim of establishing our presence and achieving strong sales performance in India, the world's largest tractor market, we plan to develop an environment for local production in the future." (Ryo Tsujiyama, General Manager, Tractor and Utility Machinery Sales Dept.)

In other words, KAI was established with a view to local production in the future and providing solutions to the agricultural problems facing India. This was the beginning of Kubota's struggle to survive and thrive in the Indian market. It was also a new challenge that would lead to the development and introduction of the MU5501 multi-purpose tractor.

*9 Kubota's estimate for 2015

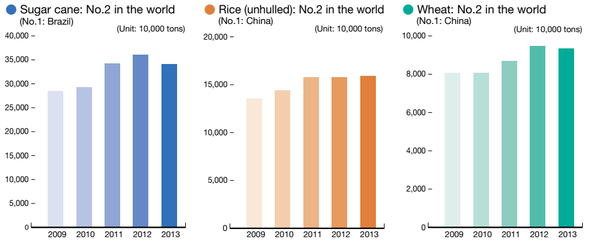
Ryo Tsujiyama
General Manager
Tractor and Utility Machinery Sales Dept.

India (Source: from the website of the Ministry of Foreign Affairs)

Land area	3,287,469 km^2 (Indian government data; includes disputed areas with Pakistan and China) (Census 2011)
Population	1,210.57 million (Census 2011) Population growth rate: 17.68% (over 10 years: Census 2011)
Religion	Hindus: 79.8%, Muslims: 14.2%, Christians: 2.3%, Sikhs: 1.7%, Buddhists: 0.7%, Jainists: 0.4% (Census 2011)
Major industries	Agriculture, industry, mining, IT industry
Nominal GDP	US $ 2,074 billion (World Bank data 2015)
GDP per capita	US $ 1,581 (World Bank data 2015)
GDP growth rate	7.6% (Indian government data 2015)

Production of major agricultural products in India

(from the Ministry of Agriculture, Forestry and Fisheries official website / Source: FAO statistics)



Urbanization and traffic congestion are accelerating with economic development (Delhi)

Women clad in colorful sari are frequently seen on the streets (Delhi)

FEATURE "Republic of India"

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Kubota's Local Community-Based Strategy: The Multi-Purpose Tractor

The multi-purpose tractor has achieved overwhelming fuel economy and high efficiency.

Applications of the multi-purpose tractor is quite diverse (top: towing a rice stem harvester, bottom: also used as power source for combines).

Major project starts up: Introducing a new type of tractor to the Indian market

Kubota entered the Indian market in 2008, rather late for a leading Japanese agricultural equipment manufacturer with strong footholds in the global markets stretching from Europe to North America and Asia. The reason for the delay in Kubota's entry to the Indian market was the desire to wait until it had tractors that were adaptable not only to rice cultivation but also to various upland farming applications. The advantages that Kubota's small, light and compact tractors provided to rice farming were not as well suited to the needs of the Indian market, so the company turned its attention to developing a tractor that would conform to Indian specifications. In fact, by the time KAI was established, Kubota had already started working on the conceptual design of the new, MU5501 multi-purpose tractor. With the goal of introducing an entirely new tractor to the market instead of merely competing with existing products, this major project was both challenging and groundbreaking.

A B-series tractor being used for control work in a vineyard. The high evaluation of this tractor led to the development of the Indian market.

Small tractors create a new market Kubota brand starts to penetrate

KAI's initial priority before launching the MU5501 was to increase Kubota brand recognition across the Indian market. KAI headed to India's southern regions to introduce the medium-sized L series, a major player in the Kubota product lineup, and then brought the smaller B-series to the fruit market in the western regions. Although the work efficiency of the lightweight 4WD tractors in the L-series was highly praised in the wet paddy regions, the series fell short of satisfying user need for multiple applications such as upland fieldwork and trailer towing, which account for the majority of use in India. As a result, L-series tractor sales were limited.

On the other hand, the small, high-power B-series tractors were highly valued in cultivation management for sugar cane and cotton, and especially prized in grape control work as its features enabled uniform and highly efficient insecticide spraying. These advantages contributed directly to improved crop quality and increased exports, which led to increased profits and helped the B-series succeed in creating a new market as it became a pillar of the agricultural equipment business in India. This new business model had an impact on the market and other manufacturers soon followed. The success of the B-series provided a solid foundation for the introduction of the new MU5501, and became the driving force behind Kubota's slow, but steady penetration into this important market. Kubota's dealer network, vital to sales, was also expanded, as the environment for introducing the new tractor was steadily developed.

Market research with a market-in approach Development concept: Durability, operability and fuel efficiency

In 2012, Kubota launched a development project for the new tractor, including full-scale research on and analysis of the Indian market. Kubota has always excelled in clearly grasping user needs and reflecting them to product development, and this approach was emphasized even more for the Indian market. Kubota adopted a market-based, or "market-in" approach. One of the people in charge of marketing was Shintaro Seshimoto of the Tractor and Utility Machinery Sales Department.

"Our mission was to thoroughly listen to the target users, the farmers themselves, and to identify the specific kind of tractors that they were looking for. We made it a point to clear the slate of past examples and apply a multifactorial approach to analyze the needs of the Indian farmers. I think we interviewed more than 200 individuals."

