

www.pwc.com

Thailand in Context Economic Potentials

October 2014



pwc

Table of Contents

Section	Overview	Page
1	Macroeconomic analysis: regional & internal context	4
1.1	The regional context: ASEAN economic status quo & developments	5
1.2	The internal context: Thailand's macroeconomic performance	11
	Key macroeconomic indicators	11
	Labour market characteristics	18
	Renewable energies	25
	The role of infrastructure development for the Thai economy	31
	The role of tourism for the Thai economy	36
1.3	Thailand's regulatory framework	39
	Business environment	39
	Financial environment	42
	Further regulations of interest for foreign investors	44

Table of Contents

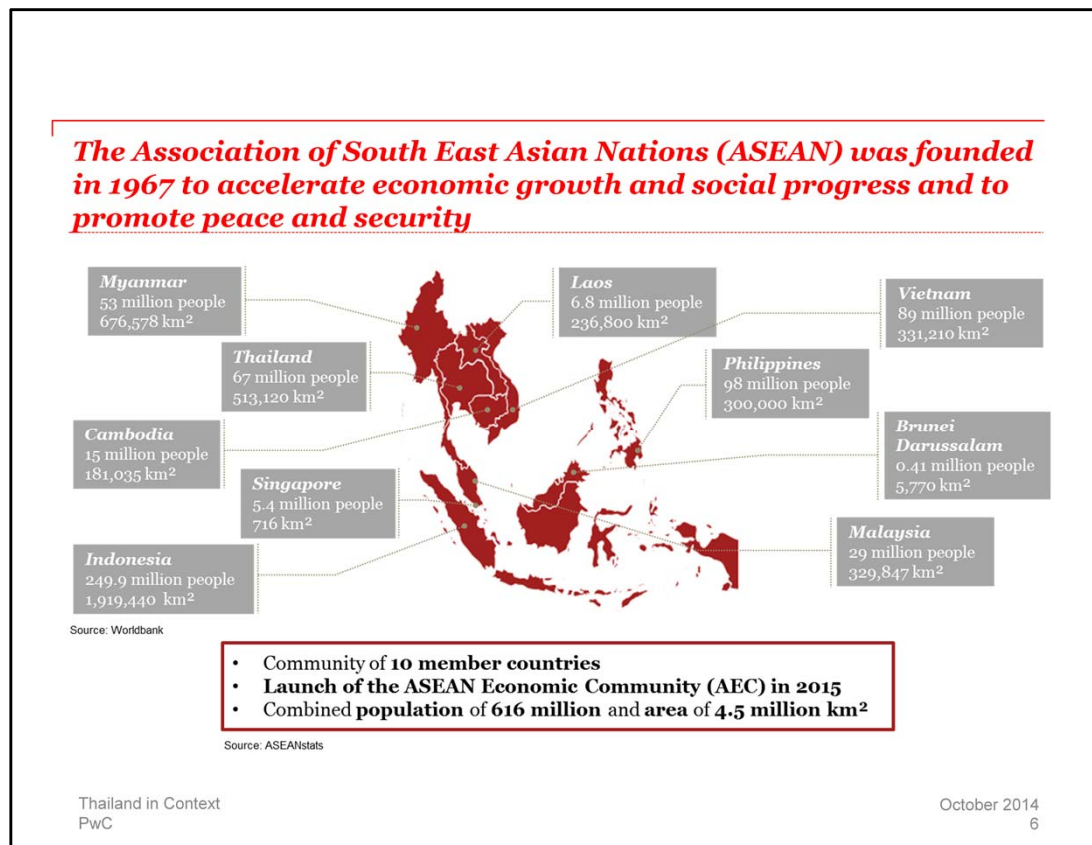
Section	Overview	Page
2	Industry structure and trends for selected sectors	50
2.1	Automotive	51
	Industry role, structure & trends	51
	The global context: how to stay competitive	59
2.2	Electronics	65
	Industry role, structure & trends	65
	The global context: how to stay competitive	74
2.3	Agribusiness	76
	Industry role, structure & trends	76
	The global context: how to stay competitive	88

Section 1

Macroeconomic analysis: regional & internal context

Section 1.1

***The regional context: ASEAN
economic status quo & developments***



Speaker Notes:

Map

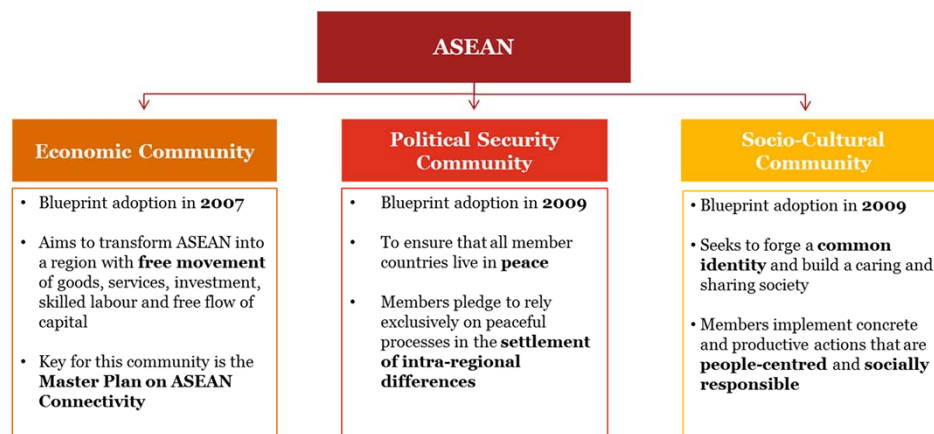
- A loose gathering of five countries at its inception, **ASEAN has become a body with regional and global clout**, despite political and economic differences among its members.
- **Founded in 1967 in Bangkok**, Thailand.
- **Founding Nations:** Thailand, Indonesia, Malaysia, the Philippines and Singapore.
- The founding nations were joined by Brunei in 1984, followed by Vietnam in 1995, Laos and Burma in 1997 and Cambodia in 1999.
- Most recently, ASEAN accelerates its economic integration by **creating a European Union-style single market**. This will involve removing tariffs, liberalising trade and the movement of labour and capital.
- The move is, in part, a response to the vigorous economic growth of China and India - two low-wage mass markets. ASEAN is negotiating free trade agreements with both countries, and with Japan. **A deal between ASEAN and China would create the world's biggest free trade zone.**
- In November 2007, ASEAN leaders signed a landmark charter aimed at speeding up and deepening economic integration. It will turn ASEAN into a rules-based legal entity and also commits member states to promoting human rights and democratic ideals.

Text Box

- **Combined population** of all member states is **616mn**, growing by **1.4%** in the last two years. Indonesia has the highest population with 250m, Thailand ranks fourth with 67m.

(Sources: ASEAN website, BBC, PwC analysis)

ASEAN is based on 3 pillars focusing on Physical Connectivity, Institutional Connectivity and People-to-People Connectivity and is aimed to be fully established by 2015



Source: ASEAN website, PwC analysis

Thailand in Context
PwC

October 2014
7

Speaker Notes:

ASEAN

- To **accelerate economic growth, social progress and cultural development.**

Economic community

- **Key characteristics:** a single market and production base, a highly competitive economic region, a region of equitable economic development, and a region fully integrated into the global economy.
- The implementation rate of the measures due under the Economic Community Blueprint has increased to 81.7%.

Political security

- Components of the **Blueprint** are: political development; shaping and sharing of norms; conflict prevention; conflict resolution; post-conflict peace building; and implementing mechanisms.
- To date 87.5% of these issues have been addressed.

Socio-cultural community

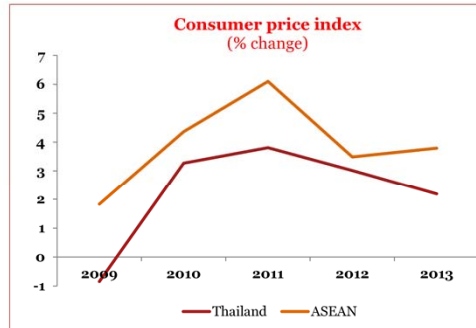
- Aims to contribute to realising an ASEAN Community that is **people-oriented and socially responsible** with a view to achieving enduring solidarity and unity among peoples and ASEAN members.
- **Key characteristics:** human development; social welfare and protection; social justice and rights; ensuring environmental sustainability, building the ASEAN identity; and narrowing the development gap.
- To date, nearly 90% of the action lines in the ASEAN Socio-Cultural Community Blueprint have been implemented.

(Sources: ASEAN website, PwC analysis)

Despite a recent slow-down of real GDP growth, ASEAN member countries show continued strong economic development, with Thailand showing only moderate inflation



Source: EIU, PwC analysis



Source: Worldbank, PwC analysis

- ASEAN's real GDP growth rates continue to **outperform growth rates of the EU**.
- **Inflation in Thailand** stays well **below ASEAN average**, but is expected to increase in accordance with other ASEAN countries.

Source: Worldbank, PwC analysis

Thailand in Context
PwC

October 2014
8

Speaker Notes:

Real GDP Growth

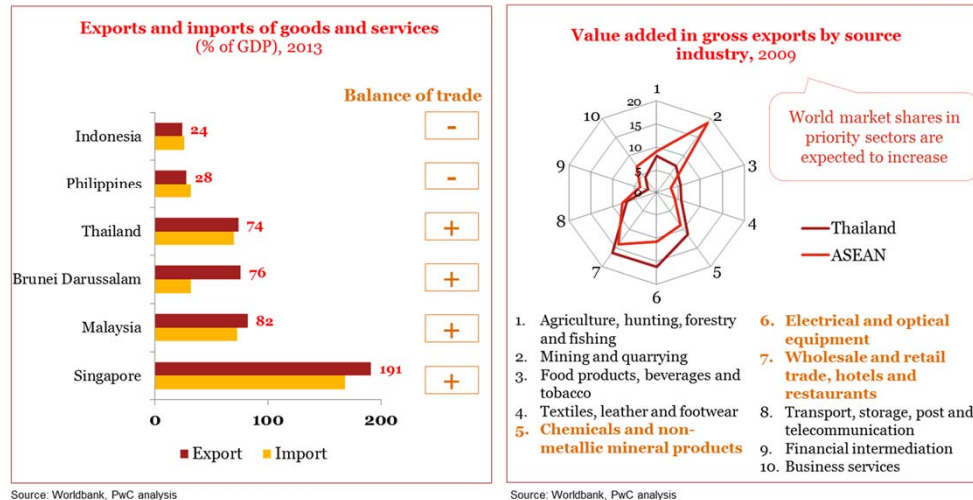
- **Continued strong performance** of ASEAN countries, especially compared to EU countries.
- **Long term real GDP growth (2014-2018) expected to be increasing** for all ASEAN member countries, except for Indonesia, whose RGDP is expected to be decreasing from 6.7% to 6.3% in 2018. Thailand's RGDP is projected to be accelerating from 1.9% in 2014 to 5.5% in 2018.

Consumer Price Index

- **Inflation** in ASEAN member states is expected to increase in the long term **due to strong economic growth**.
- A spike in wages, as well as the emergence of organised labour groups for better pay and conditions means that imported deflation from cheap Chinese products will probably be a thing of the past (nominal rural wages increased by more than 20% in 2012).
- Although commodity prices should dip in 2012 – non-oil commodities have already fallen about 10% from their peak – it will probably **take a long time for rising production to meet surging demand**, with structurally higher prices the logical outcome. The implication of structurally higher inflation is tighter monetary policy, which in turn implies a reduction in the potential growth rate for a given level of inflation.

(Source: EIU, Worldbank, CEPR, PwC analysis)

Significant rise in exports and imports of ASEAN countries is expected in coming years, driven largely by the member countries' robust economic growth



Thailand in Context
PwC

October 2014
9

Speaker Notes:

Exports/ Imports

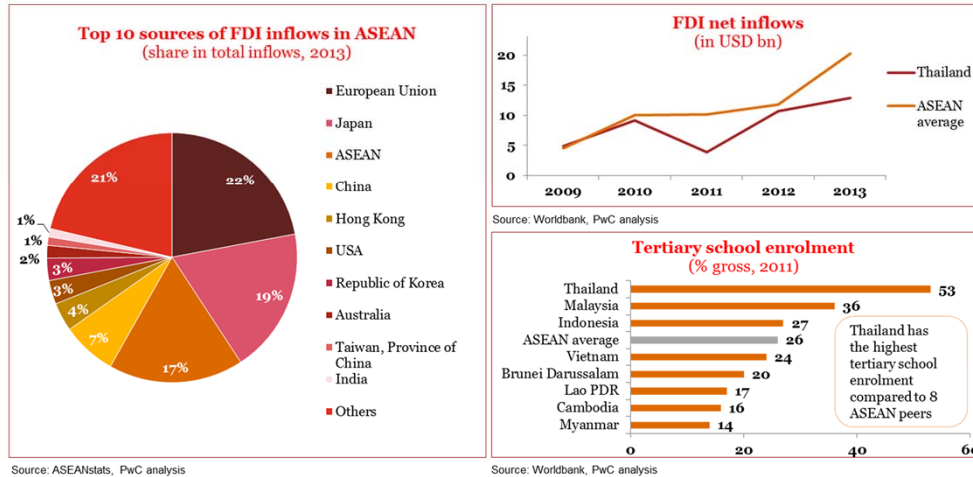
- ASEAN ex-/ and imports decreased 2013, but **demand for imported goods and services will increase** in years to come, owed to the expected continued real GDP growth.
- **General export competitiveness**, measured by a country's share of global export markets, has **remained stable** in past years, with increasing world market shares in the priority sectors.
- Brunei's and Laos' demand for food imports is expected to grow, similarly to Indonesia's growing demand for consumer goods imports.
- **Intra-regional trade** of ASEAN countries **remains significant**. It is also higher compared to trade between other emerging economies.
- China is an increasingly important trading partner.

Value added in gross exports by source country and source industry:

- SE Asia has **moved towards high-value exports**, but a clear divergence among the region's economies remains. Malaysia and Singapore show the highest share of high-value manufacturers, followed by Thailand, Indonesia and the Philippines.
- Thailand is especially strong in chemicals, electrical and wholesale industry. 16% **value added** in gross exports comes **from the electrical** sector, which is **above ASEAN average of 10%**.
- Countries undergoing the most rapid industrialisation include Thailand, the Philippines and Indonesia. Strong progress not only provides the richer economies with cheap productive capacity, but also with product markets.

(Sources: CEBR, EIU, Worldbank, PwC analysis)

An increasingly enabling investment climate and growing proportion of educated labour force makes ASEAN an attractive FDI destination



Thailand in Context
PwC

October 2014
10

Speaker Notes:

Top 10 sources of FDI inflows in ASEAN

- In November 2012, ASEAN officially launched **negotiations** with **Australia, China, India, Japan, New Zealand** and the **Republic of Korea** on a Regional Comprehensive Economic Partnership agreement (RCEP). The RCEP seeks to create a liberal, facilitative and competitive investment environment in the region.
- A number of **companies from Europe and the United States** have also **recently established** or are establishing **operations in Myanmar**.

FDI net inflows

- In 2013 **Thailand ranks 3** (USD 12bn), behind Singapore (USD 63bn), and Indonesia (USD 20bn).
- The **sharp decline of FDI in Thailand in 2011** was mainly **due to** the devastating earthquake and tsunami that hit Japan, one of Thailand's primary trading partners as well as the destructive flooding in Thailand.
- The **general positive trend** is to be **explained by** increasing demand due to population growth and an increase in disposable income; improvements of infrastructure with further projects planned to improve connectedness; reduced barriers of trade between ASEAN member states.
- **Singapore ranked 8 worldwide for host economies in 2012**. And is, together with Indonesia, among the top 20 FDI recipients worldwide.

Tertiary school enrolment

- **General shortage of skilled labour** throughout ASEAN member countries, but situation is improving.
- In 2011, ASEAN saw an average enrolment in tertiary schooling of 26%. **Thailand** and **Malaysia** show the **highest enrolment ratio with 53% and 36%**.

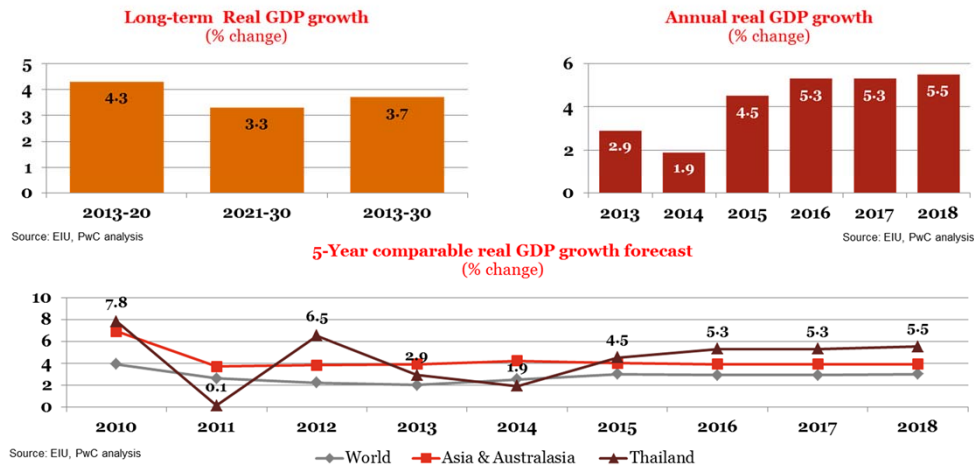
(Sources: ASEAN website, EIU, CEPR, Worldbank, PwC analysis)

Section 1.2

The internal context: Thailand's macroeconomic performance

1.2.1 Key macroeconomic indicators

Economic development in Thailand is robust in the medium and long term with a favourable growth outlook, also compared to neighbouring regions



Thailand in Context
PwC

October 2014
12

Speaker Notes:

Long-term Real GDP growth

- Overall, **Thailand's economic development is robust**, despite political turmoil and the long-term real GDP growth forecast is positive and stable.
- Average real GDP growth between 2013 and 2020 lies at **4.3%**.
- Between 2021 and 2030, real GDP growth is expected to be slightly lower, estimated to range on average around 3.3%.

Annual real GDP growth

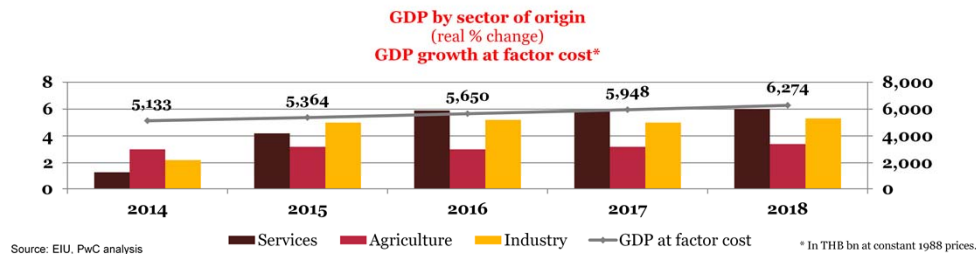
- The **5-year annual real GDP forecast is robust and favourable**, ranging between 4.5% in 2015 and 5.5% in 2018.
- It is expected that GDP will grow by 1.9% in 2014 but annual economic expansion will accelerate again to an average of 5.2% in 2015-2018.

