



Toyota's Medium- to Long-Term Growth Initiatives

Dynamic Growth Based on Making Ever-Better Cars



The Toyota Global Vision announced in March 2011 describes our values and the kind of company we aspire to be. We believe that focusing on building ever-better cars will bring about dynamic growth, so we are engaging in revolutionizing our carmaking to bring more substance to our efforts.

The first of our medium- to long-term initiatives is reforming our corporate culture. We seek to revitalize our venture spirit by reforming our consciousness in light of the Global Vision, and through other efforts such as joint ventures with other companies. We are also focusing on the areas of development, design, and procurement, for example by creating an innovative synthesis of development and design through a new carmaking policy aimed

at building better cars. In addition, we are strengthening supply chains to minimize parts procurement risk, and in the area of production we are also reforming our *monozukuri* (conscientious manufacturing) structure as the basis for production technology and structure innovation. By introducing cars that meet local needs in rapidly growing emerging markets, we seek an increase in the share of our global sales made up by emerging markets, from 40% to 50%. We will bring all our strengths to bear to quickly achieve a resilient revenue base by decreasing our susceptibility to the impact of the strong yen. One way to do so is to increase local procurement and manufacturing. In this way we will forge a path to continuous growth based on the Global Vision.

More effective and attractive

Toyota's Medium- to Long-Term Growth Initiatives I: Innovation in development, design and procurement-1

Synthesizing Design and Planning for Better Basic Performance and Improved Products

We are reforming our development structure so as to make better cars. We thoroughly research the factors that go into making a better car, and have divided our carmaking into four zones: cars specialized to meet tastes and car sense (especially sports cars); fleet and personal transportation vehicles; trucks, buses, and other vehicles with a social purpose; and finally, next-generation vehicles, such as green vehicles and concepts. We try to come up with better cars for each zone by incorporating the design and performance features our customers have in mind so as to meet their expectations.

“ Toyota's ultimate goal is ever-better products.

To achieve our goal we design parts with good features, and standardize these for each region, spanning different platforms.

This provides better efficiency and cost reduction, with the resulting savings used to improve products further.

This virtuous cycle for building better cars leads to sustained growth.

”

Initiatives Overview

We are reforming our developmental structure by engaging in design and development improvement, localized carmaking, and organizational/structural improvements. We are reorganizing our organizational structures around the chief engineers, who are in closest proximity to consumers, by strengthening their authority within the decision-making process in design and other areas in their capacity as general development coordinators. Also, we are making steady progress in reforming the development structure through the introduction of our new framework for developing better cars, called the Toyota New Global Architecture (TNGA). The TNGA provides the foundation for the growth that will propel the opening up of the next generation by strengthening Toyota's international competitiveness.

Current R&D Efforts

- 1 Enhancing design
- 2 Enhancing development
- 3 Localized carmaking
- 4 Organizational and structural improvements

Toyota New Global Architecture (TNGA)

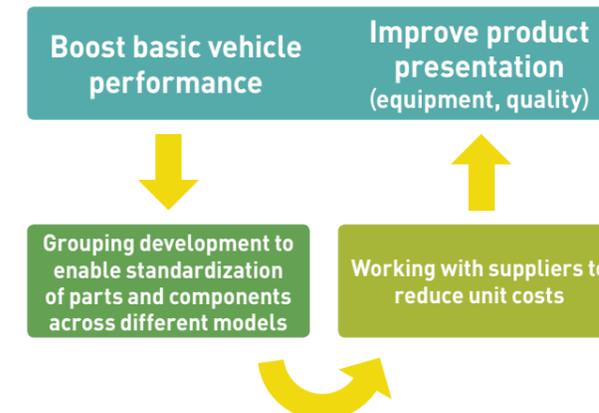
One facet of Toyota's efforts to build ever-better cars is the introduction of TNGA, which revolutionizes the

vehicle development framework through the blending of planning and design.

While of course seeking to boost basic vehicle performance, we are also establishing new platforms based on the TNGA that optimize design freedom and ergonomics, such as driving position. The TNGA provides a foundation for grouping development, which enables the standardization of parts and components across different models, improving the efficiency of the development process while reducing costs.

The introduction of the TNGA and subsequent parts standardization results in manpower and cost reductions, which leads to the making of better cars through efforts that span activities such as technology, sales, procurement and production technology by freeing up manpower for use in development. This leads to product improvements in areas such as basic performance and design improvement, cost-competitiveness, and quality assurance. The TNGA will be implemented over the coming years as we successively introduce new vehicle models.