The market-in approach showed the team that the user needs for tractors in India were completely different from those in the rice growing markets where Kubota had been successful. One significant difference is that people in India make full use of tractors all year round for daily transportation, cargo and light civil engineering work. Their tractors also get quite a workout. It's not uncommon to see a tractor with its front wheels off the ground towing an overloaded trailer; and tractors are commonly used as a power source for the harvesting and driving functions of combines, a use that is unique to India. The team found that high traction was an essential element for Indian users. It also became clear that fuel economy was a major concern because tractors are used in all aspects of daily life; and this in turn made high operability to reduce fatigue an important concern. As these findings were accumulated, the concept of the new tractor gradually began to take shape.

Shintaro Seshimoto
Tractor and Utility Machinery Sales Dept.

"Based on the results yielded by the market research, the concept of the new model was a tractor that would surpass the fuel efficiency, durability, and operability of tractors made in India, deliver the same traction, and not exceed the standard weight or vehicle classification." (Seshimoto)

Kubota has wonderful opportunities to strengthen the identity of its tractors in unchartered territory

Yoshiaki Fujii
Director, Coordinator Sales Management & Planning
Sales Management & Planning Division
Kubota Agricultural Machinery India Pvt. Ltd.

At the same time, Yoshiaki Fujii, the current Director of Sales Management & Planning at KAI, was analyzing the Indian market from Japan.

"Kubota has strong brand value in Europe, North America and Southeast Asia, but nobody knew the brand here in India. Furthermore, India is a vast federal republic of 29 states, each with its own language, culture and customs. Complicating matters was the fact that our small, light and compact tractors were not quite suited to farmer needs here. The most valued feature in India was traction power, which requires a heavier rather than lighter body weight. Kubota found itself facing a difficult challenge in uncharted territory."

To highlight the new 55-horsepower model's versatility in meeting user needs in India's high-end class market, it was named the "Multipurpose Tractor" and assigned the product code "MU5501." This venture into unchartered territory, as Fujii put it, then advanced to specific development phases in the hands of Kubota engineers. However, a tough hurdle was awaiting them just ahead, and overcoming that hurdle to bring the project to fruition required the full effort and determination of the engineering department.

A multi-purpose tractor being used in ground leveling work in a sugar cane field.

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Challenges Overcome by the MU5501: Bringing Greater Possibilities to Indian Agriculture

Takashi Onishi
Engine Engineering Dept.

Kentaro Nagai
Engine Engineering Dept.

The biggest distinction: A superior engine that delivers both power and fuel efficiency

The engine was regarded as the feature that set the MU5501 multi-purpose tractor apart from the rest of the pack. The goal was to achieve high efficiency, which meant improved fuel efficiency, and output power that could deliver high traction. The technical team was tasked with achieving both of these two important goals. The responsibility for this was assumed by the Engine Engineering Department's Takashi Onishi and Kentaro Nagai.

"To keep price down while ensuring high levels of performance and serviceability, we opted for the existing mechanical control system instead adopting the fully electronic-controlled common-rail injection system that is standard in Europe and North America. The challenge was to achieve compliance with Indian emissions regulations while matching the level of fuel efficiency delivered by the common-rail system with mechanical control. To meet this challenge we deployed the concept of "high-combustion efficiency" by developing a high-pressure fuel injection system, a system that had until then never been accomplished with a mechanical system, and enhancing the turbocharger system. (Onishi)

Nagai was in charge of the actual engine design, and development progressed rapidly with the employment of 3D printers significantly reducing prototyping periods. He explains in detail how the team overcame the difficult challenge of complying with exhaust regulations while achieving high fuel efficiency and power output.

"It was a process of trial and error. We succeeded in dramatically improving combustion efficiency by adopting a four-valve cylinder head with two intake and exhaust valves per cylinder for more efficient and uniform air intake, and opting for center injection. On the other hand, we slowed the combustion rate and reduced exhaust components by recirculating the exhaust gas into the intake air. We cut exhaust while achieving higher output power and fuel efficiency by optimizing the match between supercharging, high-pressure injection and the combustion chamber." (Nagai)

Thus, the new "E-CDIS (Center Direct Injection System)" engine achieved fuel efficiency far ahead of the engines being offered by our competitors.

Achieving high durability and operability through optimum customization for the Indian market

Meanwhile, the mechanical team was tasked with achieving durability and operability capable of withstanding long hours of use. The Tractor Engineering Department's Norifumi Adachi and Tatsuyuki Kashimoto were assigned this challenge. In order to accommodate the different types of soil and farming in each state, long-duration tests using prototype tractors were conducted in India. Based on measurement data, the team adopted durable axles that would improve the strength of the tractor; and thorough customization for the Indian market realized high operability with special attention given to details such as the optimization of pedal structure and the positioning of the operation lever to reduce fatigue.