5-Year comparable real GDP growth forecast

- Thailand's real **GDP growth** is also favourable when **compared to other regions**.
- From 2015 to 2018, Thai real GDP growth averages **5.2%** and lies above both world real GDP development and above real GDP growth of neighbouring countries and regions.
- Average real GDP growth between 2015 and 2018 for **Asia and Australasia** is about **3.9%**.

(Sources: EIU, PwC analysis)

Gross domestic product forecast by sector of origin shows that all sectors grow robustly over the forecast period, providing for multiple investment opportunities



Gross domestic product at factor cost will increase by 22.2% between 2014 and 2018.



With services, agriculture and industry, all sectors benefit from robust growth in the forecast period.

Source: EIU, PwC analysis

Thailand in Context
PwC

October 2014
13

Speaker Notes:

GDP by sector of origin

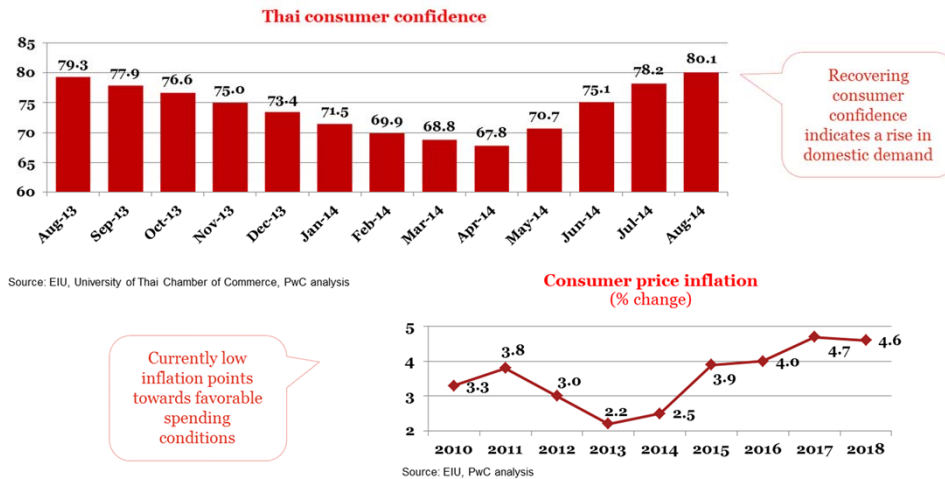
- In the forecast period until 2018, **all sectors of the economy benefit from robust growth.**
- The traditionally on agricultural exports based **Thai economy has transformed** over the past few decades.
- The **industry and services** sectors now have a more prominent role.
- While industrial activity is concentrated around the capital, the previous governments as well as the ruling National Council for Peace and Order have aimed to **decentralize Thailand's industrial base** by creating investment promotion zones throughout the whole country.

GDP growth at factor cost

- GDP at factor cost is the sum of the gross value added in the various economic activities.
- Measured at constant prices, the increase shows real (expected) increase in value added, indicating a **positive growth outlook for Thailand.**

(Sources: EIU, PwC analysis)

Despite political turmoil, Thai consumer confidence is rising again, pointing towards a recovery of domestic demand with positive effects for consumption



Thailand in Context
PwC

October 2014
14

Speaker Notes:

Thai consumer confidence

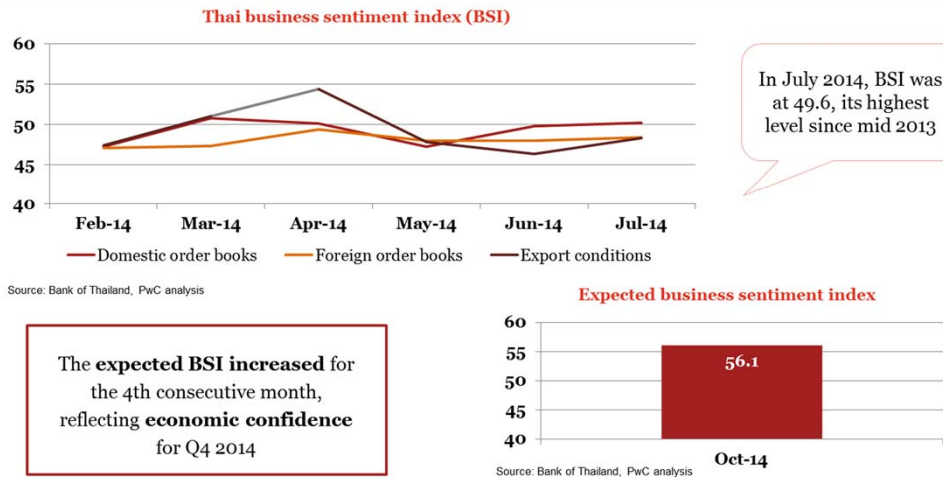
- The **University of the Thai Chamber of Commerce's consumer confidence index rose for the fourth month in a row reaching 80.1 in August 2014.**
- The index has fallen for thirteen consecutive months to 67.8 in April 2014, its lowest level since November 2001.
- However, the increase for four consecutive months shows Thailand's **ability to recover from short-term shocks** and hints to a **positive future development.**
- Similar analysis from the Bureau of Trade and Economic Indices has shown a similar improvement in consumer confidence in recent months.
- This is a more than encouraging sign given the relatively weak start the economy had in 2014 and it reflects reduced political turbulence and the **restoration of a functioning government.**

Consumer price inflation

- Moreover, the positive consumer confidence development is underpinned by **favourable spending conditions** as well as **low inflation by historical standards.**
- Inflation is expected to remain moderate for the rest of **2014 at an average of 2.5%.**
- Future consumer price inflation is expected to increase to an average of 4.5% per year.

(Sources: EIU, University of Thai Chamber of Commerce, PwC analysis)

While the consumer confidence index is rising, the business sentiment index also shows signs of improvement, indicating that businesses expect an ongoing economic recovery



Thailand in Context
PwC

October 2014
15

Speaker Notes:

Business sentiment index (BSI) Thailand

- **The BSI shows improved confidence in economic recovery.**
- In **July 2014**, the business sentiment index was at **49.6**, staying below 50 for the thirteenth consecutive month.
- However, improvement in the political situation **shored up business confidence, reflected in the highest** level of BSI since the middle of 2013.
- The index increased from the previous month in almost all components, especially in production and investment, indicating a **more apparent recovery of economy**.

Expected business sentiment index

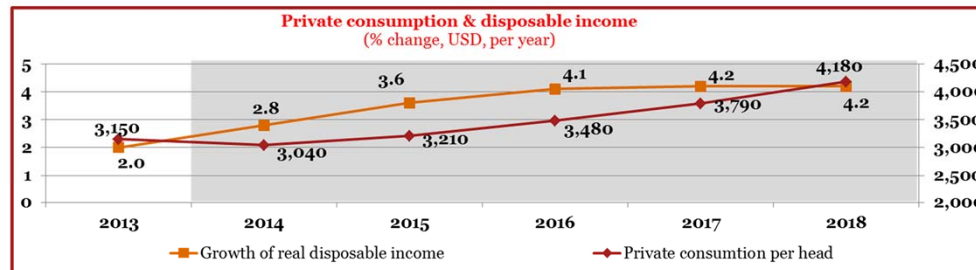
- **Over the upcoming three months**, respondents from manufacturing and non-manufacturing firms **expect business conditions to improve further**.
- The **expected BSI** not only stays above 50 but also **increases for the fourth consecutive month**.
- Confidence in production, performance and order books significantly improved from the previous month, reflecting respondents' improved confidence in economic recovery in the last quarter of this year.

Background: Interpretation of the BSI

- Index = 50 indicates that the respondents' business sentiment remains stable from the previous month;
- Index > 50 indicates that the respondents' business sentiment has improved from the previous month;
- Index < 50 indicates that the respondents' business sentiment has deteriorated from the previous month.

(Sources: Bank of Thailand, PwC analysis)

Thailand's continuous growth of private consumption and disposable income as well as the overall strengths and opportunities will increase its internal market attractiveness



Source: EIU, PwC analysis

- Real disposable income growth will average 3.5% per year until 2018.
- Private consumption will increase by 32.7% between 2013 and 2018.
- ☑ Only a small portion of personal disposable income spent on accommodation, leaving a greater share available for spending on consumer goods.
- ☑ High demand for consumer goods compared to other Asian countries.

Source: EIU, PwC analysis

Thailand in Context
PwC

October 2014
16

Speaker Notes:

Private consumption outlook

- **Household consumption will recover** from 2015 onward and the outlook until 2018 in terms of real disposable income growth and private consumption is showing a positive picture.
- **Real disposable income** is expected to grow from 2% in 2013 to **4.2% in 2018** and thus will **positively affect domestic private consumption in Thailand**.
- Equally, **private consumption per head will increase** between 2013 and 2018 from USD 3,150 to USD 4,180.
- Only a small proportion of personal disposable income in Thailand is spent on accommodation, leaving a greater share available for spending on consumer goods.
- As a result, **demand for consumer goods is high compared with that in many other countries in Asia**.
- As consumer confidence returns (which has been the case for the last four months in a row), the release of hold-back demand is expected to boost retail sales.

(Sources: EIU, PwC analysis)

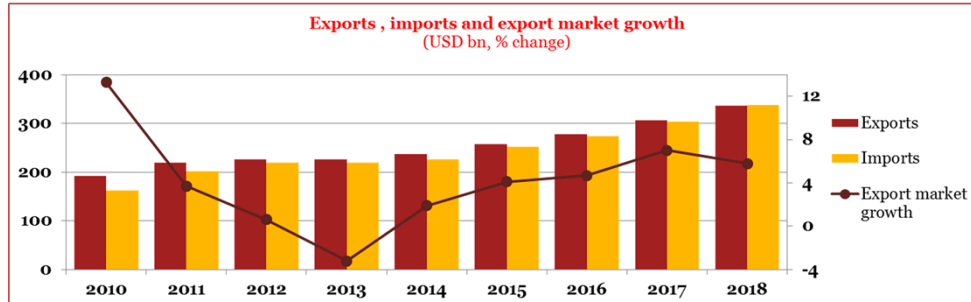
Export market growth is robust, making Thailand an attractive hub to export in neighbouring countries in Asia as well as to Australasia

Main export destinations 2013

- 1 China (11.9%)
- 2 United States (10.1%)
- 3 Japan (9.7%)
- 4 Hong Kong (5.8%)

Speed up in public investment and streamlining of foreign-investment approvals positively affect Thailand's export performance

Source: EIU, PwC analysis



Source: EIU, PwC analysis

Thailand in Context
PwC

October 2014
17

Speaker Notes:

Exports and imports, export market growth

- Thailand's political crisis earlier in 2014 has weighed on consumer and business confidence.
- The National Council of Peace and Order does focus on reviving the economy in the second half of 2014 and in 2015.
- Their efforts to speed up public investment in infrastructure and streamline foreign-investment approvals will revitalize consumer and business confidence and will positively affect export performance of Thailand.
- **Recovery of exports is expected from 2014/15 onwards.**
- **Also export market growth forecast is robust until 2018.**

Destination of exports

- Destination of exports shows that **Thailand serves as a hub for exports** in neighbouring regions and in countries worldwide.

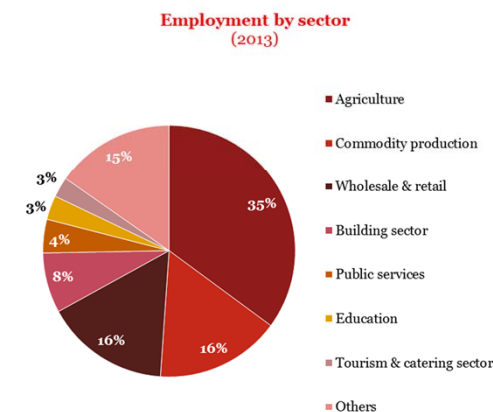
(Sources: EIU, PwC analysis)

Section 1.2

The internal context: Thailand's macroeconomic performance

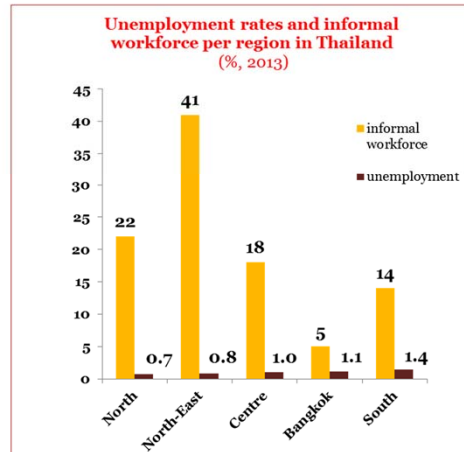
1.2.2 Labour market characteristics

Low unemployment rates and a structural change towards knowledge-intensive industries will change Thailand's current image as a labour-intensive and low-wage economy



Source: GTAI, PwC analysis

Thailand in Context
PwC



Sources: GTAI, National Statistical Office of Thailand, PwC analysis

October 2014
19

Speaker Notes:

Employment by sector

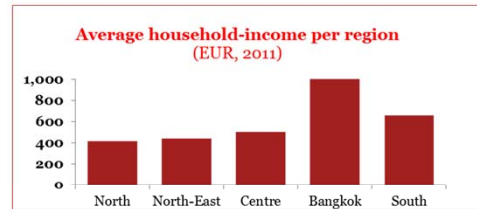
- **Agriculture** is still the **biggest sector**, followed by commodity production and wholesale and retail.
- In the mid-term, **increases** are **expected** in those **sectors** that succeed in **attracting FDI** (e.g. automobile, electronics and service sectors), as well as in those sectors that **receive substantial public funding**, like the development of the water- and transport system.
- **Female employment is high with 46%**; and **39% of senior management positions** are held by women – which leads Thailand to rank second worldwide, behind Russia.

Informal employment & unemployment

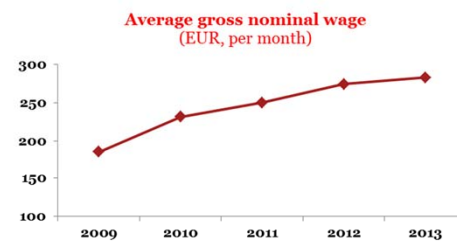
- Overall **unemployment** in Thailand is **low** (1.1% in 2014), being highest in the South of the country.
- It has consistently declined since 2001. Male unemployment has been slightly higher than female unemployment, by about 0.1–0.4 percentage points.
- Thailand however has a very high rate of **informal workers**. It is **especially high** in regions where the majority of employment is in the **labour-intensive industries**. In the capital Bangkok it is lowest as the majority of jobs here is in less labour-intensive sectors.
- It is expected that the share of informal workforce **will decrease** in future.
 - Thailand will undergo a **structural change**, away from a “low-wage country” and basic production processes towards a high-tech and knowledge-based economy.
 - This brings with it **increasing levels of education**, increasing **average wages** and **less employment in labour-intensive sectors** and thus a decrease in informal employment.

(Sources: GTAI, National Statistical Office of Thailand, ILO, PwC analysis)

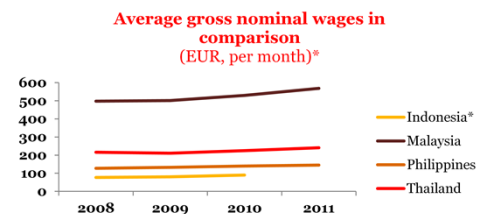
Thailand is classified as a “Upper Middle Income Country” showing a steady increase in average wages, despite some regional differences



Source: GTAI, PwC analysis



Source: GTAI, PwC analysis



*Further country data not available
Source: ILO, PwC analysis

- In 2013 a **nationwide minimum wage** of 300Baht (approx. EUR 7,22) per day was enforced.
- The **middle class is expected to grow** considerably in years to come due to improved education, an increasingly diversified economy and an increase of domestic demand.

Source: GTAI, PwC analysis

Thailand in Context
PwC

October 2014
20

Speaker Notes:

Average household-income per region

- In the years of 2009 to 2011 the nationwide average household-income **increased by 11%**.
- However, **regional differences** still remain relatively high.
- In the prospering region of Bangkok, average income is highest, while income in regions mainly dependent on the agrisector remains lower.
- **Top 20%** of Thailand's **population earn** approximately **54% of total income**, while the bottom 20% earn only 5%.

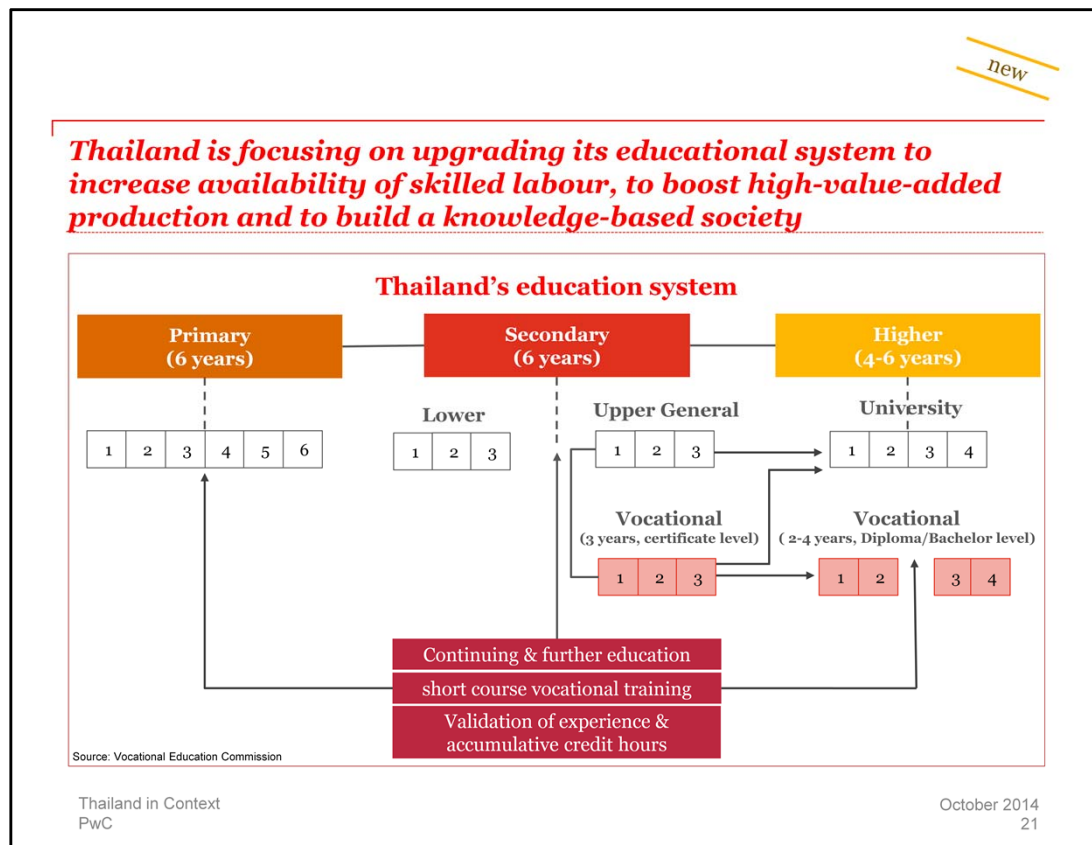
Average gross nominal wage

- During past years **wage increase** was **between 5.0% and 6.5%**. This relatively strong increase is expected to continue for years to come.
- Thailand shows 5th highest increase in wage, behind Vietnam (+11.5%), India (+10.9%), Indonesia (+10.0%), and China (+8.6%).
- Thailand lost its status as low-wage country to neighbouring countries: Cambodia, Lao, Myanmar and Vietnam.
- This especially is true since Thailand introduced a **nationwide minimum wage in 2013**.