Toyota's New Approach to Carmaking



More effective and attractive

Toyota's Medium- to Long-Term Growth Initiatives I: Innovation in development, design and procurement-2

Enhance Development Capability and Supply Chains to Improve International Competitiveness

Enhancing the Development Structure

Toyota is moving forward with improving development capacity, localized carmaking, and organizational/structural improvements so as to improve our structure for continuously producing better cars.

To improve development capacity we have set a target of 30% improvement in development capacity* for the end of 2012 compared to 2009 by improving all the factors involved in development, such as development tools (design, prototypes, testing), processes, and human resources/ability. We are also improving development efficiency by increasing the authority of the chief engineers (CEs), who are in closest proximity to consumers and who coordinate model development. This will improve development efficiency by speeding up the decision-making process.

Toyota is placing regional general managers in charge of localizing carmaking in each region, and, by developing ties with local sales and R&D units, Toyota can ascertain the needs of each market and improve both quality and product appeal.

Our organizational structure improvements center on making the CE the overall coordinator in vehicle development, with responsibility for each area of technical development, so as to foster specialized technologies and long-term development leading to the ever-better cars envisioned by the CEs. As the overall coordinator of vehicle development, the CE also has a say in the vehicle

design evaluation and testing conducted in-house.

*R&D staff members x hours

Supply-chain Enhancement to Diversify Risk and Improve International Competitiveness

Conducting "grouping development" on the platforms for economies of scale established through the TNGA provides for part and unit standardization for better efficiency and lower costs in development. It is up to the manufacturing technology units to adopt this approach and bring the technologies together to develop blueprints and manufacturing processes with the highest possible performance and functionality so as to develop parts that are standardized for sharing among a number of models. Adopting a similar approach in the procurement field means continuing to gain the benefits of an economy of scale by conducting parts ordering that straddles regions, models and launch periods. From the twin perspectives of quality assurance and improving international competitiveness, parts standardization must be conducted jointly with suppliers. Parts standardization also leads to increases in the production volume of each part, making it possible to diversify suppliers and production sites without losing efficiency. This enables stable supplies even during emergencies, thereby strengthening the supply chain.

The New Avalon - Developed in North America -



The top-of-the-line Toyota Avalon debuted in the US in 1994, and Toyota revealed the fourth-generation 2013 Avalon in April 2012, at the New York International Auto Show. The new 2013 Avalon is the result of a North American-focused design and engineering effort led by a youthful and talented team at the Caltex Design Research Inc. facilities in southern California. It is a true example of the regionally-led management aimed for in the Global Vision.

Made-in-China Hybrid - Hybrid Technology to Make Chinese Customers Smile -



Making their world premieres at the 12th Beijing International Automotive Exhibition in April 2012 were the "Yundong Shuangqing," a China-only concept hybrid equipped with a hybrid system developed primarily at the Toyota Motor Engineering & Manufacturing (China) Co., Ltd. R&D Center in Changshu, China, and the compact-sized "Toyota Dear Qin," which is a global-strategic concept (sedan and hatchback) featuring a design aimed at attracting more people to the user base. Toyota will continue to make ever-better cars, from eco-cars through specially adapted vehicles and sports cars, that will make our customers smile by contributing to richer lives and better communities in China.

More competitive and flexible

Toyota's Medium- to Long-Term Growth Initiatives II: Innovation in production technology

Reforming the *Monozukuri* Structure for Making Better Cars

Toyota is undertaking *monozukuri* (conscientious manufacturing) structure reforms in the field of production technology. We work to make better cars and to deliver good quality, affordably priced vehicles that are both exciting and environment-friendly. By providing safety and security we bring smiles to faces. Our efforts are based on the twin perspectives of good carmaking and competitive manufacturing.

“ Our primary effort, “making ever-better cars”, means overcoming the technical hurdles faced by products conceived by technology departments in areas such as attractive design, performance, and environmental technology. Next, competitive manufacturing depends on making better cars that provide good quality at an affordable price, and ensuring cost-competitiveness that can withstand the rising value of the yen.

Toyota's DNA: Toyota Production System

The foundation of our reforms of the *monozukuri* structure is the Toyota Production System, which is in our corporate DNA. This can be summed up by automation and Just-in-Time. Automation originally meant being able to stop equipment the instant a problem is detected, and then restarting production once the abnormality had been dealt with. We are taking this a step further by aiming for manufacturing in which no problems arise and only perfect goods are made. Just-in-Time means making only what is needed, when it is needed, and in the amount needed. This cuts lead times and is effective in dealing with supply chain risk. Just-in-Time requires production leveling, which in turn requires *takt* time and standardized work approaches to achieve uniformity in production process timing. Our reforms of the *monozukuri* structure are proceeding from these approaches.