"I travelled to India many times to get a handle on what was really needed. This tractor was realized through the market-in concept. The experience helped me to truly comprehend the importance of getting the feel of user needs." (Adachi)

"Adapting to the Indian market was difficult, but we were rewarded for all the effort we put into the project with the smiles of Indian farmers. I felt a great sense of fulfillment." (Kashimoto)

This is how the dream of the MU5501 multi-purpose tractor became a reality. Mass production began at SIAM KUBOTA Corporation Co., Ltd. (SKC) in Thailand in October 2015, and sales began in November of the same year.

Norifumi Adachi
Tractor Engineering Dept.

Tatsuyuki Kashimoto
Tractor Engineering Dept.

Expanding dealer networks to expand sales Kubota's culture of valuing customers

Now that a year has passed since the MU5501 was launched, Kubota is working to move sales toward an expanding trend with KAI Product Manager Pankaj Kadam working alongside Sales Management & Planning Director Yoshiaki Fujii on the frontline to implement marketing strategy. Kadam joined KAI because he was impressed by Kubota's philosophy of embracing challenge.

"Our dealers and their sales staff hold the key to expanding sales. We currently have a network of 150 dealers, and we are looking to double that number in the near future. We also have training programs designed to further enhance the quality of sales staff. Kubota has a deep-rooted culture of valuing customers, which I believe is a great weapon in promoting sales."

We also interviewed Mr. Ajay Bhosale, President of Surya Automotive, a leading dealer. The company had been selling products made by other companies but made the decision to switch to Kubota.

Mr. Pankaj Kadam (far left), KAI Product Manager, is busy explaining the MU5501.

The Surya Automotive storefront (Pune)

Prompt maintenance is another Kubota strong point.

Ajay Bhosale
Surya Automotive

"I knew that it would be a challenge that came with some risks, but I decided to invest in the future potential of Kubota because of the clear superiority of their products. This is only the first season, but I am looking forward to the further expansion of Kubota product line-up and local production in India in the near future."

That expansion has already begun. Following on the heels of the 55-horsepower MU5501, Kubota is preparing to introduce a new 45-hp model, the power range that enjoys the highest demand.

Visiting a local sugar cane farmer Experiencing Kubota's high quality and superior performance firsthand

We interviewed a sugarcane farmer in Satara, Maharashtra, who had purchased an MU5501. Mr. Sandeep Yadov already owned a B-series tractor, so the multi-purpose tractor was his second Kubota product. "Kubota's superiority was immediately clear with the B-series tractor's great engine fuel efficiency and economic low maintenance; and I am completely satisfied with the comfort of operation and high engine performance that the MU5501 offers."

Mr. Hammant Thorat, who also cultivates sugar cane, had been using domestic tractors and hadn't been familiar with Kubota. "A few acquaintances of mine mentioned the company, so I thought I would take a look. After a test drive, I was convinced Kubota offered performance that other companies simply couldn't match and decided then and there to buy one. I was especially impressed with its traction and output power, and the stylish design added to its appeal. With the power the MU5501 delivers, we have been able to improve transport efficiency and reduce costs."

Expansion of MU5501 sales contributing to India's economic development

The popularity of the MU5501 has been spreading among Indian farmers. KAI Managing Director Akira Kato talks about the significance of this and his aspirations.

"In the future, we would like to make India the sixth core market following Japan, Europe, the United States, Thailand and China. The success of the multi-purpose tractor is our key to making the leap to becoming a major global brand; and we are convinced that the expansion of MU5501 sales will improve Indian agriculture by increasing productivity and profitability, and eventually contribute to the economic development of India and solutions to food issues. Local KAI employees and Kubota dealers are confident of the future as we advance together towards a common dream. My role is to help them realize that dream."

The "dream" that Kato speaks of is the future success of the MU5501. A new era for Kubota has begun with the introduction of this multi-purpose tractor to the agricultural industry.

Akira Kato
Managing Director
Kubota Agricultural Machinery India Pvt. Ltd.

Many farmers still use cattle for transport.

The MU5501 is a member of the family (with Mr. Yadov's family)

Mr. Yadov's children warmly welcomed the interview team.

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Make in India

Building a community-based supply chain

KAI Pune Factory

Final assembly and inspection are carried out at the Pune Factory.

Communication with local staff leads to high quality.

The multi-purpose tractor: 67% of parts are sourced in India

A new production scheme was employed for the MU5501, one that differed from the conventional standard. Under the new scheme, parts are sourced in India, components are mass-produced in Thailand, and final assembly takes place in a new KAI factory built in Pune, India.

Kubota's Procurement HQ New Delhi Office (KIO) was established in 2006, earlier than KAI, Kubota's sales base in India. KIO's main mission is to gather and analyze information relating to the local sourcing of parts. One of the key factors in improving productivity and maintaining competitiveness is the local sourcing of raw materials and parts, and the localization of production facilities. Kubota has been building a global supply chain since the early stage. In 2006, it promoted expansion of the supply chain by establishing local sourcing information offices in Thailand and China and in Delhi, India. Currently, 37 local parts manufacturers worldwide supply parts to Kubota's global bases. In the case of the MU5501, although the tractor was manufactured in Thailand, 67% of the parts were sourced in India, an approach that contributed to the early startup of production. General Manager Junya Ueda has been in charge of KIO since 2012. Prior to being posted in India, Ueda had been engaged in parts sourcing in North America.