Average gross nominal wages in comparison

- Despite Thailand's minimum wage policy and the according increase in average wage, it **still groups among the lower wage countries** in the ASEAN region.
- **Singapore**, with an average gross nominal wage of EUR 2.679 **ranks highest** among ASEAN member states.

(Sources: GTAI, ILO, PwC analysis)

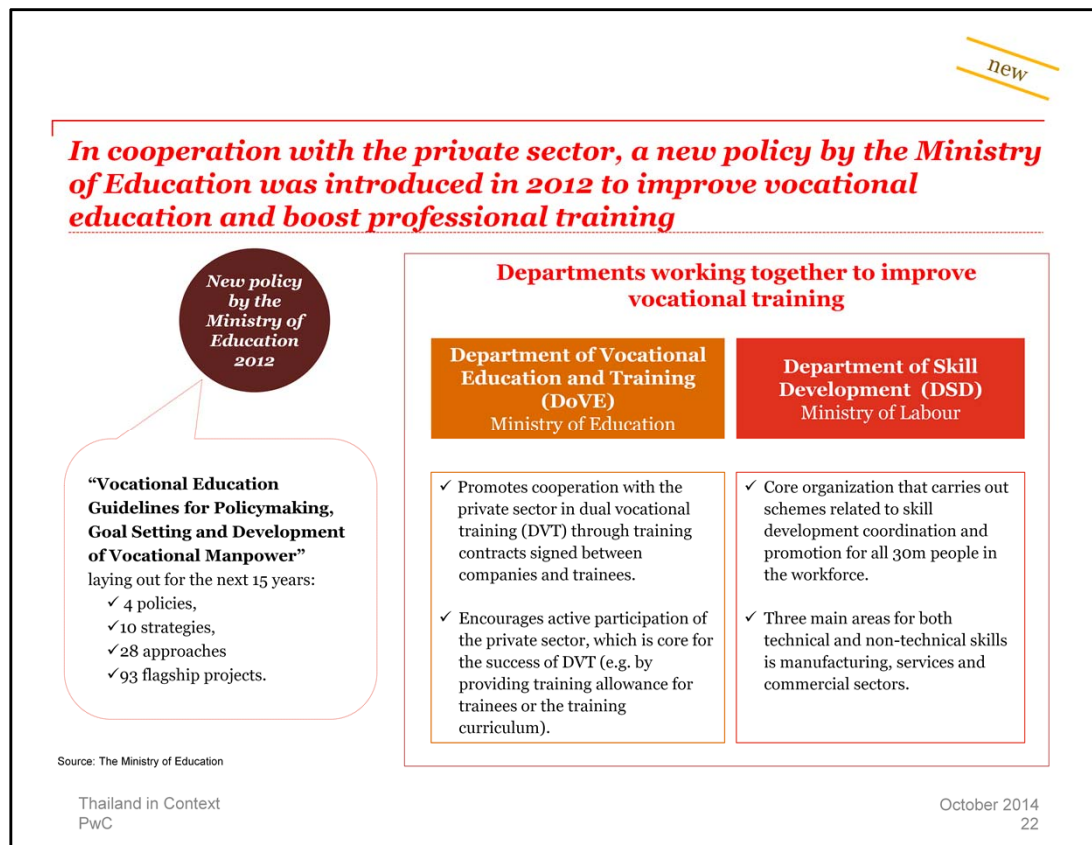


Speaker Notes:

Thailand's education system / general remarks

- Thailand is focusing on **upgrading its educational system to boost high-value-added production, to build a knowledge-based society** and to increase the **availability of skilled labour**.
- From early 2001 on, the Ministry of Education began developing new national curricula in order to model the system of education on child, or student-centred learning methods. On return to democracy **in early 2008, new allocations of funds for education**, an increase in the number of teachers, and more changes to the national curriculum and university entrance system were established.
- Education is provided through the Ministry of Education from pre-school to senior high school. **Free basic education of twelve years** is guaranteed by the constitution, and a minimum of nine years' school attendance is mandatory.
- Basic education is divided into **six years of primary education** and **six years of secondary education**, the latter being further divided into three years of lower- and upper-secondary levels. The upper secondary level of schooling is divided into **academic and vocational streams**.
- Formal **vocational education** begins in grade 10, when students choose between academic (general) education and vocational/technical education. Academic-path students can go to university after grade 12 to attain a degree. Vocational stream students study for 3 years (grade 10-12) for a vocational certificate to become skilled workers in the labour market, but the majority continue to study for two more years to obtain a higher vocational diploma as a technician due to the higher economic rewards.

(Sources: Vocational Education Commission Thailand)



Speaker Notes:

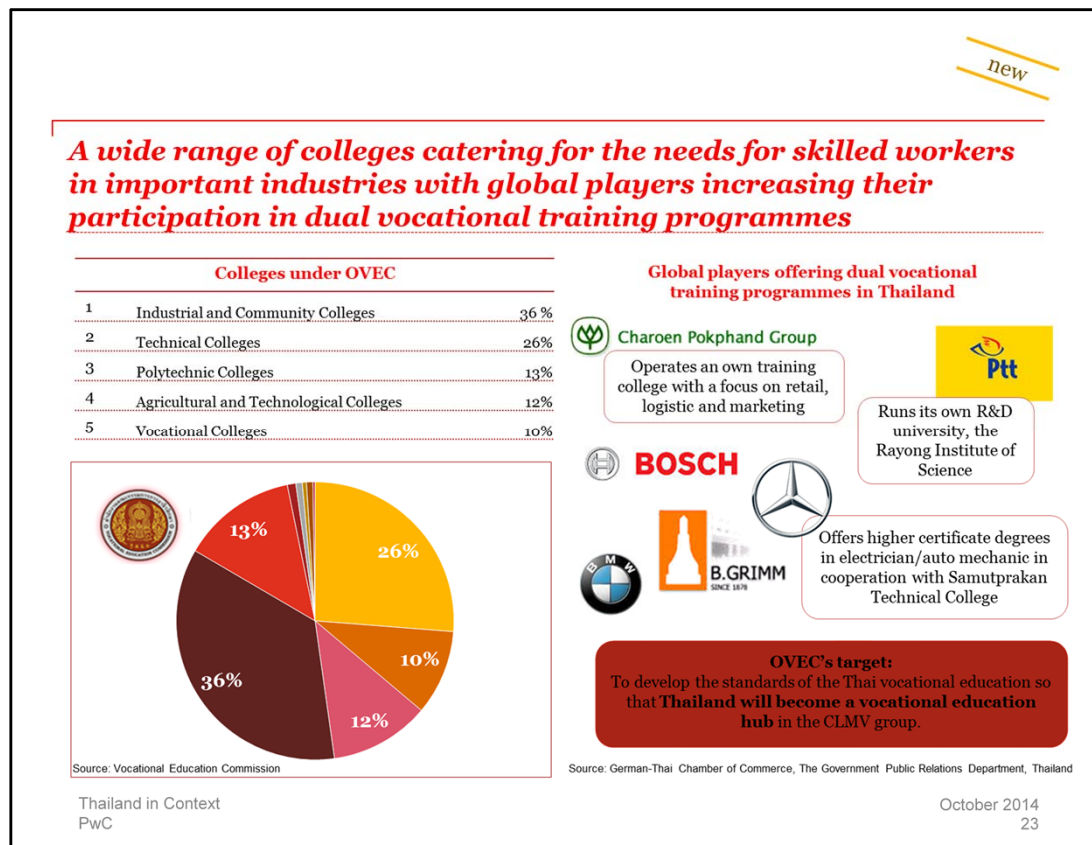
New policy by the Ministry of Education 2012

- In July 2012, the Ministry of Education issued a new VET policy statement called “**Vocational Education Guidelines for Policymaking, Goal Setting and Development of Vocational Manpower**”. The policy document lays out four policies, 10 strategies, 28 approaches and 93 flagship projects. It is intended to guide policy for the forthcoming 15 years.
- The **four policy objectives** are (1) to produce vocational manpower in response to labour market demands; (2) to raise the quantity and quality of teachers, faculties and personnel in vocational education; (3) to develop the quality of educational institutions and new learning sources and (4) to develop management efficiency.

Departments working together to improve vocational training

- Prime Minister Prayut Chan-o-cha has suggested in September 2014 that **vocational education should be upgraded as a key foundation of the country**, as Thailand is still in great need of skilled workers in many fields.
- Public policies and measures dealing with vocational education and training generally fall under two domains: the **Department of Vocational Education (DoVE)**, Ministry of Education, and the **Department of Skill Development (DSD)**, Ministry of Labour.
- The DoVE promotes **cooperation with the private sector in dual vocational training (DVT)** through training contracts that are signed between companies and trainees. Core to the success of DVT is the active participation of the private sector.
- The DSD deals directly with **skills development** of the 30 million people in the workforce. It is the core organization that carries out schemes related to skill development coordination and promotion.

(Sources: The Ministry of Education Thailand)



Speaker Notes:

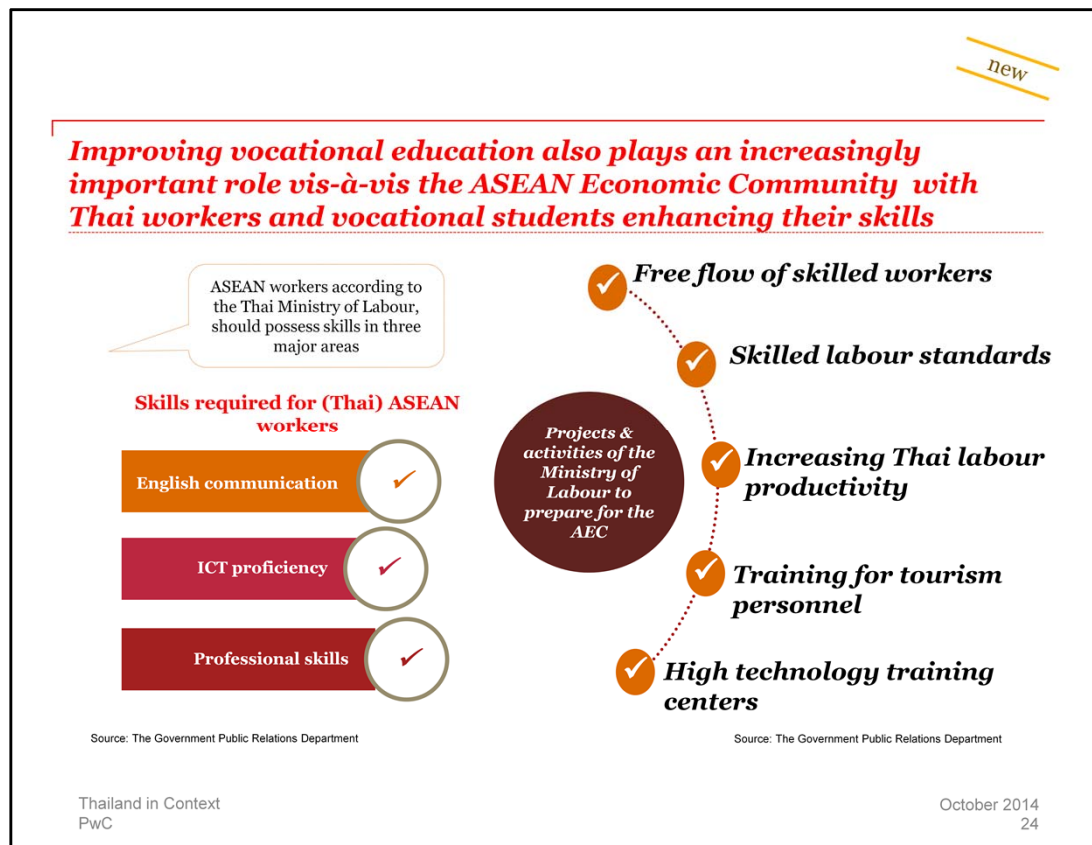
Colleges under OVEC

- The **Office of Vocational Education Commission (OVEC)** provides formal technical & vocational education (TVE) and training – and aims to make Thailand **the vocational education hub** in the CLMV group (Cambodia, Laos, Myanmar and Vietnam)
- **OVEC** equips individuals with occupational competencies and skills needed for the labor market and self-employment.
- Vocational education is notable for its **high percentage of private sector provision**. By 2010, the OVEC administered 415 public colleges and 427 private vocational colleges.
- Vocational education is provided through **industrial and community colleges (36%)**, **technical colleges (26%)**, **polytechnic colleges (13%)**, **agricultural and technological colleges (12%)**, **vocational colleges (10%)** and some other specialized institutions.
- In 2010, nearly 0.7 mn students were enrolled in TVET colleges governed by OVEC, and approximately 0.4 mn students were studying in private vocational schools and colleges.

Dual vocational training

- In 1995 the Department of Vocational Education initiated the introduction of dual vocational training (DVT) programmes, **based primarily on the German model**, which provide students with hands-on training in selected private-sector organisations. The training takes 3 years with more than half of the time devoted to practical training on-the-job.
- **Two levels of DVT:** (1) **three-year certificate level** for skilled workers (age 15 and above, after Grade 9); (2) **two-year diploma technician level** for students with the Certificate of Vocational Education (after 12 years of formal education).
- The **German-Thai Dual Excellence Education (GTDEE)** was introduced by the German-Thai Chamber of Commerce and Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH in 2012. Here, students spend two years at school and two years of training at one of the participating companies (e.g. **BMW, Bosch** and **B.Grimm**).
- There is also a growing trend for private companies to **establish their own educational institutions**. E.g. **CP group** operates its own training college and **PTT** set up its own R&D university.

(Sources: German-Thai Chamber of Commerce, The Government Public Relations Department, Thailand, Vocational Education Commission Thailand, UNESCO Bangkok)



Speaker Notes:

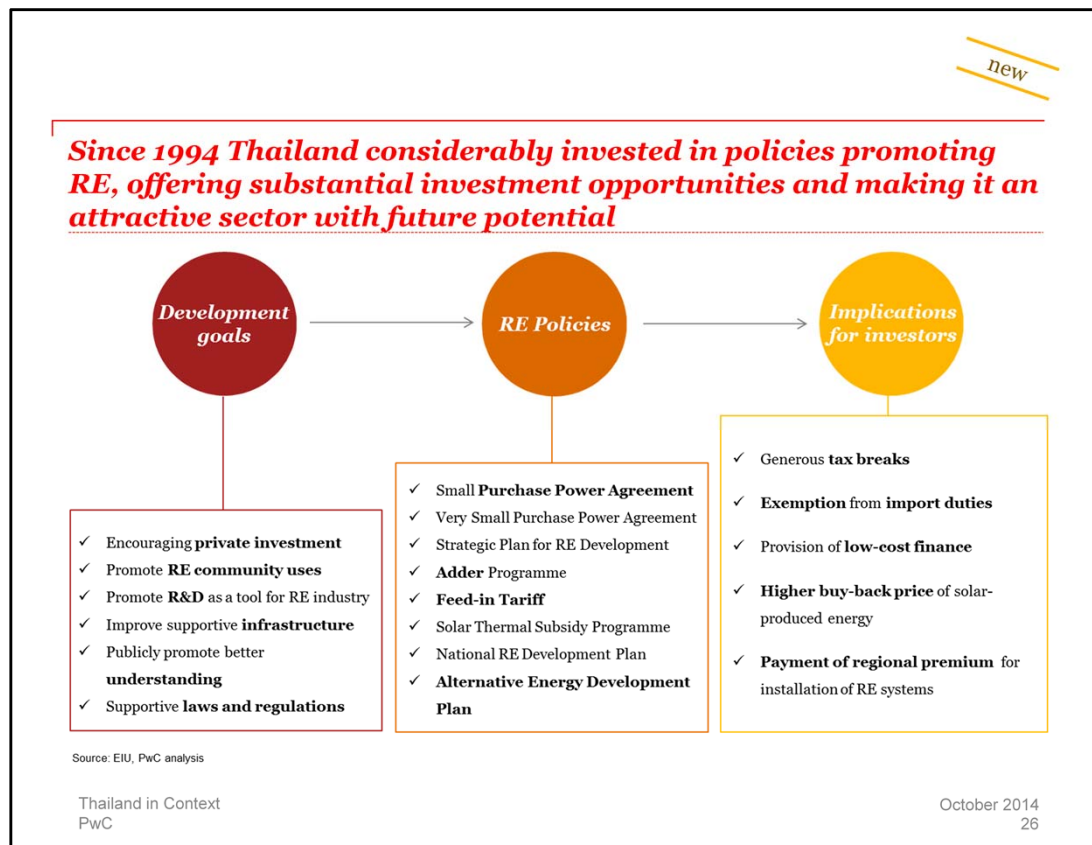
- Skilled and high-quality labor will help strengthen the ASEAN region. The free movement of skilled labor after the implementation of the AEC will also contribute to this region, which will become a single market and production base in late 2015.
- The Thai Permanent Secretary of Labor stated that ASEAN workers should possess **skills in three major areas:**
 - (1) English communication**, as English will be the working language of ASEAN, when the ASEAN Community is in place.
 - (2) Promotion of information and communication technology (ICT)** by developing manpower with high levels of ICT proficiency and expertise.
 - (3) Professional skills**
- Moreover, ASEAN workers should begin to think internationally and adjust their working style, so that they can work with people of different cultures and cope with cultural differences.
- The Permanent Secretary said that the Ministry of Labour has been implementing many projects and activities to prepare Thai workers to be “ASEAN workers” such as measures to facilitate the free flow of ASEAN skilled workers, develop skilled labor standards, increase Thai labour productivity, provide training for tourism personnel, and establish high-technology training centers.