Three Pillars of *Monozukuri* Structure Reform

The three pillars of *monozukuri* structure reform are “one-by-one production,” “produce at the optimum speed for sale,” and “small-scale production.” These are vital principles of the Toyota Production System.

Three Pillars of *Monozukuri* Structure Reform

- 1 One-by-one production
- 2 Produce at the optimum speed for sale
- 3 Small-scale production

Low-Cost, Small-Volume Production

“One-by-one production” is based on our longtime policy at Toyota of building based on the customer's order for individual output production. “Produce at the optimum speed for sale” is based on placing importance on correlating production with demand. “Small-scale production” means producing via a small structure when demand is low, and responding rapidly to increases in demand. To accomplish this we created a small, simple and scalable line. The goal is low-cost, small-volume production, and reaching that goal requires raising the net yield rate* and the net operation rate.

*Net yield rate: The rate of final output efficiency, including items such as stock utilization, when adding value

Keywords for Technological Innovation

Reforming our *monozukuri* (conscientious manufacturing) structure requires technological innovation unbound by general notions of what is possible. The four keys to technological innovation are “simple and slim,” “variable models in variable volume,” “net shaping” (of the TPS 7 *muda*, helps eliminate waste from over-processing), and “high added value.”

Note: The TPS 7 *muda* (wastes): over-processing, inventory, over-production, waiting, motion, transportation and defects

Keywords for Technological Innovation

1 Simple and slim

- Simple equipment
 - ➔ Break-resistant, easy to repair
- Capital investment reduction
 - ➔ Depreciation cost reduction

2 Variable models in variable volume

- High-volume production line
 - ➔ Small-scale production line
(Eliminate waste of production capacity)
- Simple set-up changeovers to new/different models

3 Net shaping (of the TPS 7 *muda*, helps eliminate waste from over-processing)

- Process reduction (reduce stock removal)
- Craftsmanship

4 High added value

- More compact, higher performance, more stylish, more reasonably priced

“Simple and slim” means durable equipment that is easy to repair and is kept as simple as possible. This leads to less capital investment and minimizes depreciation. A real-world example of this simplification by going from a 2:1 to a 10:1 volume ratio for press, casting and forging molds. Other equipment and lines are also slimmed down and simplified as much as possible, right down to the plant building itself.

“Variable models in variable volume” means taking a flexible approach to model and volume changes. This requires a scalable-length final assembly processing line, as well as engine and transmission lines that enable simple equipment changeovers.

“Net shaping” means bringing the shape of the product, especially at the post-rough-shape processing stage, closer to the final shape. A real-world example of this is the application of craftsmanship know-how to automation equipment to achieve reduction in material loss rates from 80% to 90%.

“High added value” means more compact, higher-performance, and more affordable components, including hybrids, and the development of production technologies that enable the making of high-performance cars.

This innovation requires the digitization and quantification of the experience and craftsmanship that have been passed down, and the adoption of it in innovative technologies. Then, further honing these skills and techniques and adopting them in innovative technologies leads to greater innovation, producing a virtuous cycle of craftsmanship-skill and innovative technology.

Domestic Output of 3 Million Vehicles — For Competitive Strength

The Toyota Production System as well as the new technology and product development and production that support it were created in Japan. The advanced technologies created through the joint efforts of our strong Japanese production centers and our suppliers, and the high-value-added *monozukuri* represented by the development of our hybrids will remain in Japan, where it is important that we continue to hone *monozukuri*. When Toyota first achieved output of 3 million vehicles in 1980, our output outside Japan was a mere 200 thousand, but it has since increased greatly, reaching our current level of 5 million cars produced overseas. The foundation that has enabled that achievement is our domestic production structure of 3 million units. Toyota will maintain this 3 million domestic production structure, maximizing the competitive superiority of high-tech Japanese *monozukuri*. Quickly spreading the innovative technologies developed and nurtured in Japan will in turn improve Toyota’s competitive advantage outside Japan.