"The most important aspect of dealing with local companies is building solid relationships by working closely with the local community. When you open your heart, your counterparts will open theirs. I believe that my mission is to increase the number of associates through this type of communication. India is a manufacturing nation whose total volume ranks as one of the highest in the world. A major role of Kubota's Procurement HQ is not only to source parts but also to support India in raising the level of manufacturing to the level of Kubota quality."

Junya Ueda
General Manager
New Delhi Office, Procurement HQ

A noteworthy initiative in the Kubota Group for improving the quality and production management capabilities of suppliers, developing human resources and contributing to local communities is the "Global Improvement Community," which opens annually in Japan with suppliers from around the world. Roughly 200 companies joined the community this year. Each participant gives a presentation on efforts made to address problems, such as improvement of quality and productivity, in a competitive format. Traditionally, Kubota's basic stance in dealing with suppliers had been to provide guidance for improvement, but the Global Improvement Community aims to encourage independence. One of the suppliers that has joined the Global Improvement Community is Raunaq Automotive Components Ltd., which has its head office near New Delhi.

Indian supplier talks about Kubota's overall efforts to improve quality

Raunaq Automotive Components Ltd. has been supplying parts to the Kubota Group since the opening of its Delhi Office in 2006. With guidance from Kubota's Procurement HQ, the company's quality and production control improved dramatically. The company now supplies gear parts to Kubota Group factories in Japan and Thailand. It also became the first company to deliver mass-produced Indian-made gears to Japan. Raunaq Automotive Components Ltd. President Gursharan Singh looks back on those days.

"I was surprised because Kubota's approach to manufacturing from the material level and ensuring quality control was new to India. Kubota guided us to the achievement of quality levels that are standard in Japan. I feel that Kubota has raised us up."

The fact that Raunaq Automotive Components was supplying parts to a global brand quickly became known to other manufacturers. Backed by the credibility of dealing with Kubota, Raunaq Automotive Components started dealing with major European and American car manufacturers, and the company is growing rapidly. Today, roughly 50% of its sales is generated through export. Mr. Singh is expecting Kubota to establish a local production system in India as soon as possible. The supply chain for parts sourcing is already almost completed, and preparations for local production are progressing.

Mr. Singh highlighted sourcing together with Kubota at the "Kubota Global Sourcing Meeting." (At the India Engineering Sourcing Show 2014)

India is becoming a global manufacturing hub: Putting "Make in India" into full-scale practice

Currently, India is implementing an economic policy called "Make in India," which literally means "manufacturing in India." This policy aims to maintain a high rate of economic growth and create jobs in India by promoting both domestic and foreign investment and developing India into an attractive global manufacturing hub (node). The launch of the MU5501 with part sourcing in India is the first step in practicing Make in India, and the foundation for full-scale implementation in the near future.

"The importance of local production for local consumption has been pointed out in many manufacturing industries. Once the production system in India is established, The Kubota Group will be able to source most parts locally. The Kubota Group believe that such a posture will lead to community and social contributions, and will make the significance of Kubota's presence in India even clearer." (Ueda)

The robust supply chain that Kubota has built in India over the last ten or so years will undoubtedly provide a firm foundation for Kubota's future marketing strategies in India.

Gursharan Singh
Chairman & Managing Director
Raunaq Automotive Components Ltd.

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Contributing to Development of Indian Industries through Engine Supply

A sweeping machine made by Roots Multiclean, Ltd., which is powered by a Kubota engine.

Growing demand for engines used in construction/industrial machinery

Kubota's engine business has a long history. In 1922, the company developed its first oil-based engines for the agriculture industry. Since then, Kubota has been leading the industry by supplying diesel and other engines that best meet the needs of each era. Today, Kubota boasts a leading global share of the compact industrial diesel engine market. Kubota is highly trusted by various manufacturers not only in Japan but also in Europe and North America because its high quality is backed by the four fundamentals of "Respect for Humanity," "High Performance," "Energy Efficient" and "Labor Saving."

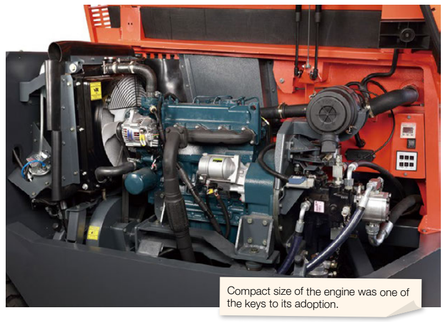
Despite the high reputation that Kubota engines have received around the world, the company's involvement in the Indian market has been sporadic because of the dominance of India's domestic engine manufacturers and Kubota's difficulty in penetrating this overwhelmingly price-sensitive market. However, Kubota has a history of providing technology for diesel engines used for Auto Rikshaws (tricycle taxis) and supporting development from the late 1990's. In 2014, Kubota established a new section within the engine division and tasked it with developing markets in emerging nations and regions, including India, Middle East and Africa. Hiromichi Iida, Manager, Market Development Group, Engine Global Marketing Department II, was tapped to lead this group.

Hiromichi Iida
Manager
Market Development Group
Engine Global Marketing Dept. II

Varun Karthikeyan.R
Managing Director
Roots Multiclean Ltd.