(Sources: The Government Public Relations Department Thailand)

Section 1.2

The internal context: Thailand's macroeconomic performance

1.2.3 Renewable energies



Speaker Notes:

Development Goals

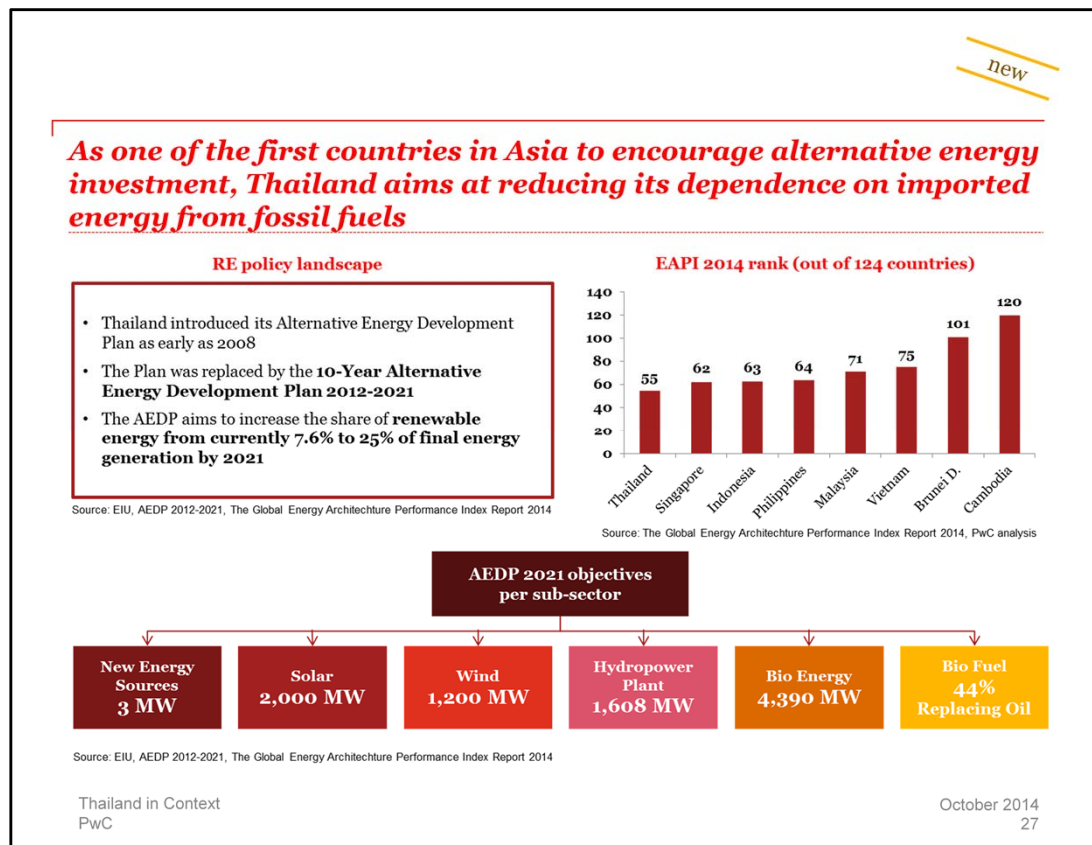
- Thailand's government aims at developing a **low-carbon society** and strives to: Increase private investment in this sector, promote the usage of alternative energy, increase R&D in the RE sector, develop and improve the relevant infrastructure, to improve public understanding of the benefits and necessity of RE, and install a supportive regulatory environment.

RE Policies

- **Since 1994** the government has enforced several policies concerning RE.
- They include programmes for very small producers, generally simplified regulations, introduction of the "adder" etc.
- **Additionally two development plans** were introduced: 2009 National RE Development Plan 2008 – 2022 and in 2012 Alternative Energy Development Plan 2012 - 2021

Implications for investors

- Through incentives administered by the Board of Investments, eligible RE projects can get a **corporate income tax break** for up to 8 years and are **exempt from import duties** on equipment.
- In addition, a revolving fund, funded by taxes on all petroleum products sold in Thailand, provides **low-cost finance** for renewable energy projects.
- The government's policy of paying more for solar power has triggered a surge in investment in solar projects by both domestic and foreign firms.
- An additional premium is paid to projects that replace diesel generators in remote areas or are located in one of Thailand's 3 southern provinces (part of the "Adder" programme).



Speaker Notes:

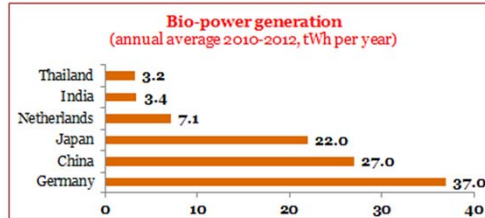
Introduction to Thailand's renewable energy approach

- Thailand is **heavily dependent on energy imports**: some 70% of its primary energy supply (crude oil, coal, natural gas).
- Thailand is **one of the first countries in Asia** to encourage alternative energy investment as early as 2008.
- The policy environment is highly conducive to raising the share of renewable energy in total energy generation.
- The objective under the 10-Year Alternative Energy Development Plan 2012-2021 is to increase the share of renewables, which would save US\$19bn annually in energy imports.
- Thailand's renewable energy **targets are among the most ambitious in the ASEAN** with Thailand's efforts and success being reflected in its top performance in the Energy Architecture Performance Index 2014.

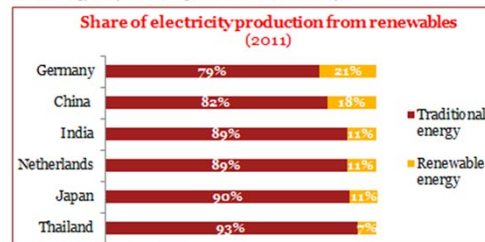
EAPI 2014 (by World Economic Forum and Accenture)

- The EAPI uses a set of indicators, determining to what extent nations have been able to create affordable, sustainable and secure energy systems.
- The index includes **three dimensions**: 1. economic growth and development (efficiency, affordability, supportive/ detracts from growth), 2. environmental sustainability (emissions impact, ratio of low carbon fuels in the energy mix) and 3. energy access & security (diversity of supply, level and quality of access, self-sufficiency)
- Over the past two decades, the ASEAN region has experienced **high energy demand growth**, and this trend is expected to increase by an additional 80% between 2013 and 2035. This offers **vast potential for companies** operating in the energy sector, especially in Thailand due to its focus on renewables.

The Thai government is very enthusiastic about renewable energies, as they will play a crucial role in meeting the country's rising energy demand

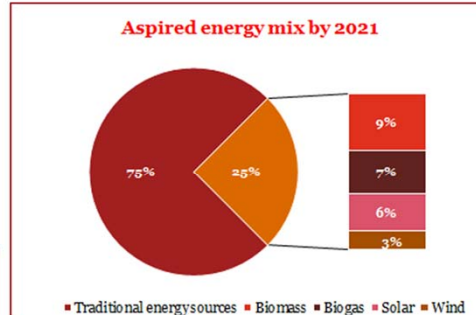


Source: Energy Policy and Planning Office of Thailand, PwC analysis



Source: UNEP 2013, PwC analysis

Thailand in Context
PwC



Source: Oxford Business Group, PwC analysis

In comparison to other countries worldwide **Thailand lags behind**. However, the ambitious goals set by its government offer **vast investment opportunities**.

Speaker Notes:

Bio-power generation

- The Ministry of Energy of Thailand reports that Thailand produced approximately **5% of its energy from renewables in 2013**.
- In a ranking of 2013 by the UNEP Thailand ranked **19 worldwide** in bio-power generation.
- However, the gap between Thailand and the countries at the top is still significant.

Share of electricity production from renewables

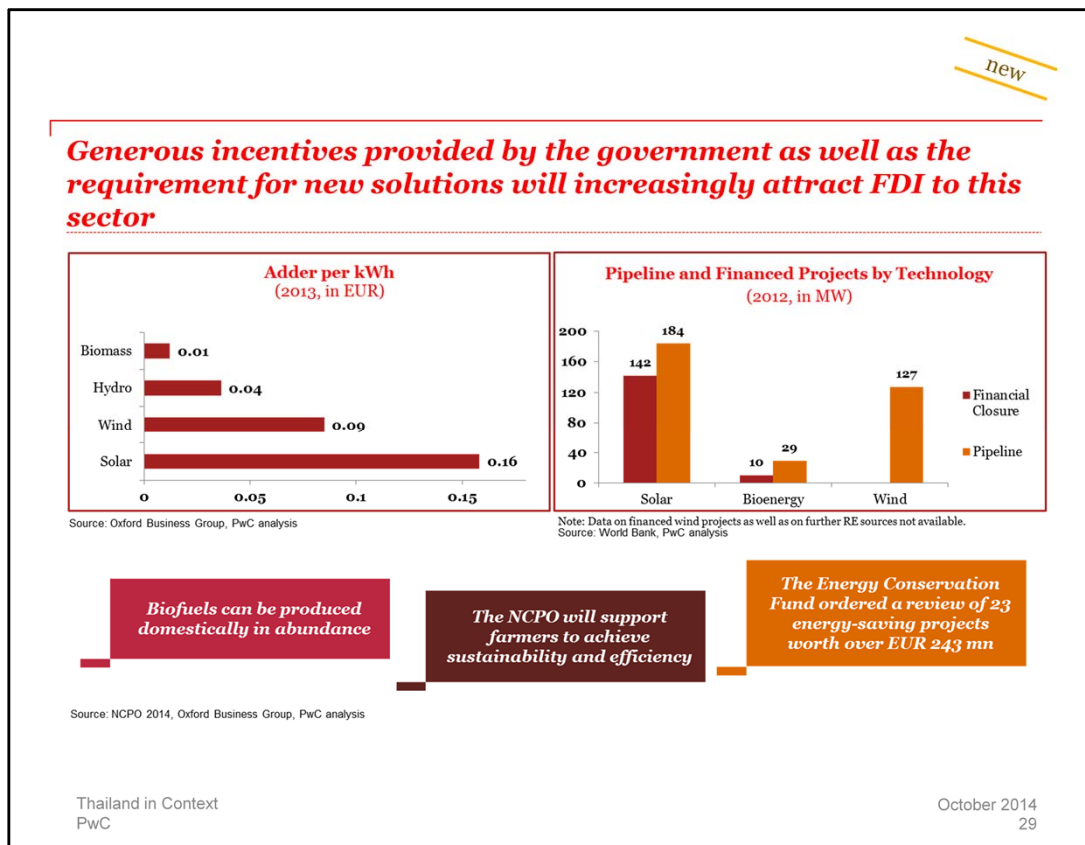
- Same holds for the share of electricity produced from renewables.
- Thailand already achieved 7% to be produced by renewable energy, still, compared to other countries **room for improvement** exists. The country still heavily depends on energy imports and traditional energy sources.

Aspired energy mix by 2021

- The **government** is very enthusiastic about renewable energies and has **set high targets** for alternative energy sources.
- In 2013 it **increased its goal by 50%**, from 9201 MW to 13,927 MW, to be achieved by 2021.
- This ambitious goal serves as great opportunity for **substantial investments** in this sector.

(Sources: Energy Policy and Planning Office, Oxford Business Group)

October 2014
28



Speaker Notes:

Adder per kWh

- In 2006 the government introduced incentives to **boost renewable energy production**.
- These incentives comprised, among others, “adder” tariffs providing suppliers with per kWh compensation **on-top of what is paid to standard wholesale power producers**.
- Initially the Solar adder equalled EUR 0,19 per kWh. However, the programme attracted so many solar projects that utilities were left with an excess of obligations. Thus, in 2010 the solar adder was reduced to EUR 0,16 per kWh.

Pipeline and Financed Projects by Technology (2012, in MW)

- In 2012, 152 MW of renewable energy projects with private participation reached financial disclosure. **Total project cost amounted EUR 231 mn.**
- Further, the project pipeline reached a total of 340 MW capacity.
- The **most active sponsor** was **Gunkul Engineering** of Thailand, with 60 MW in the pipeline and 20 MW in financed projects.


Text Boxes

- **Biofuels** have **less carbon emissions** than fossil fuels, however conflict with the food industry need to be solved, and efficiency needs to be further improved.
- The NCPO will install two key measures: 1) reducing production costs, and 2) provision of credit and short-term loans, in order **to allow farmers to become more sustainable**.
- The initiative of the Energy Conservation Fund will bring about **public awareness** for energy savings.

(Sources: Oxford Business Group, World Bank, NCPO, PwC analysis)

new

With the project of Chiang Mai Green City, Thailand is the first among ASEAN members to develop a community using only renewable energy and green technologies



- Environmentally friendly and **100% sustainable** model city
- Built **from scratch** on **150 acres** of Mae Rim district
- **Balanced bio-cycle** and **mixed renewable energies**
- The **Office of Naval Research** is one of the funding agencies



Smart Community
Zone A

- Model community solely using **DC power**
- The DC micro grid is **integrated with other RE technologies**

Green Institute
Zone B

- Zone for **Academics and Research**
- All facilities are **energy efficient** and integrated with the environment

Green & Eco-Products
Zone C

- **Permanent exhibition** and “World Outlet”
- Acts as **mean to conduct Green business** for the ASEAN Economic Community

Source: Aptep, The Government Public Relations Department, PwC analysis

Thailand in Context
PwC

October 2014
30

Speaker Notes:

- Owing to the need of Thailand to **prepare for the changing energy situation**, the Asian Development Institute for Community Economy and Technology, launched the project of Chiang Mai Green City (CMGC).
- CMGC was developed as a model community that applies **smart technologies** and **renewable energy sources** into a green life style.
- This prototype is striving to be **fully sustainable**.
- Based on the concept of offering communities worldwide ideas of how to become sustainable and environmentally friendly, the concept seeks to **tackle economic and poverty problems as well**.
- It is situated at the Saluang-Keelek Campus of Chiang Mai Rajabhat University in Mae Rim district.

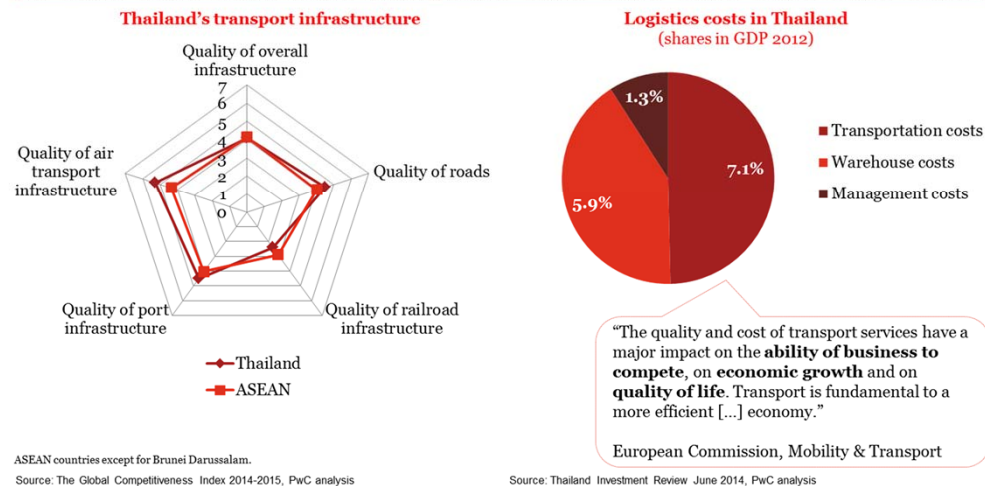
(Source: Aptep, The Government Public Relations Department, PwC analysis)

Section 1.2

The internal context: Thailand's macroeconomic performance

1.2.4 The role of infrastructure development for the Thai economy

While performing well in ASEAN comparison, Thailand has room for improvement in infrastructure development which will benefit the Thai economy and its people



Thailand in Context
PwC

October 2014
32

Speaker Notes:

Thailand's transport infrastructure

(score 1 is the lowest "worst"; score 7 is the highest "best")

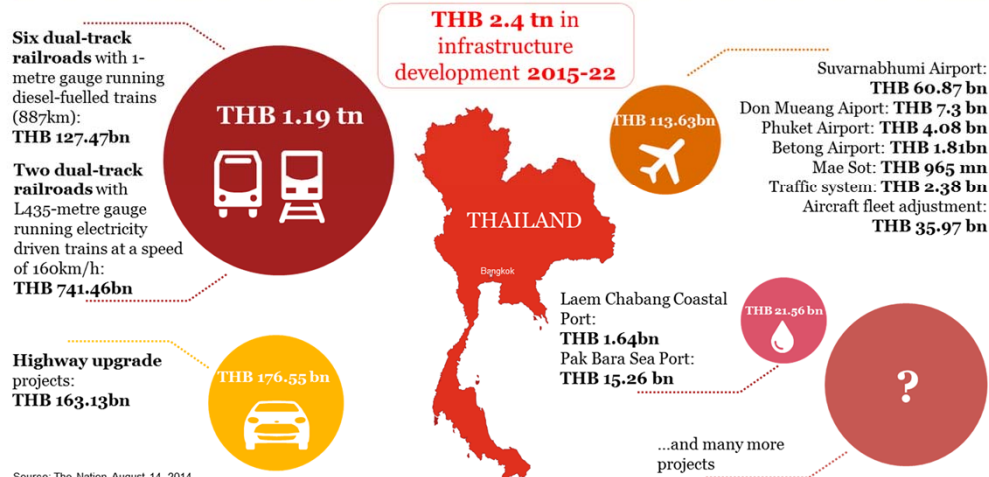
- Thailand **ranks 48** out of 144 economies in the overall infrastructure index (a sub-index of the Global Competitiveness Index).
- In almost all transport infrastructure dimensions, Thailand outperforms the ASEAN average except for "quality of railroad infrastructure".
- Reaching a score of 2.4 in **railroad infrastructure**, this infrastructure component leaves the largest room for improvement.

Logistics costs in Thailand

- The overall logistics costs in 2012 of GDP was 14.3% with the **majority consisting of transport costs** (7.1%), followed by warehouse costs (5.9%) and management costs (1.3%).
- The report on Thailand's **logistics costs per gross sales** surveyed by the Office of Industrial Economics indicates that logistics costs fell from 9.4% (per gross sales) in 2011 to 8.9% in 2012. It is expected that the costs decreased to 8% in 2013. The Ministry of Industry set the target of **decreasing logistics costs (per gross sales) to 7%** within the coming 3-5 years.
- Infrastructure development plays an important role for reducing the largest share of logistics costs and will make entrepreneurs operating in Thailand to benefit from infrastructure investments by **enhancing competitiveness** and thereby **economic growth** as well as **overall quality of life**.

(Sources: The Global Competitiveness Index, Thailand Investment Review, PwC analysis)

In order to maximize the leverage of economic potentials, Thailand will spend THB 2.4tn (EUR 58bn) in infrastructure development between 2015-22



Source: The Nation August 14, 2014

Thailand in Context
PwC

October 2014
33

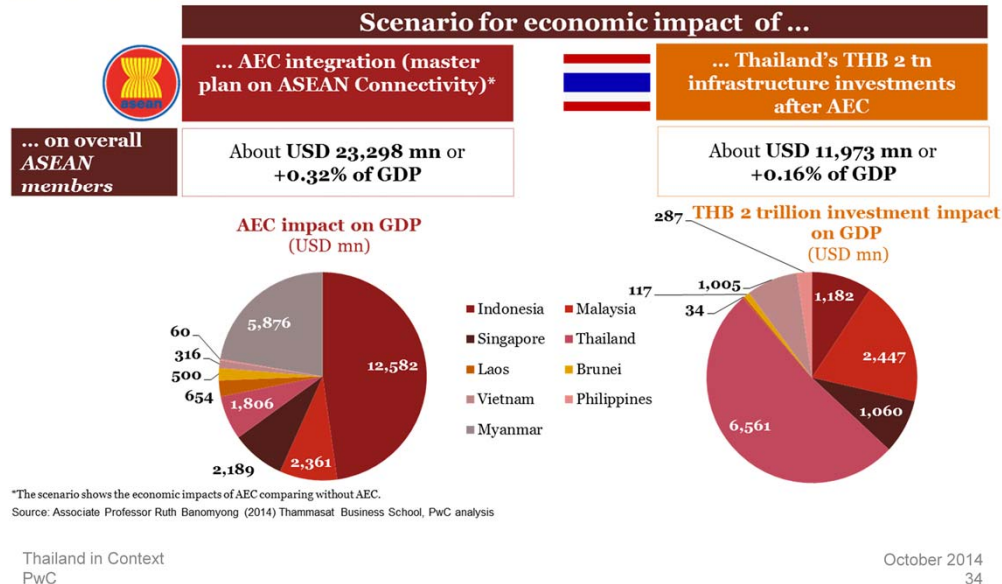
Speaker Notes:

Master plan for infrastructure development 2015-2022

- The **National Council for Peace and Order (NCPO)** approved Thailand's master plan for infrastructure development that spans from 2015-2022 **in July 2014**. The **five target areas** consist of 1. revamping the provincial rail network, 2. improving public transport systems to ease traffic congestion in Bangkok, 3. boosting the capacity of highways to connect with production bases in rural areas and neighboring countries and 4. improving the efficiency of water and 5. air transport systems.
- As part of Thailand's master plan for infrastructure development, the **Ministry of Transport** will **propose an urgent infrastructure development plan** to the National Legislative Assembly (NLA) for deliberation by the end of August 2014. The plan, **worth around THB 69.2bn (EUR 1.7bn)** will focus on implementation during **the years 2014-15** with the **objective of enhancing connectivity** between Thailand and its neighbouring countries. Proposed projects include inter alia the development of dual track railways as well as water and air transport networks like e.g. the expansion of Suvarnabhumi and Don Muang airports.
- Continuous policy efforts are also reflected by the **three working groups on transport, energy infrastructure and water management** which the NCPO has agreed to set up in July 2014 – also a measure to invite investments from abroad.