Production Topics

Integrating Production in Tohoku and Building a Trilateral Domestic Production Structure

Kanto Auto Works, Central Motor Co. and Toyota Motor Tohoku Corporation merged (as of July 1, 2012); creating Toyota Motor East Japan, Inc. (TMEJ). Tohoku will be our third vehicle manufacturing hub in Japan after the Chubu and Kyushu regions. We aim through this integration to establish a comprehensive automobile manufacturer that plans, develops and produces compact cars and also manufactures components and supports overseas Toyota operations.

Under the trilateral system, Chubu will be the core of domestic production and the development hub for new technology and new manufacturing methods. Kyushu will be the hub for mid-sized and Lexus brand vehicle production, and Tohoku will specialize in compact cars.

We believe that establishing the technologies for specialized mass production of certain vehicle models by each regional company will accelerate the advance of Japanese *monozukuri*, and to that purpose we will maintain a 3 million vehicle production capacity in Japan. We will reach a new level of international competitiveness by creating an environment for producing innovation through the interaction of the technology development and product planning units with the frontline production and sales units. This will strengthen the autonomy of each hub as well as the trilateral system itself.

The Aqua and New Corolla, Featuring World-Class Fuel Economy*

-Making Tohoku the compact *monozukuri* base.



Toyota put our 17 years of mass-produced HV development know-how and experience into making components such as the compact, light, efficient HV system that powers the Aqua, which is top in its class worldwide in fuel economy.* Toyota is producing an entirely new class of compact hybrid. We also have launched a new version of our popular Corolla, a compact car that is perfect for Japanese roads and our customers, and for which global sales have reached 39 million units.

The Aqua went into production at the Kanto Auto Works (currently Toyota Motor East Japan) Iwate plant, while the Central Motor Co. (also currently Toyota Motor East Japan) Miyagi plant was chosen to produce the new Corolla. Both plants are in Tohoku, and the selection of these plants marks an important step toward improving manufacturing competitiveness in Tohoku. Toyota wants to be a force for the revitalization of Japan, and we are moving forward with *monozukuri* that has strong regional roots.

*As of July 2012

Deeper and closer

Toyota's Medium- to Long-Term Growth Initiatives III: Expanding into Emerging Markets

Making High-Quality, Affordable Cars Attuned to Regional Needs

The Toyota Global Vision calls for us to increase the ratio of total global sales taken up by emerging markets to 50%, up from 40% in 2010. Therefore, emerging markets have become one of our primary areas of focus, and along with strengthening locally conducted R&D functions, we are striving for regionally focused better carmaking for the timely provision of high-quality, affordable cars suited to regional markets and needs.

“ New Strategy for Emerging Market Compact Cars

8 Models

Sales of **one million** annually

in more than **100 countries** ”

Toyota's Overseas Business and Emerging Market Initiatives

Launched in 2004, Toyota's IMV (Innovative international Multi-purpose Vehicle) Project is aimed at creating an efficient production and distribution structure for IMVs. The project involves developing products best suited to emerging markets and converting to a global supply structure based on concentrating output for exports at four plants, including those in Thailand and Indonesia, so as to achieve growth in a tough business environment marked by a strong yen and fierce competition. We aim for 100% local procurement, rather than procurement from Japan, so as to strengthen our responsiveness to foreign exchange fluctuations.

The growth of the emerging markets is driving the annual growth of IMVs, and we have launched five models, such as a pickup truck, multipurpose sports car, etc., worldwide except for Japan, China and the US, with sales topping 5 million vehicles. In 2010, we made further advances with global IMV models in each region, such as launching the Etios to meet local needs in India, and as of May 2012 sales had topped one million vehicles.

Making New Compact Cars Our Global Strategic Vehicles

Henceforth, as we continue to develop the IMV Project actively in emerging markets, we will also pursue our new compact car strategy for selling compacts that retail for around ¥1 million in more than 100 countries worldwide, with the rapidly growing middle class making up the customer base for these cars. We will launch eight such models based on the Etios, and to follow up on the success of the IMVs we are targeting sales of upwards of one million specialized compacts in emerging markets.

Toyota aims to develop and expand the IMV Project concept of offering attractive vehicles to our global customers through our new compact car strategy, and to increase our market share in emerging markets by promoting the establishment of local businesses and by building local parts distribution networks and supply chains.

IMV (2004~)

- Leaner development processes based on a common platform
- Five models in five countries, with no production in Japan, simultaneous worldwide launch
- Higher-quality global blueprints
- Local procurement



Etios (2010)

- Exclusive models for emerging markets
- Tailored to needs of the market
- Stronger emphasis on a good product at an affordable price



- Greater independence and autonomy for affiliates outside Japan
- Set up local parts distribution network and supply chain