The members of Kubota's Market Development Group, whose mission is to develop emerging markets in the engine business

Kubota engine, which has achieved high performance and fuel efficiency.



Compact size of the engine was one of the keys to its adoption.

"In India, investment in infrastructure is expanding along with the country's rapid economic growth. At the same time, demand for engines used in construction and industrial machinery is also increasing; and we are taking full advantage of this opportunity by targeting Indian equipment manufacturers. India also faces chronic power shortages, and this has created substantial demand for power generator engines. There are many challenges to overcome, but we are committed to steadily capturing business opportunities in this vast market."

How is Iida planning to respond to the current market environment, an environment in which domestic manufacturers' prices create stiff competition?

"Our initial focus is on developing export projects of the Indian manufacturers, which we expect to increase in the future. Although price is an important factor here, I am convinced that the Indian market will gradually come to recognize the proven high quality and performance of Kubota engines. Building on our track record in export projects, we then plan to gradually develop domestic projects in the volume zone of the Indian market."

Chosen by an industrial machinery manufacturer in India: The high reliability of Kubota engines

One of the companies where Kubota engines have been delivered in India is the "Roots Group," which has a base in Coimbatore in the south of India. It is a company group that boasts the greatest production in India of horns as a part for motorcycles and four-wheeled automobiles. In addition to the production of various different automobile parts, one of its main products is a "sweeping machine." As the name suggests, these are machines that sweep roads and the floors of places such as factories. In the past, the company imported from manufacturers in Europe and America and worked to spread a culture of mechanization in the cleaning work in India, which previously relied on human power. The company has now started to develop and manufacture the machines internally and Kubota engines have been used on them.

"The machines imported from overseas were extremely expensive and selling them was quite difficult. We reached the conclusion that it would be best if we made the machines by ourselves so that we would be able to supply them at a more affordable price," says Varun Karthikeyan, the Managing Director of Roots Multiclean. The development work was started two years ago. Apparently, the use of a Kubota engine had been decided without hesitation from the initial stages of the development. Why was that?

"We were already aware of Kubota engines as a highly reliable brand and the engine that had been mounted on the sweeping machines we had imported had also been a Kubota engine. It had high output, but excellent fuel efficiency and it is no exaggeration to say that the engines are No. 1 in the world for efficiency and high durability. We plan to export the machines overseas in the future and the engines have an established reputation worldwide, so we are certain that we will have competitive strength and superiority in the market."(Mr. Karthikeyan)

Expanding use of Kubota engines to contribute to development of Indian industry

Kubota didn't just supply engines. Engineers traveled to India many times for discussions that advanced the development and customization of an optimal engine.

"I feel that our engineers have also learned a lot and have improved their technical skills. The heart of the sweeping machine is its engine, and I believe that joint development was a significant achievement for both companies." (Mr. Karthikeyan)

Incidentally, this was the first achievement by the Indian manufacturer to develop a sweeping machine with diesel engine.

Development of the Indian market for Kubota engines has just started. How can Kubota penetrate a market dominated by low cost domestic engines? It is an uphill battle, but Kubota is committed to promoting the brand amid strong demand for engines.

"The first step is expanding the scale of our business and establishing bases in India. We plan to develop the Indian market with a view to local production in the future, which I believe will support industry in India and contribute to the growth of the Indian economy." (Iida)

In December 2016, Kubota participated for the first time in "BAUMA CONEXPO INDIA," a trade show in the construction machinery field, and appealed widely to the Indian market.

COLUMN

Kubota e-Project: Digging Wells in India to Tap the Source of Life

Actively supporting an international NGO working to deliver safe water to India

Safe water for India – In order to fulfill its responsibilities as a corporate citizen, Kubota is active in promoting various activities, one of which is support for the installation of wells and water supply facilities in India. With its vast land area, India has many farming communities that lack access to potable water due to differences in natural conditions such as climate, including rainfall, and geology, in addition to disparities in regional development. Solving overseas water problems is a social mission for Kubota. Indeed, the company has been developing water-related businesses for more than a century since it became the first company in Japan to manufacture iron pipes for waterworks in 1893. Kubota has now turned its attention to the Safe Water Project of the Japan Asian Association and Asian Friendship Society (JAFS).

JAFS was established in October 1979 as an NGO for international cooperation. Its missions were to improve the lives of people in Asian farming communities, which lacked access to safe water, by establishing wells and delivering water-supply equipment, as well as developing self-help, self-supported farming communities by addressing various issues (sanitation, education, daily life, the environment, etc.).

Kohei Yokoyama
Oversea Project Coordinator
Japan Asian Association and Asian Friendship Society

"Delivering safe water leads not only to improved sanitary and health conditions, but also to the freeing of women and children from the heavy labor of drawing water. Through this activity, we aim to promote education (providing educational opportunities) and the independence of women (economically, through vocational training, etc.), with a view to improving environmental sustainability. Our ultimate goal is to eradicate poverty through this cycle. We have already installed 457 wells in India." (Mr. Kohei Yokoyama, Oversea Project Coordinator, JAFS)

A well with a Kubota sign. A well that can supply safe water is truly a "fountain of life."