(Source: Royal Thai Embassy, The Nation, PwC analysis)

The economic impact of Thailand's investments in infrastructure after AEC integration is estimated to be - compared with the gains from AEC itself - relatively high for the whole region



Speaker Notes:

Scenario for impact analysis

- Professor **Ruth Banomyong** estimated the impact of infrastructure development on GDP in ASEAN member countries:
- Clearly both, AEC integration with its **master plan on ASEAN Connectivity** as well as **Thailand's THB 2 trillion investments in infrastructure development**, will have a **positive economic impact** on ASEAN member countries.
- The overall economic impact from AEC integration is estimated to reach approximately USD 23,298m on overall ASEAN members which reflects +0.32% of GDP.
- While the estimated economic impact of Thailand's THB 2 trillion infrastructure development spending is smaller reaching USD 11,973m on overall ASEAN members (which reflects +0.16% of GDP), in comparison, **Thailand's own infrastructure efforts have a comparable high economic impact** not merely for Thailand but also for the region.
- Thailand's economic benefit from AEC integration amounts to an estimate of USD 1,806m. Thus Thailand's share in the overall economic benefit is 6.9%.
- As could be expected, **Thailand benefits most from its THB 2 trillion infrastructure investments**: The estimated economic impact is USD 6,561m which reflects 55% of the overall economic benefit.
- Malaysia and Indonesia profit the most next to Thailand from Thailand's mega investments in infrastructure, USD 2,447m (20% of overall economic benefit) and USD 1,182m (10% of overall economic benefit) respectively.

(Sources: Associate Professor Ruth Banomyong, PwC analysis)

Thailand's THB 2tn infrastructure investments after AEC integration are estimated to have a positive economic effect on all provinces of Thailand



AEC integration is estimated to have a positive economic impact of about **USD 1,806 mn** on Thailand's GDP which means +0.05% of GDP in 15 years after AEC integration.

	Province	GDP (USD mn)
1	Samut Prakarn	387.4
2	Rayong	301.6
3	Bangkok	270.7
4	Samut Sakhon	203.8
5	Phra Nakhon Si Ayudhya	135.8
...
75	Trad	0.3
76	Mae Hong Son	0.2
	Thailand	1,806

THB 2tn infrastructure investments are estimated to affect Thailand's GDP about **USD 6,561 mn** which means +0.67% of GDP in 15 years after AEC integration.

	Province	GDP (USD mn)
1	Bangkok	2,258.5
2	Rayong	723.4
3	Samut Prakarn	527.2
4	Chonburi	402.2
5	Chiang Mai	243.2
...
75	Uthai Thani	3.0
76	Tak	1.7
	Thailand	6,561.0

Source: Associate Professor Ruth Banomyong (2014) Thammasat Business School, PwC analysis

Thailand in Context
PwC

October 2014
35

Speaker Notes:

Scenario of impact study on Thailand provinces

- **AEC integration impact (left side):** Professor **Ruth Banomyong** estimates the economic impact on Thailand's GDP from AEC integration to be **USD 1,806m** which results in an increase of +0.05% of GDP in 15 years after AEC integration. A **positive economic impact is estimated for all provinces of Thailand** with **Samut Prakarn** gaining the most, followed by **Rayong, Bangkok**, Samut Sakhon. While still gaining, the provinces Trad and Mae Hong Son are expected to benefit least of all.
- **THB 2 tn impact (right side):** The estimated economic impact from Thailand's THB 2tn infrastructure investments is **USD 6,561m** which results in an increase of +0.67% of GDP in 15 years after economic integration. Here, in contrast to the AEC scenario, **Bangkok gains the most** followed by Rayong, Samut Prakarn and Chonburi. Uthau Thani and Tak are estimated to benefit least of all.
- In both scenarios, the three provinces Samut Prakarn, Rayong and Bangkok benefit most.
- Independently of the exact numbers for economic impact, the study by Professor Banomyong does clearly demonstrate that **Thailand's mega investments** in infrastructure do play a **large role for the economic development of all Thai provinces**.
- Not just the investments themselves will increase GDP but also the **efficiency increases, transport cost reductions** and **enhanced connectivity** to neighbouring countries as well as to countries worldwide will all allow Thailand to benefit from the investments in the long-run.

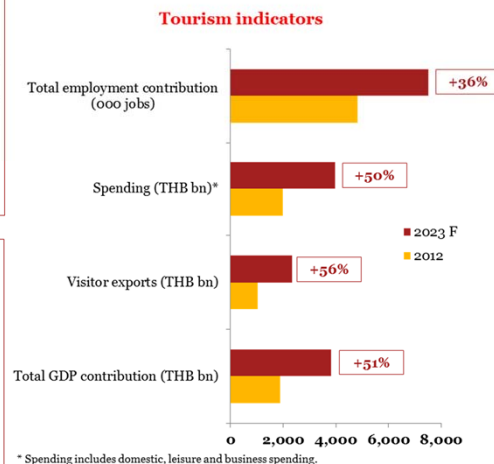
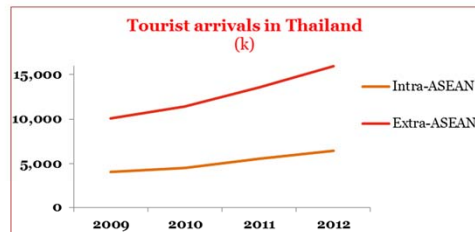
(Sources: Associate Professor Ruth Banomyong, PwC analysis)

Section 1.2

The internal context: Thailand's macroeconomic performance

1.2.5 Excursus: tourism and its role for Thailand's economy

Tourism revenue as percentage of GDP is already second-highest in the region, explaining its impact as key driver for socio-economic progress



Thailand in Context
PwC

October 2014
37

Speaker Notes:

Tourist arrivals in Thailand

- Intra- as well as extra-ASEAN tourist arrivals **continuously increased during the past years**. With 26.7 m international tourists the **target for 2013 was even exceeded**.
- Over recent years, the region has become a **major tourist destination**.
- The fastest growing countries of origin will probably be China, Russia and India. Visitors from these countries tend to be in the low-to-middle-income segment.

Top 7 Tourist origins

- **China topped the chart** at 4.7m arrivals (a **68.8% jump**), followed by Malaysia at 2.99m tourists (up 17.2%), Russia at 1.73m arrivals (a 31.9% growth).
- The Tourism Authority of Thailand expects 1.9m Russian visitors in 2014, and is **aiming to attract** even greater numbers in the **honeymoon, wedding and medical travel segments**.

Tourism indicators

- Tourism is a very important economic sector in the Asian and Pacific region as it **generates employment in many related sectors** and contributes to the overall economic growth.
- **Asia and the Pacific receives the second largest number of tourism arrivals** worldwide, with 28.4% of the world's total.
- In **2012** the tourism sector contributed **16.7% to total GDP**, and is forecasted to rise to 19.6%.
- **17.5% of employees** are expected to work in the tourism sector **by 2023**.

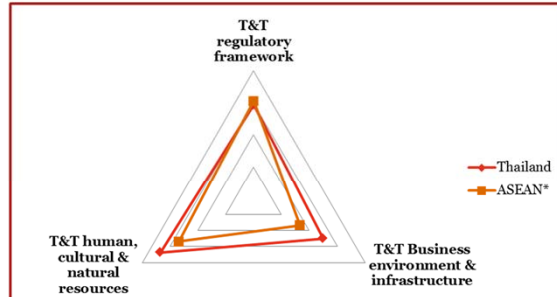
(Sources: ASEANstats, TAT News, Statistical Yearbook for Asia and the Pacific, The Report Thailand 2014, PwC analysis)

Thailand ranks favourably among ASEAN peers regarding factors that make the country attractive to further develop the travel and tourism sector

The Travel & Tourism Competitiveness Index (TTCI) aims to measure factors and policies that make it attractive to develop the T&T sector in different countries.

	Country*	Rank
1	Singapore	10
2	Malaysia	34
3	Thailand	43
4	Indonesia	70
5	Brunei	72
6	Vietnam	80
7	Philippines	82
8	Cambodia	106

* No information available for Laos and Myanmar.
Source: Travel & Tourism Competitiveness Report 2013, PwC analysis



* No information available for Laos and Myanmar.
Source: Travel & Tourism Competitiveness Report 2013, PwC analysis

Thailand ranks particularly good regarding
 ✓ affinity for travel & tourism (#18)
 ✓ friendly attitude toward tourists (#13)
 ✓ good destination marketing campaigns (#11)
 ✓ relative price competitiveness (#25)

Source: Travel & Tourism Competitiveness Report 2013

Thailand in Context
PwC

October 2014
38

Speaker Notes:

Thailand's rank in the travel and tourism competitiveness index TTCI

- The **Travel & Tourism Competitiveness Index (TTCI)** was developed by the World Economic Forum
- The index aims to measure factors and policies that make it attractive to develop the T&T sector in different countries.
- It is based on three categories of variables that facilitate or drive T&T competitiveness which are summarized into three sub-indices: **the T&T regulatory framework sub-index; the T&T business environment and infrastructure sub-index; and the T&T human, cultural, and natural resources sub-index.**
- The first sub-index captures elements that are policy related and generally under the purview of the government; the second captures elements of the business environment and the “hard” infrastructure of each economy; and the third the “softer” human, cultural, and natural elements of each country’s resource endowments.
- **Thailand performs third among ASEAN member states at rank 43.**
- In terms of the three sub-indices, **Thailand outperforms the ASEAN average** for all three sub-indices.

Thailand ranks particularly good regarding

- affinity for travel & tourism (#18)
- friendly attitude toward tourists (#13)
- good destination marketing campaigns (#11)
- relative price competitiveness (#25)

(Sources: Travel & Tourism Competitiveness Report 2013, PwC analysis)

Section 1.3

Thailand's regulatory framework

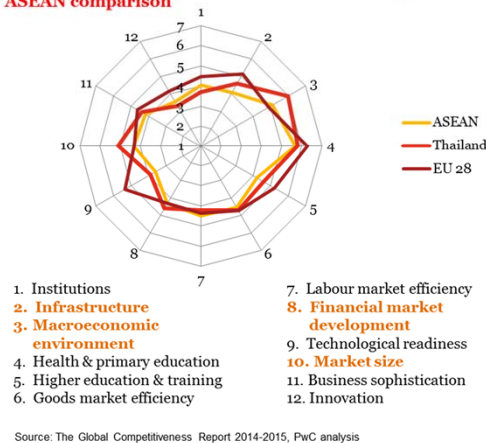
1.3.1 Business environment

Thailand shows a strong position among ASEAN peers and ranks among the top 20 countries for doing business for several years now

Thailand's favourable market environment in ASEAN comparison 2014 (out of 189 economies)



Pillars of competitiveness: Thailand's scores (1-7) in ASEAN comparison



Thailand in Context
PwC

October 2014
40

Speaker Notes:

Thailand's favourable market environment in ASEAN comparison

- In the **Ease of Doing Business** Thailand has ranked among the **top-20** countries worldwide for several years now.
- In the **Protection of Investors** ranking it performs even better at **rank 12** out of 189 economies, which is why Thailand is one of the **most attractive investment destinations in the region**.
- In last years, Thailand has made **paying taxes less costly for companies** by reducing the profit tax rate and & reducing employers' social security contribution rate.
- Moreover, at **rank 12**, Thailand is also one of the best ranked countries in ASEAN for **getting electricity**.
- The **favourable business environment** of Thailand continues to **attract FDI** from around the world.

Pillars of competitiveness: Thailand's scores in ASEAN comparison

(Score 1 is lowest/worst; Score 7 is highest/best)

- Thailand ranks 31 out of 144 economies and is thus **one of the top-performers in ASEAN comparison**:
 - Thailand is ranked **right after Singapore**.
 - Thailand **scores** particularly **above average** in: **Market size, Infrastructure, Macroeconomic environment** and **Financial market development** – the most important indicators for foreign investors.
- The business impact of **rules on FDI** is **encouraging investments**: Thailand ranks 22 (score: 5.1) out of 144 and is #3 in ASEAN comparison right after Singapore (rank: 2) and Malaysia (rank: 11)

(Sources: Doing Business Ranking 2014, The Global Competitiveness Report 2014-2015, PwC analysis)

Thailand's New Investment Strategy 2015-21 is designed to regain investor confidence after political turmoil early 2014 and further improve the country's attractiveness as an investment destination



Thailand in Context
PwC

October 2014
41

Speaker Notes:

Thailand's New Investment Strategy 2015-21

- With the view to improve Thailand's attractiveness as an investment destination, the NCPO has approved a new investment strategy for 2015–21 in August 2014.
- The NCPO seems to accommodate a long-term perspective on improving investment conditions given the duration of the plan.
- The new investment strategy aims to attract more value-added manufacturing as well as high-tech and ecological projects.
- It also seeks to boost spending on research and development, which is currently low, at 0.4% of GDP (global average 2% of GDP).
- The BOI said that it would continue to prioritise investment in **agriculture and agro-industry**, minerals and metal, light industry, machinery and transport equipment, **electric and electronics equipment**, chemicals, plastic and paper, services, utilities, and **infrastructure**.

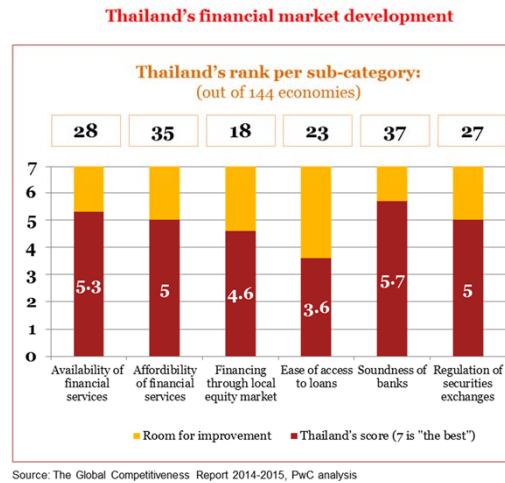
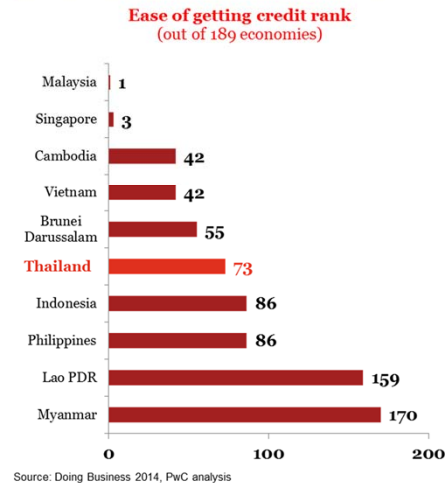
(Source: EIU, The Nation, PwC analysis)

Section 1.3

Thailand's regulatory framework

1.3.2 Financial environment

The Thai financial market is in global comparison relatively well developed with continued efforts from public and private institutions to increase market efficiency and potential



Thailand in Context
PwC

October 2014
43

Speaker Notes:

Ease of getting credit

- Compared to ASEAN peers, Thailand performs at **rank 73 out of 189 economies** in the medium range. Malaysia at rank 1 followed by Singapore at rank 3 are the best performers.
- Thailand's moderate performance is also reflected by the ease of access to loans sub-index of the Global Competitiveness Index (see left side fourth pillar from left) which scores at 3.6 lowest compared with the other financial market development indicators.
- However, looking at Thailand's ranking on the **Ease of access to loans in the Global Competitiveness Index, Thailand positions rank 23 out of 144 economies** which is even in global comparison comparably well.

Thailand's financial market development

- Overall, the sub-indicators of the financial market development pillar from the Global Competitiveness Index reflect a **positive picture of Thailand's financial market development status**.
- The lowest score on the sub-indicators presented is 3.6 for the Ease of access to loans and the highest is at 5.7 for the soundness of banks.
- While there is still room for improvement, looking at Thailand's rank **in global comparison, Thailand's financial market is comparably well developed**: In Financing through local equity market Thailand is positioned at rank 18 out of 144 countries.
- **Several private and public entities** like e.g. the Public Debt Management Office, the Fiscal Policy Office, the Revenue Department, the Stock Exchange of Thailand – to mention just a few – have **continuously tackled existing challenges** in order to **build up market infrastructures** and **facilitate further market enhancement**.

(Source: Worldbank, Doing Business 2014, The Global Competitiveness Index 2014-2015, Bank of Thailand, PwC analysis)

Section 1.3

Thailand's regulatory framework

1.3.3 Further regulations of interest for foreign investors

The overall regulatory environment improved considerably during past years, offering a supportive framework especially for private sector investments

- ✓ Regional economic integration (AEC) by 2015
- ✓ Positions Thailand as an export and transport hub
- ***Formation of an Economic Community***

- ✓ 2nd lowest corporate income tax of SE Asia
- ✓ Reduction of employer's social security contribution rate
- ***Favourable Taxation***

- ✓ Health, pension and unemployment insurance
- ✓ Development of social standards to be adopted by Thai businesses
- ***Increase in Social Standards***

- ✓ Adoption of voluntary records system for copyright owners
- ✓ Reinforcement of legal framework through the Ministry of Commerce
- ***Improvement of IPRs***

- ✓ Founding member of the International Labour Organisation (ILO)
- ✓ Since 2013 a minimum wage law is in place
- ***Improvement of Labour Standards***

- ✓ Promotion of Renewable Energy (RE) sector through supportive policies
- ✓ National water management plan
- ***Increase in Environmental Standards***

Source: AEC, IFC, BOI, ILO, Thailand Investment Review, Department of Intellectual Property, PwC analysis

Thailand in Context
PwC

October 2014
45

Speaker Notes:

Thailand's supportive framework for private investment

Formation of an economic community: The ASEAN Economic Community was founded as part of the **regional economic integration**, strived to be achieved **by 2015**. **AEC's key characteristics** are: single market & production base, highly competitive economic region of equitable economic development and fully integrated into the global economy.