Kubota started supporting JAFS in 2010 and has already subsidized the installation of six wells. Kubota plans to expand its support through various approaches in the future.

From CSR to CSV: Working towards global evolution

Kubota's social contribution activities are not limited to well installation in India. Kubota launched its "Kubota e-Project" in 2008 as an initiative in the area of food, water and environment. The "e" stands for the six features of the project: earth (earth-friendly), ecology (environmental conservation), education (including on agriculture and water), eating (safe and secure food), eau (safe and clear water) and emotion (joy of living). The project includes a wide range of activities such as "Support for the restoration of abandoned farmland," "The Kubota Genki Agriculture Experience Workshop," and "The Kubota e-Day volunteer program," an activity involving Kubota employees across Japan carrying out cleanup and beautification of the local environment.

"Many of our employees are keenly aware that our business itself contributes to society, and that doing our best in that business is a direct part of this. Reaffirming this commitment, we are working to upgrade activities related to our Corporate Social Responsibility (CSR) to the level of the more strategic "Creating Shared Value," or CSV, through which we strive to attain both social and corporate value at the same time, with plans to implement it on a more global scale. (Ryuichi Hattori, Manager, Sustainability Group, CSR Planning Department)

Kubota's social contribution activities, which support the lives of people around the world and contribute to the creation of a sustainable society while protecting the global environment, are steadily evolving and spreading from Japan to the world.

Ryuichi Hattori
Manager
Sustainability Group
CSR Planning Dept.

BUSINESS TOPICS 01

From Japan

Full-scale introduction of the "M7 Large Tractor Series" for upland farming to the domestic market. Receives the Good Design Award

In the last issue, we introduced the "M7 Large Tractor Series" for upland farming, which was launched in the markets in Europe and North America in 2015. Kubota plans a full-scale launch in the upland farming and dairy markets in Japan. Kubota has also adopted GF specifications, with an integrated automatic steering function, and plans to release it as a global positioning system (GPS) farming machine series called "Farm Pilot." Kubota is committed to continue contributing to the improvement of Japanese agricultural productivity.

Incidentally, the M7 Series received the Good Design Award 2016 (Presented by the Japan Institute of Design Promotion), as they were highly evaluated for "minimizing operator fatigue" and a "design that conveys the intrinsic strengths of tractors."

PEOPLE

Expanding the future of food, water and the environment.

Global challenge for Kubota professionals

Everyone at Kubota has a strong desire to help people and continue to accept challenges around the world to achieve their goals.
Four professionals voice their thoughts on the global challenges they face and the goals they hope to achieve.

Global Work Style 1

I want to give 100% to my job as a way of contributing to Kubota's growth in the Indian market.

Rekha Paliwal

Group Leader & Manager
Admin/HR/Accounts
New Delhi Office, Procurement HQ (KIO)
Joined Kubota in 2007

Strong support from people around me ensured my steady growth

I first visited Japan on student exchange program when I was in high school. I was attracted by the beautiful cityscape, the kindness and openness of local people, and the traditional cultures of Nara and Kyoto. This inspired me to pursue a career in which I could serve as a bridge between Japan and India in the future; so I majored in Japanese at the University and started working as an Interpreter in Japanese companies based in India.

I joined Kubota as a replacement to an acquaintance of mine who had left the organization. I was initially hired as an interpreter but my responsibilities changed significantly thereafter. Unlike other Japanese companies where I had worked, I was assigned to cover a wide range of responsibilities that went beyond the job of being a language interpreter. My responsibilities now include not only human resources, accounting co-ordination but also overall management of KIO. I received guidance at first while I was learning on my job. I was impressed with the strong support which I got from the General Manager and others around me. I feel that I was able to grow steadily because I was given lot of responsibilities.

Currently, one of my important Key Responsibility Area (KRA) is managing and hiring human resources for KIO. This is an important function, as per with other administrative work, which includes helping visitors from Japan Head Office, coming to India and also to create a workplace environment where each employee can perform to the best of his or her ability. I feel this is my mission. To promote this, we are also developing a system that allow employees to upgrade their skills and knowledge. I feel that I am expected to make decisions and take action on my own, which is giving me immense satisfaction and huge confidence.


Commemorative photo at the Supplier Meeting 2015

Freedom in Kubota's work environment supports working women

We regularly have our internal meeting to deliberate and analyze our work procedure so that we can perform within the prescribed in guideline of the Reserve Bank of India ('RBI'). RBI regulation mandates that a Liaison Office can only take part in business promotion on behalf of the Head Office. KIO always give much attention in hiring people as a quality staff and committed to provide a good working environment to them. And as a result, some people gone to abroad for higher study and after completion of their study they again join Kubota in other country.

One of the unique features of KIO is freedom which normally is not seen in other Japanese companies in India. I feel, if employee gets the freedom towards their job that will always be fruitful for the organization, as well as for employee's growth.

I gave birth in 2014. Childcare leave at private companies was set at three months by the national system at that time, but Kubota provided me with six months. I was deeply moved by Kubota's understanding of childbirth and childcare and its approach to supporting working women. I want to continue working and want my children to see me working in the future. In terms of my work, I also hope to advance my career by experiencing other bases and divisions.

In retrospect, I have learned many things and have grown at Kubota. I feel happy just being a Kubota employee. I want to contribute to the growth and development of the Indian market with a strong awareness of being a Kubota employee.

BUSINESS TOPICS 02

From Thailand & USA

Established R&D bases in Thailand and the United States

Kubota established research and development bases in Thailand and the United States as part of the globalization of its research and development system. In Thailand, Kubota Research & Development Asia was established as a center for agricultural machinery. Located near the head office of SIAM KUBOTA Corporation, the center works to develop agricultural machinery suitable for local crops and field conditions with the aim of enhancing the product lineup and speeding up the market introduction process. Meanwhile, Kubota Water and Environment R&D Center USA was established in Canton, Ohio.
As Kubota's first overseas R&D base for the water environment business, the center will strengthen work on membrane systems appropriate for the local climate and water quality, and will expand Kubota's MBR* business in North America.

* MBR: Membrane Bio-Reactor


Kubota Research & Development Asia


Kubota Water and Environment R&D Center USA is located within a water reclamation facility in Canton.

PEOPLE

Global challenge for Kubota professionals

Global Work Style 2
A sense of contributing to societies in the global market strengthens motivations

Takumi Sato

Oil & Petrochemical Business Dept.
Joined Kubota in 2013

Supplying the cracking coil that are indispensable to ethylene production in global market

I conducted research on Kuwait's constitutional movement in graduate school. While visiting the Middle East as part of my research, I felt the precious value of human life anew. The Middle East has been politically unstable for nearly a century, and conflict in the region has cost many lives. Having studied these realities, I wanted to engage myself in a job that would allow me to support human life. I decided to join Kubota because I felt that the theme of "food, water and environment" advocated by the company would provide me of opportunities to pursue my goal.

As a sales representative, I am currently responsible for an industrial product called a "cracking coil," which is used in petrochemical plants. The plastics, vinyl, PVC and chemical fibers found everywhere in our daily lives are produced from a chemical product called ethylene. The cracking coil is essential for producing ethylene. Only five manufacturers in the world are capable of manufacturing cracking coil, and Kubota's cracking coil account for roughly 50% of the global market share. Therefore, if Kubota ceases manufacturing the cracking coil, it would greatly affect our daily lives and the operation of various industries. It is not an exaggeration to say that Kubota's cracking coil involves at one production stage of about half of the plastic products around us in our daily life. Thus, the cracking coil can be considered to have a high degree of social contribution.

Gaining the top share in India
Creating a story on my own

My customers are petrochemical companies that manufacture ethylene. Currently, I am responsible for the eastern Japan area domestically and Taiwan, Australia and India in the overseas market. Sales activity covers a broad scope of work–market research, product promotion, specification proposals, the preparation of quotations, price negotiations, finalization of specifications, manufacturing orders, delivery/payment management, etc. are all carried out by sales representatives. Although my responsibility is heavy and the pressure is high, it is fulfilling and helps me to build my career as a sales person. One

At a Hindu temple in Mumbai. The red mark is called Tika. It is a symbol of celebration and welcome.

of my recent assignments was a cracking heater replacement project in India, on which I worked for a year and a half. I flew to the site three times for negotiations. The key points in this project were whether the project was profitable in the first place, whether we could meet the required specifications requested by the customer, and knowing competitors' activities. The process of reviewing and setting the price while securing a marginal profit through negotiations was an intense experience for me. In addition to pricing, I also worked energetically on specification proposals. I emphasized the advantage of Kubota products and finally succeeded in getting the order.

The important thing is to carefully examine the entire flow of work and "create a story on your own": in other words, think and judge with your own head. My current goal is to gain the ability to think and judge more precisely. Today, Kubota's cracking coil has a top share in India and Taiwan. To maintain that position and further expand it, I believe that it is essential to have highly accurate thinking and judging ability. The markets that I would like to tackle in the future are the Middle East and Africa. I hope to make use of my fluency in the Arabic I studied at the university and my local knowledge of those regions to contribute to the expansion of sales not only of cracking coil, but various Kubota products that support human life.

Global Work Style 3
Market-based stance creates optimal implement solutions

Yasuko Washio

Farm Machinery Implements and Products Engineering Dept.
Joined Kubota in 2011

Understanding farmer needs and providing the right solutions

Since joining the company, I have been closely involved in the development of implements, work equipment that is attached to tractors. I am usually in charge of development for the domestic market. There are more than 300 different implements designed for work in such categories as field tilling, ridge forming, fertilizer distribution, seeding, harvesting, etc.

Currently, we are targeting the domestic implement market for upland farming, and we are developing products in collaboration with domestic manufacturers. Since the needs for implements in upland farming vary widely by crop type and work system, an accurate understanding of those needs is required in product development. Our approach to achieving that goal is clear: employ a market-based approach. This is an activity we are implementing in Japan to meet the diverse needs unique to upland farming, and we are striving to provide the optimal solution by actually verifying the needs of the market; in other words, talking with farmers and identifying their needs.