Increase in Social Standards: **Health, pension and unemployment insurance** are jointly paid by the employer and the employee. The International Finance Corporation supports Thai banks in adopting environmental and **social standards** and best practices.

Improvement of Labour Standards: Thailand has **ratified 15 ILO Conventions**, including equal remuneration and minimum age. Thailand's government also works at **improving labour conditions for foreign workers** in accordance with international standards.

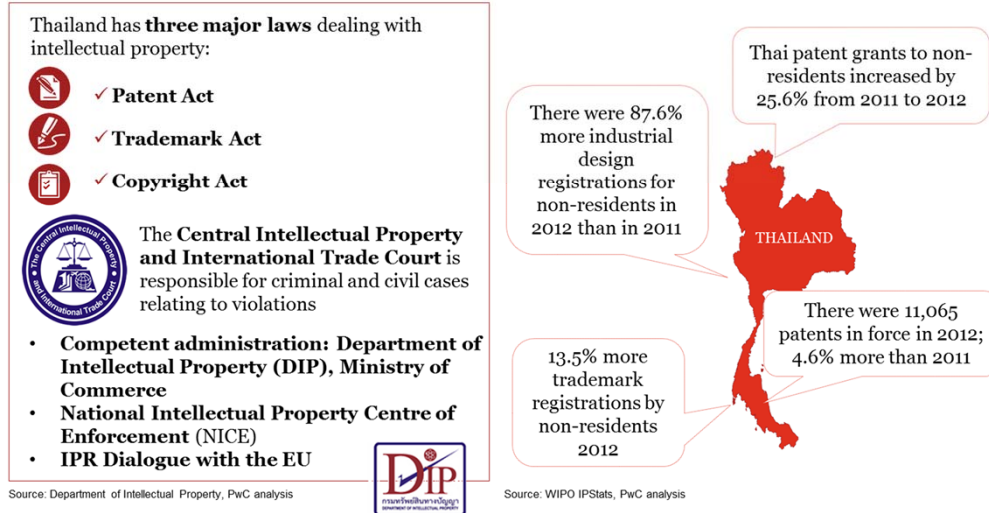
Favourable Taxation: The National Council for Peace and Order decided to maintain **value-added tax at 7%** for another year. This will increase domestic consumption & continue to boost economic growth.

IP Rights: The Department of IP at the Ministry of Commerce has been **reinforcing its legal framework** aimed at overcoming existing challenges and adopted a **voluntary records system**.

Environmental Standards: Thailand is **among the first countries** in the ASEAN region to **encourage investment in the RE sector** through supportive policies. The ministry of Natural Resources & the Environment expects to finalize the country's new **National Water Management Plan** by October 2014.

(Sources: AEC, IFC, BOI, ILO, Thailand Investment Review, Department of Intellectual Property, PwC analysis)

Thailand makes continuous efforts in the protection and enforcement of intellectual property rights, establishing laws and setting up institutions to increase effective IPR protection



Thailand in Context
PwC

October 2014
46

Speaker Notes:

Intellectual property rights

- Thailand has three major laws dealing with intellectual property: the **Patent Act**, **Trademark Act** and **Copyright Act**.
- The **Central Intellectual Property and International Trade Court** is responsible for criminal and civil cases relating to violations of trademarks, copyrights and patent law, and/or the counterfeiting or imitation of trademarks. Although jurisdiction of the court is limited to Bangkok and its vicinity, the court has jurisdiction throughout the country as there are no regional IP tribunals.
- According to the EU in 2013, **Thailand made strong efforts to increase IPR protection**: The DIP is cooperating with EU institutions and the Thai government has made stronger IPR protection and enforcement a national priority, reflected by the creation of the **National Task Force** chaired by the Prime Minister, by setting up an **IPR Dialogue with the EU** and by putting forward the "**Creative Economy initiative**".

Map

- Continuous efforts to increase IPR protection is also visible from increase in granted registrations of industrial designs and trademarks.
- Compared to 2011 (latest figures available from the WIPO), industrial design registrations from non-residents increased by 87.6%, trademark registration of non-residents by 13.5%.
- In 2012, there were 11,065 patents in force and Thai patent grants increased by 25.6% from 2011 to 2012.

(Source: Department of Intellectual Property, WIPO IP Stats, European Commission Report on the protection and enforcement of intellectual property rights in third countries, World Intellectual Property Organization IP Statistics)

Rights of employees have considerably improved during past years and tend to be gradually adapted to the European standards of protection of workers

Remuneration	Social Insurance	Employment Law
<p>Wage</p> <ul style="list-style-type: none"> ✓ Nationwide minimum wage of 300 Baht per day <p>Bonus</p> <ul style="list-style-type: none"> ✓ On average 1 monthly salary <p>Additional parts</p> <ul style="list-style-type: none"> ✓ Perfect attendance bonus ✓ Meal & transportation allowance ✓ Company car 	<p>Pension Scheme</p> <ul style="list-style-type: none"> ✓ 3% of net income ✓ Starts at the age of 55 <p>Health insurance</p> <ul style="list-style-type: none"> ✓ 1.5% of net income <p>Unemployment insurance</p> <ul style="list-style-type: none"> ✓ 0.5% of net income ✓ 50% of the income is paid for a max of 180 days ✓ Max coverage equals EUR 180 per month 	<p>Working hours</p> <ul style="list-style-type: none"> ✓ 48 hours/week ✓ Allowance for overtime is 24 hours/week <p>Holiday entitlement</p> <ul style="list-style-type: none"> ✓ 6 days/year ✓ 13 days / year of public holidays <p>Additional</p> <ul style="list-style-type: none"> ✓ 30 days/year of paid sick leave ✓ 4 months of probationary period

Source: GTAI, ILO, PwC analysis

Thailand in Context
PwC

October 2014
47

Speaker Notes:

Remuneration

- Remuneration consists of wage plus several extra payments.
- Standard additional payments include meal and transportation allowance.
- Low-skilled workers usually also receive a **Perfect Attendance Bonus of 5-15%** of their regular wage, if they do not miss any working days.
- Individual premium payments depending on performance and seniority are also usual.

Social Insurance

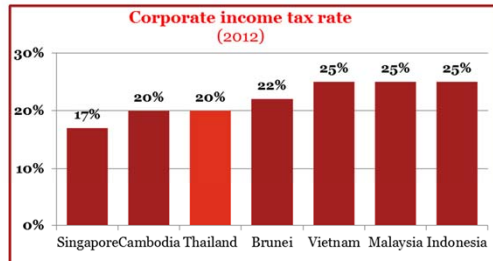
- The obligation of insurance exists from the first employee, but only for people aged between 15 and 60.
- Employer and Employee **each pay 5%** of wage for social insurances, with a maximum contribution of EUR 18 (THB 750).
- Every employer who employs more than 9 people additionally has to pay 0.2-1% of the employees' annual income to the Women's Compensation Fund.

Employment Law

- These regulations hold **for Thai as well as foreign companies**
- Especially important is the Labour Protection Act, dated 12.02.1998. A new edition was enforced in 2008 regulating working hours, vacation, paid sick leave and compensation payments.
- The employer has a general duty of care, including safe and hygienic working conditions.
- The **general notice period is 30 days**.

(Sources: GTAI, ILO, The Asia Foundation, PwC analysis)

Thailand's tax regime figures favourably among East Asian peers and offers a set of incentives for investors, demonstrating that the country is eager to attract business



Source: Thailand Investment Review December 2013

Income Range THB	Personal Tax Scheme
0 - 300,000	5%
300,001 - 500,000	10%
500,001 - 750,000	15%
750,001 - 1,000,000	20%
1,000,001 - 2,000,000	25%
2,000,001 - 4,000,000	30%
> 4,000,000	35%

Source: Thailand Investment Review December 2013

Goods & Services	VAT rate (%)
Sale of goods or provision of services or import of goods/services	7%
<ul style="list-style-type: none"> Exported goods Services provided in Thailand but consumed overseas International transport services by air or sea 	0%

Source: PwC Thai Tax 2013 Booklet

Thailand in Context
PwC

October 2014
48

Speaker Notes:

Corporate Income Tax

- Thailand provides favorable conditions for businesses with the **second lowest corporate income tax in South East Asia**.
- Main tax law: **Thai Revenue Code**, governing corporate income tax, VAT, Specific Business Tax and stamp duty.
- Taxes are administered by the Revenue Department, the Customs Department and the Excise Department.
- Thailand has a broad tax treaty network that is mostly formulated along the lines of the OECD model treaty and contains exchange of information provisions compliant with OECD standards.
- Thailand's cabinet has approved the extension of reduced personal and corporate taxes until the end of 2015 (EIU).

Personal Tax Scheme

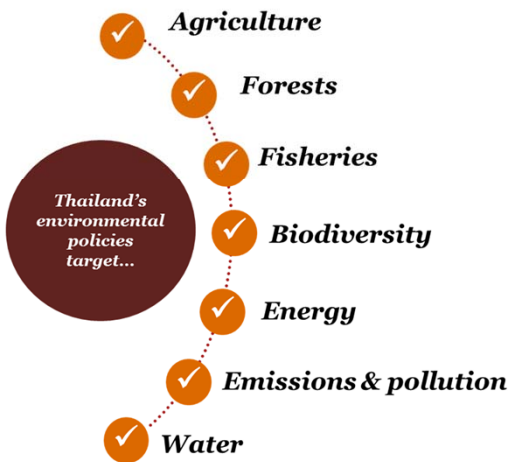
- Recently the Thailand Cabinet has approved the **adjustment of the personal income tax scheme**, reducing tax calculation from 5 to 7 rates and decreasing top marginal tax rate from 37% to 35%.

Goods & Services

- Thailand also has a value added tax at the lower end of countries in Asia and Australia, offering special exemptions for businesses.
- Exemptions include 0% VAT for exported goods, services provided in Thailand but consumed abroad and international transport services by air or sea.

(Sources: Thailand Investment Review December 2013, PwC Thai Tax 2013 Booklet, PwC analysis)

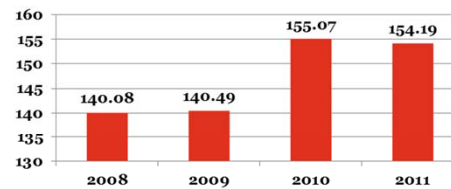
Thailand has a long history of focusing on sustainable growth issues with its revolving enforcement and development of environmental policy efforts already paying off



Source: Worldbank, International Energy Agency, Institute for Industrial Productivity, PwC analysis

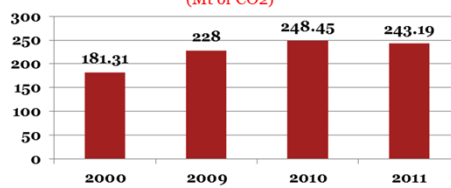
Thailand in Context
PwC

Electricity consumption (TWh)



Source: World Bank, International Energy Agency, Institute for Industrial Productivity, PwC analysis

CO2 emissions (Mt of CO2)



Source: Worldbank, International Energy Agency, Institute for Industrial Productivity, PwC analysis

October 2014
49

Speaker Notes:

Thailand's environmental policies

- Thailand targets all important dimensions in terms of its environmental and climate change policies with effort ranging back as far as **1992** when **Thailand integrated climate change policies** in its national development process (7th plan 1992-1996) and started its **UN Framework Convention on Climate Change membership**.
- With respect to environmental policies, Thailand integrated a **variety of policy action plans** in order to address the negative environmental effects which always come along with a fast-growing economy.

Electricity consumption and CO2 emissions

- While a growing population and economic sector lead to increases in **energy consumption** as well as **GHG emissions**, the **slight decreases** that can be observed in both energy indicators between 2010 and 2011 reflect Thailand's efforts taken in terms of **increasing energy efficiency** and **lowering carbon emissions**.
- Thailand's energy conversation targets for 2011 to 2030 are laid down in its **Energy Efficiency Development Plan** including the following: 1.) by 2030, reduce energy intensity to 25 percent below 2005 levels across all economic sectors, 2.) by 2030 reduce overall energy consumption by 20 percent from current levels and 3.) reduce overall CO2 emissions by 49 million tons.
- Presenting one example, the **Thai Low Carbon City Initiative** is just one out of an immense bundle of policy actions and cooperations.
- The **Muangkhang Municipality** in Thailand is a **pioneer Low Carbon City** and presents best practice for cities in Thailand and abroad.

(Sources: Worldbank, International Energy Agency, Institute for Industrial Productivity, PwC analysis)

Section 2

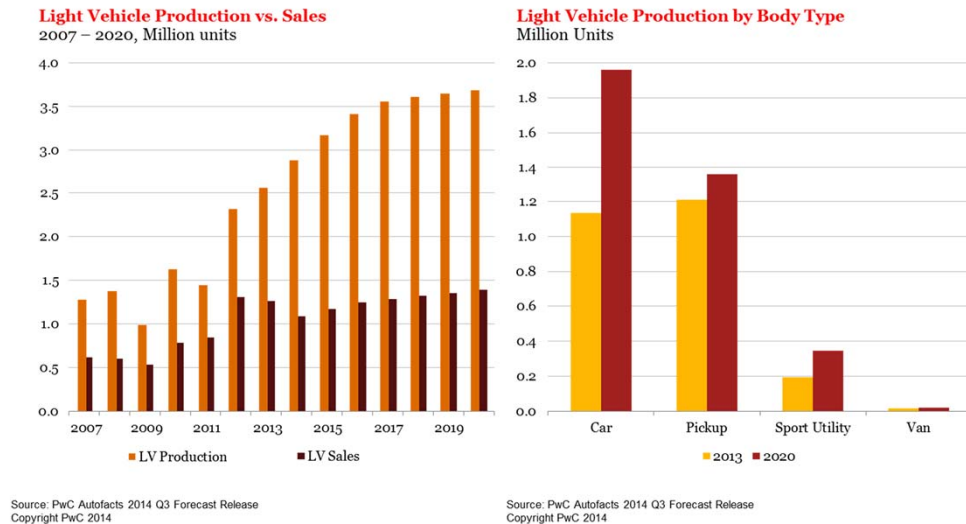
Industry structure and trends for selected sectors

Section 2.1

Automotive

2.1.1 Industry role, structure & trends

Thailand's Light Vehicle production is set on a rapid growth, further expanding its role as a major export hub. Future growth will come mostly in car segments, with pickups expected to hold up well



Thailand in Context
PwC

October 2014
52

Speaker Notes:

Light vehicle production vs sales

- Local vehicle sales suffered a decline in the course of political unrest. Although political action seems to have receded, **business activity still shows signs of lacking confidence** in the overall development, which we expect to recede over time and allow the **local demand to grow back** to its record levels.
- The build-up of production as forecasted is dependent on preceding **installation of production capacity**, which requires significant investment by manufacturers and suppliers.
- Especially the establishment of a **high-performance supplier base** is a pre-requisite for ongoing attraction of international OEM investments. Currently, the supplier bases for Japanese manufacturers are comprised of different companies than the ones that supply US or European OEMs; therefore, there is a **strategic reason to attract investments by European suppliers** as well.

Light vehicle production by body type

- Even after the reduction of the tax privileges for **one-ton-pickups**, we expect **production to hold up well** due to international exports and the highly developed industrial basis.
- As local demand of pickups is expected to decline, increasing exports will be needed to support the existing level of capacity and production.
- The **main growth thrust, however, is expected to appear in the car sector**, with numerous compact-car projects planned for international export.
- Also, the **Sport Utility/ SUV segment is in high demand globally**, and especially Toyota is expected to shift existing production capacity to this highly attractive segment.
- A balanced investment strategy will look for products that are attractive to both, ASEAN and the global markets for exports. This will ensure the greatest flexibility and constant utilization of the plant. This of course will only work when embedded in a system of **free-trade** (or favourable trade) **agreements**.

The recent ECO Car II investment program has attracted applications for numerous large-scale operations. Total applied volume amounts to 1.5m additional production capacity

Automotive Investment Program ECO Car II

Announced:	October 2013
Application end:	March 31, 2014
Focused at:	Vehicle manufacturing Engine manufacturing Component manufacturing
Minimum investment:	6.5 bn BHT = 200 mn USD
Target volume:	100,000 units p.a. after 4 yrs.
Required SOP:	2019

Results

10 carmakers, at more than 138.9 bn BHT = 4.5 bn USD in investment value with production capacity of 1.5 mn units

Repeat investors: 5 OEM, 52 bn BHT , capacity 828,000 upa

First-time investors: 5 OEM, 86 bn BHT , capa 753,000 upa

Source: Bloomberg, BOI, PwC analysis

Thailand in Context
PwC

October 2014
53

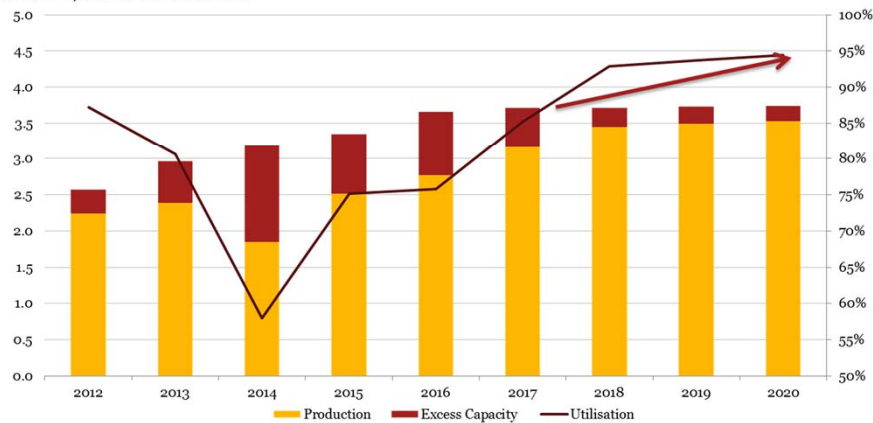
Speaker Notes:

Automotive Investment Program

- The applicant must propose an **integrated package** consisting of car assembly, engine manufacturing and car part manufacturing or sourcing.
- Actual production must not be less than **100,000 units per year** from the 4th year onwards and **have to start by 2019**.
- Cars that are **produced for the domestic market** shall have the special **fuel-saving, environment and safety qualifications**
- **At least 4 out of following 5 key engine parts** as well as of manufacturing Cylinder Head, Cylinder Block and Crankshaft, **must be included in the project**.
- The integrated package consisting of car assembly, engine manufacturing and car parts (manufactured by both the applicant and supplier/s) shall have a **minimum investment**, excluding cost of land and working capital, **of THB 6.5bn** or BHT 5bn for existing BOI promoted companies under the Eco-Car 1st Generation scheme.
- The project also must meet **other requirements** as stipulated by the announcement on Eco-Cars (2nd Generation) issued by the Ministry of Industry.
- **Incentives:**
 - **Exemption of import duty on machinery** regardless of zone for the period approved by the Board.
 - Up to 90% **reduction of import duties on raw materials** and essential parts under section 30 for a period of 2 years.
 - **Exemption of corporate income tax** for a period of 6 years, regardless of zone. Exempted tax shall not exceed the investment value of the project, excluding cost of land and working capital. Additional rights and incentives can be applied.
 - A **50% reduction of corporate income taxes**
- **Participating OEMs: Existing** eco-car manufacturers (Nissan, Honda, Mitsubishi, Suzuki and Toyota), **Newcomers** (MG, Ford, Chevrolet, Mazda and Volkswagen)

The new vehicle programs under the ECO car II scheme create additional vehicle production capacity which may run the risk of being partially underutilized if demand growth subsides

Light Vehicle Production Capacity
Million units, Percent utilisation rate



Source: PwC Autofacts 2014 Q3 Forecast Release
Copyright PwC 2014

Thailand in Context
PwC

October 2014
54

Speaker Notes:

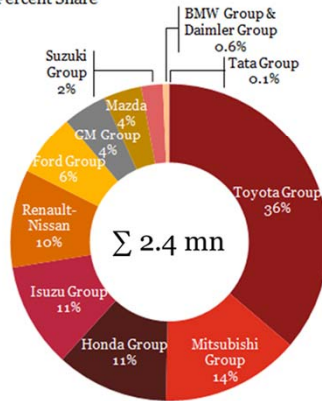
Light vehicle production vs capacity

- **At least eight** of the **10** automakers that submitted applications to invest in Phase 2 of the eco-car program **are likely to go ahead** with it, said Thailand Automotive Institute president Vichai Jirathiyut.
- **Despite** the **current political turmoil** and plunging automobile market, the TAI chief said he was confident the country's target to achieve the **next production milestone** of **3 million vehicles** annually by **2017** would not be hard to accomplish thanks to the eco-car project.
- When the Board of Investment's application period ended on 2014 March 31, 10 automakers had submitted proposals to take part in Phase 2 of the government project, pledging a combined investment of THB 138.89bn and **additional production volume of 1.58m units per year**.
- **Five of them are existing** eco-car manufacturers - Nissan, Honda, Mitsubishi, Suzuki and Toyota - and the **balance are newcomers** MG, Ford, Chevrolet, Mazda and Volkswagen.
- Vichai said he had talked with executives of many automotive companies who said they still basically viewed Thailand's **current crisis as a temporary situation**, and the sooner it is resolved, the quicker they will be able to proceed. Nevertheless, Vichai said he had some concerns about the **delay** of a project for **automotive testing facilities** and **proving grounds**, which formed part of the national **automotive-sector master plan** and was an **important strategy** to push Thailand ahead as an important global automobile-production hub.
- The TAI has submitted a proposal to the Ministry of Industry **requesting for government investment** of THB 8bn for the project. The **Industrial Estate Authority** of Thailand has provided a few locations as possible sites.

(Source: PwC Autofacts 2014, Nation Multimedia)

In 2013, production in Thailand was dominated by Toyota, but until 2020 other OEMs are set to make significant entries while Toyota is merely sustaining production volume – based on current information

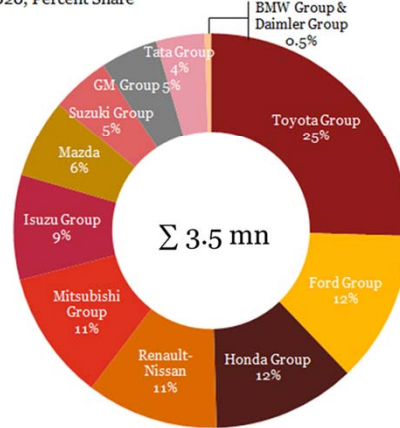
Light Vehicle Production by Alliance Group
2013, Percent Share



Source: PwC Autofacts 2014 Q3 Forecast Release
Copyright PwC 2014

Thailand in Context
PwC

Light Vehicle Production by Alliance Group
2020, Percent Share



Source: PwC Autofacts 2014 Q3 Forecast Release
Copyright PwC 2014

October 2014
55

Speaker Notes:

Light vehicle production by Alliance Group 2013

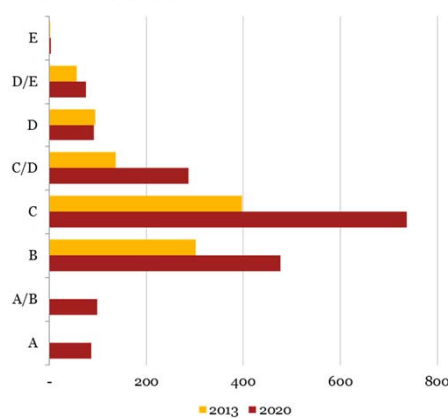
- In 2013, light vehicle production was **dominated by Toyota**. Toyota's top models include the Vigo (500,000 units/year) and the Yaris subcompact car (150,000 units/year).
- **Mitsubishi** has established the **main production location of its Triton** compact pickup **in Thailand**, but also produces over 100,000 units of the compact car Mirage. Honda's lead model is the ultra-compact City which is exported globally.
- **Nissan's** lead model is the March, for which we expect an increase in production from 50,000 to 100,000 by 2016.
- **Ford** is currently producing the Fiesta, but is investing in a large new factory which will boost output to over 200,000 units starting in 2017.
- **In total, about 2.4m light vehicles were manufactured in 2013.**

Light vehicle production by Alliance Group forecast 2020

- In 2020, light vehicle production is forecast to **still be dominated by Toyota**. However, Toyota's percentage share is projected to fall to 25%. Due to its wide regional footprint, Toyota seems to prefer other ASEAN countries for further incremental investment, but will continue its large-scale operations
- **Ford** is putting more strategic emphasis on Thailand with the build-up of a major production plant for the Fiesta.
- **Honda's** percentage share in total light vehicle production is **forecast to remain stable**. Due to the overall growth of production in Thailand, this will imply an increase of brand production from just under 200,000 units in 2012 to over 400,000 by 2018, mainly on the back of small cars such as the Jazz and Brio.
- In total, LV production will increase from 2.4m in 2013 to about 3.5m in 2020; this projection may increase further when more capacity from the ECO Car 2 program will be installed.
- **In comparison to 2013, the five largest LV producers account for a smaller combined market share** (2013: 82%; 2020; 71%).

The vehicle size distribution is significantly different between car and pickup. The main future growth is expected in the C-Car Segment, making it the largest car sector

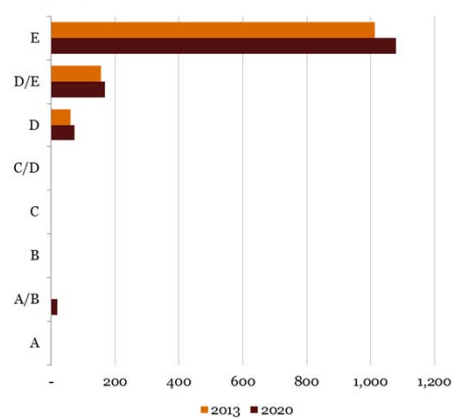
Car Production by Size Segment
2013 vs 2020, Thousand Units



Source: PwC Autofacts 2014 Q3 Forecast Release
Copyright PwC 2014

Thailand in Context
PwC

Pick-Up Production by Size Segment
2013 vs 2020, Thousand Units



Source: PwC Autofacts 2014 Q3 Forecast Release
Copyright PwC 2014

October 2014
56

Speaker Notes:

Car production by size segment

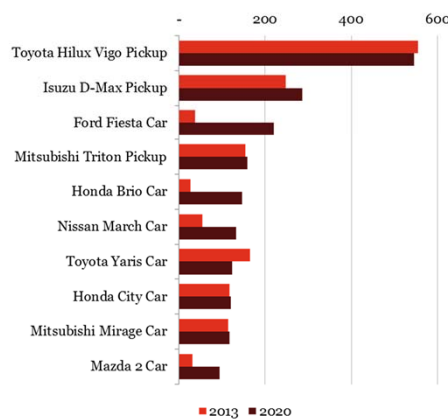
- The doubling of annual car assembly volume from 2013 to 2020 is mainly caused by **small (B and C) segmented vehicles**, such as **Honda Brio, Mazda 2 and Ford Fiesta**.
- However, also **subcompact (C/D)** vehicles such as **Toyota Corolla and Ford Focus** will increase.
- Growth in the B car segment is also significant, mainly due to the new investment of Ford's Fiesta.
- The main future growth is expected in the C-car segment, making it the largest car sector. Between 2013 and 2020, car production in this sector will nearly double, based on both increasing local and regional demand, but also global exports.

Pick-Up production by size segment

- Between 2013 and 2020, the pickup assembly volume is projected to be **very stable**. While domestic demand is expected to recede due to the change of taxation rules, regional and global demand is expected to increase as product specifications are adopted to meet more specific demands.
- Only three models show a **considerable growth** from 2013 to 2020: **Isuzu D-Max, Tata Ace and Nissan Navara**, due to an ongoing increase of global export share.

Thailand is a major automotive production hub with industrialized facilities fulfilling significant roles in global production networks – but also the home to some small-scale local assembly operations

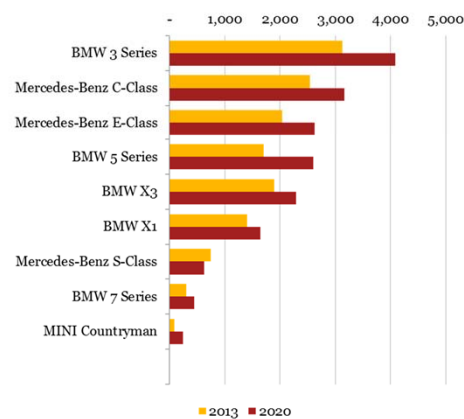
Top 10 Production Models
2013 vs 2020, thousand units



Source: PwC Autodata 2014 Q3 Forecast Release
Copyright PwC 2014

Thailand in Context
PwC

CKD/ SKD Assembly Models
2013 vs 2020, units



Source: PwC Autodata 2014 Q3 Forecast Release
Copyright PwC 2014

October 2014
57

Speaker Notes:

Top 10 production models

- The **Top 2** production models are **pickups**. They have a share of **1/3** of the total assembly volume in 2013.
- In comparison to the other models, both models are characterized by **smaller projected growth** until 2020.
- The scale of top-models production shows a highly industrialized production base as well as a fully developed supplier network. It also highlights that logistics can be developed to handle as many as 500,000 units per year, which translates into a daily output of over 2,000 vehicles.
- This highlights the importance of individual model series in automotive manufacturer strategies; an investment framework should therefore not only be evaluated concerning overall installed capacity and infrastructure, but also the individual production model, as the change from one model to another is complicated, costly and takes considerable time.

Top 10 CKD/ SKD assembly models

- The kit production in Thailand is used by **Germany Premium OEMs**, such as BMW Group and Daimler Group due to lower local demand.
- Interestingly, the scale of the SKD/ CKD operations compares to the overall top models at a scale of 1000:1 – showing clearly different strategic priorities and outlook.
- Usually, CKD/ SKD operations are used to satisfy local demand in a country that is shielded from global trade flows by excessively high tax rates or other industrial regulation, such as local content requirements. Due to its complexity, a production process based on CKD (completely-knocked-down) or SKD (slightly knocked down) parts kits is significantly more expensive than fully industrialized, large-scale manufacturing.
- In many cases, CKD/ SKD operations are ended as soon as tax or customs regimes are changed, and the market will be served with imported vehicles from within the home plant or other global manufacturing operations – depending on trade agreements and logistical fit.

Thailand is following a concise masterplan for the Automotive industry, focusing on R&D advancements and green technologies in order to avoid falling into the manufacturing “gap”

Vision 2021:

“Thailand is a global green automotive production base with strong domestic supply chains which create high value added for the country”

5 Year Action Plan 2012 – 2016

Strategy 1 (COE-1) Excellence in research and technology development

Strategy 2 (COE-2) Excellence in Human Resources Development

Strategy 3 (COE-3) Entrepreneur Strength Enhancement

Strategy 4 (ENV-1) Infrastructure development for suitable environment

Strategy 5 (ENV-2) Government policy integration for suitable business environment

Source: Master Plan for Automotive Industry 2012 – 2016
Copyright PwC 2014

Thailand in Context
PwC

Source: Master Plan for Automotive Industry 2012 – 2016
Copyright PwC 2014

October 2014
58

Speaker Notes:

Vision 2021

- Vision 2021 emphasizes on **developing competitive advantages** to promote Thailand automotive industry from Asian production base to an **eco-friendly global production** base and **maximized the benefits** for Thailand by value creation in the supply chain of automotive industry.
- Vision 2021 emphasizes on being Green automotive production base which consists of 2 characteristics, (1) **eco-friendly** and (2) **international standard** especially for **safety**.

5 Year Action Plan 2012-2016

- **Strategy 1:** Green motor vehicle technologies research and development projects consists of clean, economize and safety technology. The examples of target technologies are as followed: to promote **alternative** and **renewable energy** usage, to develop **light weight vehicles**, to enhance **vehicle safety** on the roads, to develop advance **production technology**.
- **Strategy 2:** **Collaborative** projects with **academic institutes**. Human resource **development** in the **workplace** for both new and current employees via Continuing Professional Development (CPD) programs. **Develop senior students** or new graduate through preparation course before starting their career in the automotive industry.
- **Strategy 3:** **Sustainable Manufacturing** Development for Automotive Supply Chain consists of 3 projects: (1) **Productivity enhancement** with effective improvement tools subproject, (2) **green technology development** subproject and (3) cluster supply chain network subproject.
- **Strategy 4:** **Establish automotive testing** and research and development center with the following capacities: (1) to support **green** automotive technology **research** and development, (2) to be a **testing center** for ASEAN MRA **and** international type approval and (3) to be a testing center to **support** research project of the **government sector** and other related entities.
- **Strategy 5:** Policy **integration**, policy **research** support, promote **investment promotion** for **green products** and suppliers, **branding** for REM.

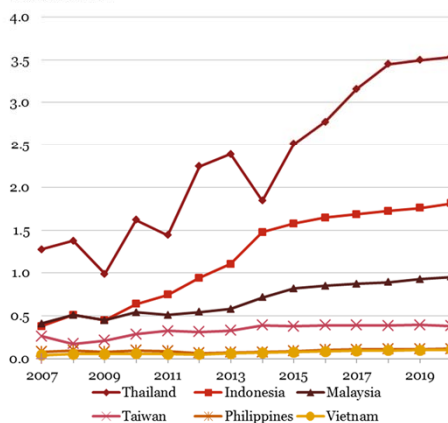
Section 2.1

Automotive

2.1.2 The global context: how to stay competitive

Thailand is functioning as a global manufacturing hub mostly for Asian OEM, while European manufacturers address the ASEAN markets with small-scale CKD and SKD operations

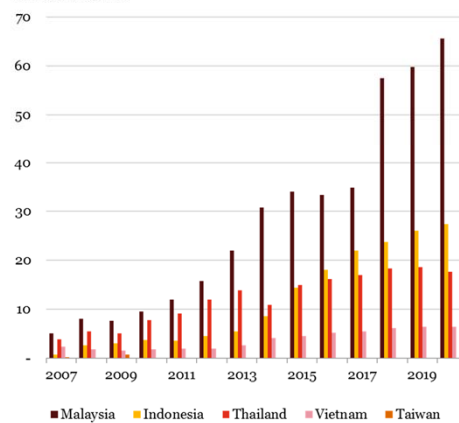
Total LV Manufacturing by Country
Million Units



Source: PwC Autodata 2014 Q3 Forecast Release
Copyright PwC 2014

Thailand in Context
PwC

LV Manufacturing by European OEM
Thousand Units



Source: PwC Autodata 2014 Q3 Forecast Release
Copyright PwC 2014

October 2014
60

Speaker Notes:

Total LV Manufacturing by Country

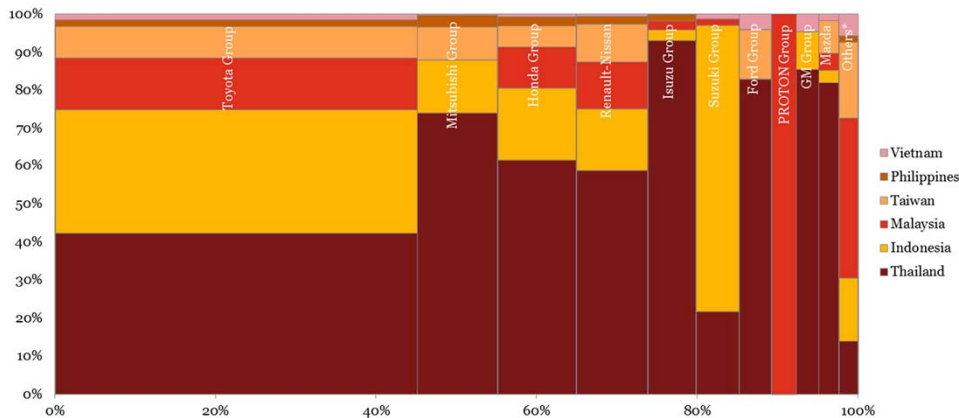
- Assembly volumes in ASEAN countries (Indonesia, Malaysia, Myanmar, Philippines, Thailand and Vietnam) are expected to show **significant growth**.
- This is due to **higher local demand** and **government supported programs** for small, fuel efficient and low cost vehicles, such as the **eco-car scheme in Thailand** from 2010 and the **green car program in Indonesia** from 2013.
- Top 3 production growth 2013 vs 2020 by Current Alliance Group
 - Thailand: **Ford Group** (+280k), **Renault-Nissan** (+140k), **Tata Group** (+140k)
 - Indonesia: **Toyota Group** (+260k), **Honda Group** (+160k), **Renault-Nissan** (+140k)
 - Malaysia: **Proton Group** (+110k), **Toyota Group** (+110k), **Honda Group** (+60k)
 - Taiwan: **Toyota Group** (+20k), **Hyundai Group** (+10k), **Yulon Group** (+10k)
 - Philippines: **Mitsubishi Group** (+25k), **Toyota Group** (+10k), **Honda Group** (+5k)
 - Vietnam: **Toyota Group** (+10k), **Honda Group** (+10k), **Ford Group** (+5k)

LV manufacturing by European OEM

- Within ASEAN **Thailand** is the **most important** country for European manufacturer, albeit on a very low volume. Operations by European and US manufacturers are targeted exclusively at the satisfaction of domestic demand, even excluding intra-ASEAN export.
- The existing operations use mostly CKD (completely knocked down) or SKD (semi knocked down) vehicle kits for local assembly, including selected locally sourced parts and only partially automated production technology.