India, my first overseas market
The feeling of touching the world

Our focus in the development of the MU5501 multi-purpose tractor, which was newly launched in the Indian market, was on improving an implement called the "plow." This is a popular implement in India used for reverse plowing after harvesting and resetting the field for the next cropping.

My role in this project was to improve the implements made by an Indian

Expanding the future of food, water and the environment.

Global Work Style 4
Continue the challenge—a new horizon will open up before you

Goshi Nakao

Materials Sales Dept.
Joined Kubota in 2012

Supplying products for thermal treatment equipment in the steel industry

When I was at the university, I participated in a month-long agricultural training program in Ghana, Africa. This experience decided the course of my life. The farm village I visited was impoverished, and I felt that promoting agriculture was essential to helping these people escape from their poverty. Thinking that the mechanization of agriculture was necessary for that purpose, I opted to join Kubota, which is the leading company in agricultural machinery, after graduating from university. Increased food production through the mechanization of agriculture is needed not only in Ghana but in all parts of the world; and I wanted to contribute by engaging in work that would accomplish this. After joining Kubota, however, I was assigned to a department that handled steel and machinery rather than the agricultural machinery sector. I was initially a bit confused, but now I feel a sense of social contribution in my job with a different approach from agriculture.

I am currently in charge of products that are used in heat treatment facilities at steel plants, including hearth rolls, which are rolls that convey steel plates, and skid buttons, which support the heated steel materials inside the heating furnace. These products are required to have high strength at high temperatures, a high degree of oxidation resistance, etc. In addition to being in charge of several domestic companies, I am also engaged in global sales activities covering India, Taiwan, South Korea, Northern Europe and Russia.

A moment after a meeting at Tata Steel in India

Winning an order for a new plant
The challenge of thinking and acting on your own

A recent assignment with an Indian plant manufacturer stands out in my mind. The Indian market has been developed by my predecessors over the years, but the customer that I approached was a plant manufacturer we had never had business with before that was planning to construct a new plant in Vietnam. The first thing that surprised me was the enormous number of specification sheets, and there were many specifications that Kubota could not meet. With the cooperation of our technical department, I suggested a shift to "Kubota specifications." The company rejected the proposal at first, but I highlighted the level of quality, a level that only Kubota was capable of achieving. The company agreed to our proposal and we finally won the order. The key is to understand what the customer is thinking by looking at the situation from the customer's standpoint. Another thing is to respond with a sense of speed. This experience gave me a great sense of accomplishment.

Every potential project requires us to think, take action and produce results on our own. Although I naturally receive support from the people around me, I am basically on my own in dealing with overseas customers. Kubota offers an environment that allows young people to take on challenges in the true sense of the word. Even though the responsibilities are great, the sense of accomplishment is also great.

I am currently working on Northern Europe and Russia as new development targets. Again, I am responsible for everything, from research and preparation to specific approaches, product proposals, presentations, specification adjustment and price negotiations. I always feel uneasy when I leave Japan, but the sense of accomplishment when I achieve the results that I had expected in the field is unbeatable. Since steel is needed in every industry, it is not an exaggeration to say that steel supports the very foundation of society. Agricultural machinery also requires steel. In that sense, I am actually feeling a sense of social contribution through my current work of supporting steel manufacturing.

manufacturer to achieve higher fuel efficiency, which is one of the features of the MU5501. As the improvement work was carried out jointly with an Indian implement manufacturer, I was sometimes perplexed by differences between the Indian and Japanese approaches to development. The most challenging task was to improve the slight variation produced in each plow because the Indian manufacturer had no drawing. I discussed problems and suggested solutions to the local engineers as we proceeded; but my suggestions were rarely reflected in trial production, so I had a difficult time. In addition, since soil type and plow use differ from Japan, verification and testing in the field were essential. The number of trial productions and tests we carried out before the start of actual production would be unthinkable in Japan. Taking on an overseas project for the first time turned out to be a great opportunity for me to learn about the difficulties involved in working through the differences in culture, values and mindset, as well as a good opportunity to realize the universality of implement development. I learned that in the end, in any country and in any region, the process of collaborating with manufacturers to develop a new product while verifying each actual work process and customer request is really the same as the market-based approach implemented in Japan; and I felt that this process was an essential condition to a development based on local needs.

If I get another opportunity to be involved in product development in the future, not only for India, but for any unknown overseas market, I would like to make it a point to provide the best solution for local users by applying the market-based approach.

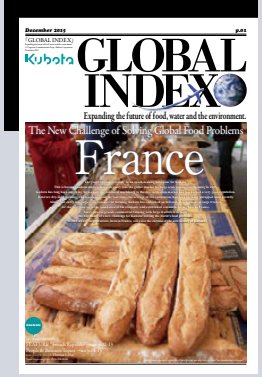
Surveying local users is indispensable to producing better products (India)

The MU5501 multi-purpose tractor
Symbol of Kubota's community-based approach

Notice on "GLOBAL INDEX" back numbers

Since the first issue of 1992, the previous "GLOBAL INDEX" publications have been considering social problems around the world for more than 20 years.

September, 2016
FEATURE "France"



September, 2015
FEATURE "Myanmar"

September, 2014
FEATURE "America"

March, 2014
FEATURE "Indonesia"
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