Thailand is not without competition within ASEAN – e.g., Indonesia ranks a close second. OEMs are distributing production between countries to satisfy local demand as well as serve global markets

Distribution of Production by Alliance Group and Country
2013, Percent Share



Source: PwC Autodata 2014 Q3 Forecast Release
Copyright PwC 2014

*Other Alliance Groups = Hyundai, BMW, Daimler, Yulon, PSA, VW, Fuji, Brilliance, Geely, Tata, Chery, Naza, Lifan

Thailand in Context
PwC

October 2014
61

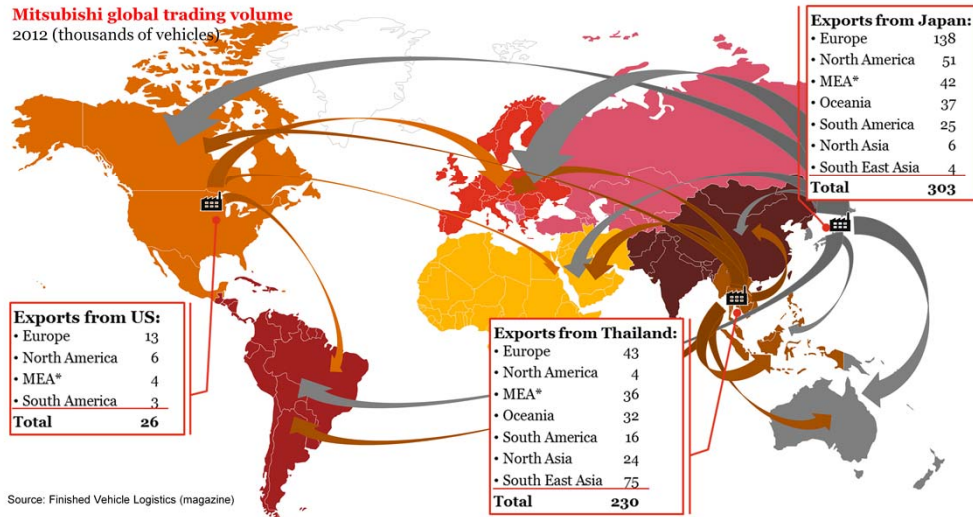
Speaker Notes:

Distribution of production by Alliance Group and country

- **Toyota** currently accounts for almost **50% of production in the entire ASEAN region**, followed by Mitsubishi, Hyundai, Nissan with below 10% each.
- Within the **ASEAN line-up**, Thailand plays a dominating role for Mitsubishi, Honda, Nissan, Isuzu, Ford GM and Mazda – these companies rely heavily on good business conditions in Thailand and deserve special treatment, as they have placed their trust and investment into Thailand.
- The interaction and competition with other ASEAN countries for European and US OEM investment is a key element of any industrialization strategy for automotive, and is governed by considerations that include for example: (1) **local (in-country) demand**, (2) **regional (ASEAN) demand**, (3) **export opportunities and logistics**, (4) availability of skilled, loyal **workforce** at competitive **labour costs**, (5) **taxation, regulation**, accounting, legal regulations and requirements, (6) **safety**, security, sustainability of operations (concerning infrastructure, supplies, working staff, currency and financial system etc.), (7) presence of known **component and service providers**, logistics and operations networks.
- Due to the high investment costs for automotive operations, **business conditions** should be held stable and reliable for at least 10 years after the initial investment. For a general scale:
- Partially mechanized CKD assembly = USD 25-50m, Full assembly line= USD 100m, Manual paint shop = USD 50m, Automated paint shop = USD 200m, Partially mechanized body shop = USD 50m, Fully mechanized body shop = USD 200m, Metal stamping facility = USD 100m

As an example of Thailand's global hub function, Mitsubishi has relocated a major part of their manufacturing to Thailand, and is serving the global markets including Japan from there

Mitsubishi global trading volume
2012 (thousands of vehicles)



Source: Finished Vehicle Logistics (magazine)

Thailand in Context
PwC

October 2014
62

Speaker Notes:

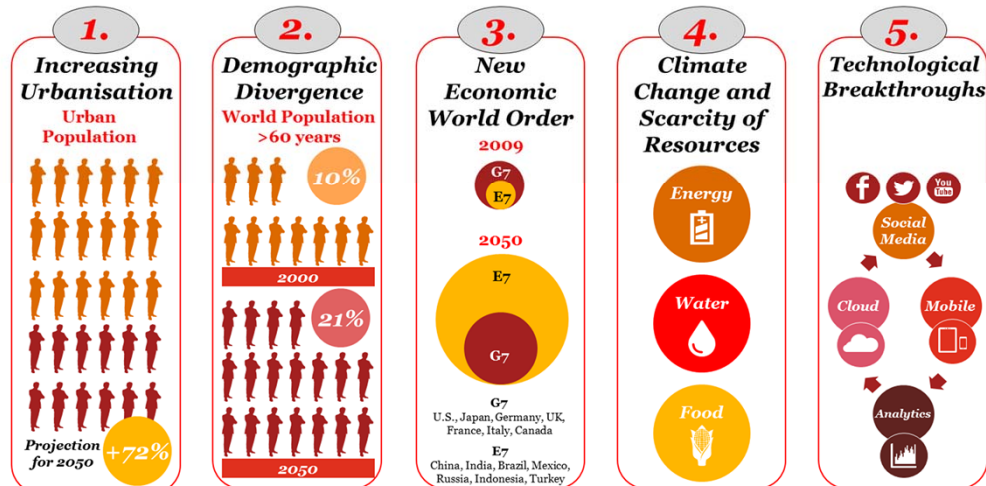
“Mitsubishi is redefining its production and distribution footprint to increase sales in the ASEAN region and further afield.”

(Kyoji Miwa, general manager of Mitsubishi's export operations department)

- Mitsubishi has since been **undergoing tectonic shifts** in its **production footprint** as well as in its **export flows**. In the calendar year 2012, the carmaker's overseas production outpaced that of its Japanese plants for the first time, with around **591,200 vehicles assembled abroad** compared to **517,000 at home**.
- The **change in exports** has in some ways been even **more dramatic**. Mitsubishi has not entirely shifted to a **regional production strategy**, with global vehicle shipments still playing a major role for the company. However, it ships about half as many vehicles from Japan as did five years ago, while the carmaker's production and exports from Southeast Asia, **notably Thailand**, have **risen strongly**.
- In 2012, for example, while finished vehicle exports from **Japan** were **303,000 units**, **vehicle exports from Thailand** reached **230,000 units**, with high volume **sent** both regionally to countries in the Association of Southeast Asian Nations (**ASEAN**), as well as to **Europe**, the **Middle East** and **China**. **Vehicle exports from Thailand** are **increasing** as a percentage of the company's total exports.
- Mitsubishi also exported 26,000 units from its **US plant** in Normal, Illinois in 2012 to **destinations** that include **Russia**; US exports have risen again in 2013 and are **expected to grow further**. In future, Miwa and his team suggest that the carmaker could consider exports from other manufacturing locations, such as from China or Russia, for example.

(Source: Finished Vehicle Logistics January-March 14)

The consumer of tomorrow will live, work, think, and use technology in different ways than today – and will change his life patterns and views more rapidly than ever before



Source: PwC Annual Report, Autofacts Analysis
Copyright PwC 2014

Thailand in Context
PwC

October 2014
63

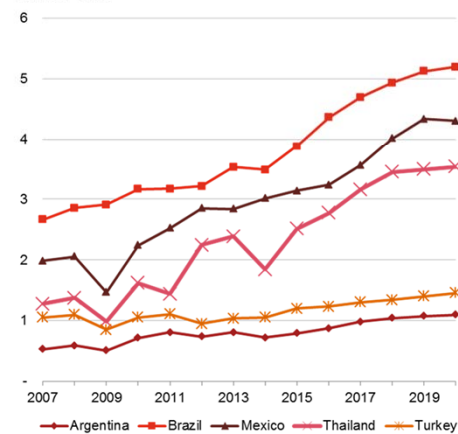
Speaker Notes:

- **Increasing urbanization:** Currently, 50% of the world's population lives in cities; by **2030**, the UN projects that 4.9bn people will be urban dwellers. By **2015**, the UN estimates that there will be 22 mega-cities (populations over 10 million), with 17 located in developing economies. Infrastructure will be strained, where new cities will rise rapidly and require investments to accommodate growth.
- **Demographic divergence:** Explosive population growth occurring in some areas versus declines in others; some societies are **aging rapidly**, constraining their workforces, as others societies are **young and growing**, creating larger labor forces/consumer markets. Whereas the **developed nations** experience a **demographic shift**, **Sub-Saharan Africa** and **India** continue to experience **rapid population growth**, at least in the near future.
- **New economic world order:** The **focus of global growth** has shifted. The developments we see are essentially a **rebalancing** of the global economies. A **realignment of global economic** and business activity is transitioning emerging economies to consumption-oriented economies. As they become exporters of capital, talent and innovation, the direction of capital flows is being adjusted.
- **Climate change and scarcity of resources:** Availability of natural resources will be increasingly difficult as on a global scale, the **number of humans** exceeds the capacity of the earth.
- **Technological breakthroughs:** Internet and connectivity have proved to be an **enabling technology** of massive social and cultural impact. Future environment will be fully **digitized** and **connected**. Increasingly, the **analysis and interpretation of usage data** are exploited to create **new generic products** (initially in the service sectors) in an automated fashion rather than traditional ideation and development.

(Sources: PwC study "Five megatrends and possible implications")

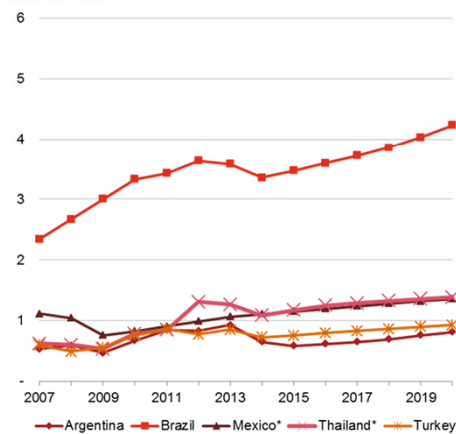
Due to its strategic free trade policy and growing domestic market, Mexico has won large investments from European manufacturers, making it an upcoming automotive hub

Forecast LV Production
Million Units



Source: Autofacts 2014 Q3 Forecast Release

Estimated LV Sales
Million Units



Source: PwC Autofacts Research

Thailand in Context
PwC

October 2014
64

Speaker Notes:

Forecast LV production

- On a **global scale**, Thailand **competes** with growing automotive markets and production hubs: Brazil, Argentina, Mexico, Turkey. **Global logistics** and **free trade** give wide choice to **global investors**.
- **Mexico** has once again become an **attractive option** to both **domestic and foreign entities** to locate thanks to **low labour costs** and an abundance of **FTAs**.
- **Turkey**: localization of **Toyota** and **Hyundai** is ongoing and keeping the assembly development slightly positive, to almost 1.1m units (+5.7%) in 2014 and further growth throughout the forecast window.

Estimated LV sales

- **Argentina** is facing a **bond default**, high **inflation**, and an alleged **shortage of dollar**. It is expected that the **economic** and **financial woes** will remain at least until late 2015, when the **next presidential elections** will occur.
- 2013 was the first time in a decade that **Brazilian** sales saw a decline, which are however expected to strengthen again in late 2014.
- **Mexico**: Annual auto sales in Mexico rose to the **highest level** since 2007 (up 7.7% in 2013) as car financing expanded and the **economy grew** for the **fourth straight** year. The results were buoyed by the number of vehicles bought on credit.
- **Thailand**: Having **major political turmoil**, the automotive sector in Thailand **declined significantly** in 2014. It is expected that making a **full recovery** even after situations have been somewhat stabilized is quite unlikely this year. However, there is a large **growth potential** in the future.
- **Turkey** with around a fourth of Eastern European assembly, has taken a turn for the **worse** in the **beginning of 2014**, with a significant **market decrease** of -21.5%YTD (August 2014). This is mainly driven by the recently introduced **tax hike**, the **weakening** of the **Turkish Lira** as well as the regulations concerning **car loans**.

Section 2.2

Electronics

2.2.1 Industry role, structure & trends

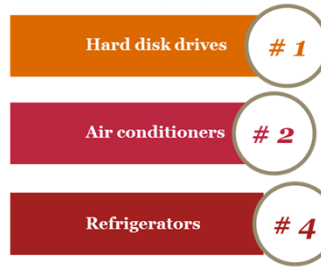
Being one of the world's largest E&E manufacturer and exporter, Thailand's E&E-Industry greatly contributes to the economic development of the country

	Country	Export value USD mn, 2011
1	China	669,618
2	Hong Kong	244,259
3	United States	218,501
4	Germany	181,799
5	Japan	170,165
6	Singapore	152,631
7	South Korea	137,265
8	Netherlands	123,982
9	Taiwan	114,361
10	Mexico	93,879
11	Malaysia	80,358
12	France	55,753
13	Thailand	53,219

Source: Thailand Investment Review 2012, BOI, PwC analysis

In 2011, Thailand ranked **#13 worldwide** regarding E&E exports

Thailand's rank in world exports (2011)



Source: Thailand Investment Review 2012, BOI, PwC analysis

- ✓ > **2,300 companies**, in the E&E sector
- ✓ 77% part and component makers, **23%** end-product assemblers
- ✓ **most major assemblers foreign or joint-venture firms**
- ✓ In 2011, **E&E exports** made up **23%** of all Thai exports, 24% in 2014
- ✓ Thai E&E industry employs > **480,000 workers** in 2011, **one third certified engineers**

Thailand in Context
PwC

October 2014
66

Speaker Notes:

E&E export value ranking 2011

- Thailand's E&E industry stands robust among world-wide competitors.
- In 2011, Thailand ranked **13th world-wide** regarding **E&E export value**.
- Also in 2011, the country was the world's largest manufacturer of hard disk drives (HDDs), the second-biggest producer of air conditioners and the fourth-largest for refrigerators.

Industry facts 2011

- With more than 2,300 companies, Thailand's E&E industry greatly contributes to the country's economic development.
- The industry is composed **77% of part and component makers** and **23% of end-product assemblers**.
- While the majority of part suppliers are Thai companies, **most of the major assemblers are foreign or joint-venture firms**.
- In 2011, **E&E exports** made up **23%** of all Thai exports, the share remained stable being at 24% for the first six months of 2014
- Thai E&E industry employed > **480,000 workers** in 2011, **one third certified engineers**.

(Source: Thailand Investment Review 2012, BOI, PwC analysis)

Manufacturing output of the electrical appliances and electronics industry decreased in 2014 but political stability and growing consumer demand make a recovery likely in 2015

Decline in overall **manufacturing output** of the electrical appliances and electronics industry:

- ✓ -1.56% m-o-m in June 2014
- ✓ -1.73% y-o-y in June 2014



Increasing political stability and **growing consumer demand** make a **recovery** of the sector likely for 2015.



Electronics sector 2014: +6.2%

- ✓ Increased demand for semi conductors
- ✓ Increased demand for **integrated circuits**
- ✓ **HDD manufacturing** in Thailand likely recovers

Source: The Office of Industrial Economics Industrial Economic Status Report July 2014, PwC analysis

Thailand in Context
PwC

October 2014
67

Speaker Notes:

Electrical appliances and electronics industry

- For almost 3 decades, the **electrical and electronics industry expanded continuously**, constituting an approximately **USD55bn sector in Thailand's economy**.
- Overall manufacturing output of the electrical appliances and electronics industry decreased 1.56% m-o-m in June 2014 and 1.73% y-o-y.
- As consumers are likely to increase spending in the near future, recovery of the EE-sector is likely in 2015.

Electrical appliances

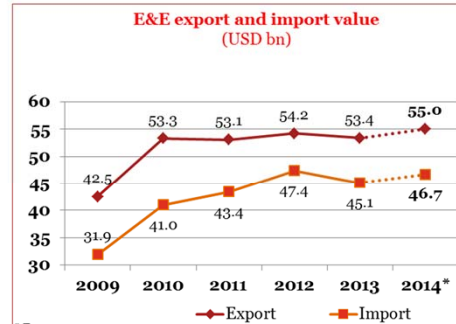
- Decreased production of refrigerators, compressors, fans, and electrical wires mainly as a result of decreasing consumer spending.
- The figures for **water boilers** and **rice cookers** expanded, as well as **television sets** in preparation for the upcoming launch of the country's digital TV system.

Electronics industry

- Decreased production of HDDs
- The **electronics sector** in 2014 is expected to **increase by 6.2% y-o-y**, stemming from a higher demand of semiconductors and integrated circuits (ICs) in the EU and ASEAN markets. Meanwhile, production of HDDs is expected to restart after moving its base to other countries during Thailand's political unrest.
- **Semiconductors, monolithic ICs, and other ICs** increased 6.0%, 24.3%, and 16.2%, respectively from 2013. These items have been used as components for communications systems, such as Bluetooth and touch screens, and consumer electronics which have grown consistently.

(Source: The Office of Industrial Economics Industrial Economic Status Report July 2014, PwC analysis)

The electronics sector is expected to grow in the years to come, supported also by the launch of the ASEAN Economic Community 2015 and improved exports to the US & Japan



Source: Thailand Investment Review, Thai Electrical and Electronics Institute, BOI, PwC analysis

Export and import value growth (%)

Year	Export	Import
2009	-9.7	-11.7
2010	25.5	28.8
2011	-0.5	5.8
2012	2.0	9.3
2013	-1.4	-5.0
2014*	2.9	3.7

* Forecast

Source: Thailand Investment Review, Thai Electrical and Electronics Institute, BOI, PwC analysis

- Major electronic exports encompass **hard disk drives (HDD)** and **integrated circuits (IC)**.
- With a **share of 40%-45% in worldwide HDD production**, Thailand is the world's **#1 HDD and components manufacturing location**.

Source: Thailand Investment Review, Thai Electrical and Electronics Institute, BOI, PwC analysis

Thailand in Context
PwC

October 2014
68

Speaker Notes:

E&E export and import value

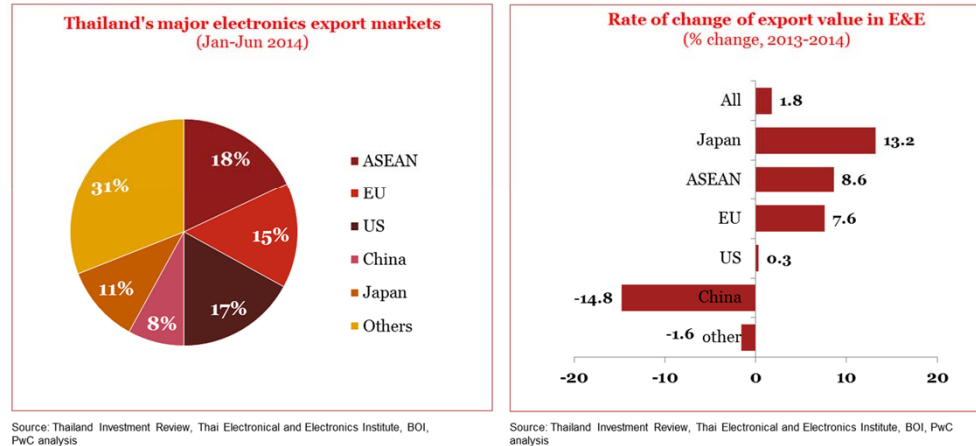
- Despite adverse effects such as the devastating flooding 2011 and the cautious world-wide demand, **E&E-exports and -imports were resilient**.
- Following a decline in both export and import value in 2013, export and import value is forecast to increase again in 2014.
- Export value in USD bn is forecast to **increase** from USD 53.4bn in 2013 to **USD 55.0bn in 2014** (2.9%).
- Import value in USD bn in forecast to **increase** from USD 45.1bn in 2013 to **USD 46.7bn in 2014** (3.7%).

HDD & IC

- The **major electronic exports** over past years have been hard disk drives (**HDD**) and integrated circuits (**IC**).
- Thailand is ranked as the **world's number 1 HDD and components manufacturing base**, commanding 40%-45% of worldwide HDD production.
- Its competitiveness derives from a deep network of **world class supporting industries** that manufacture most parts and subcomponents utilized in the final HDD assembly.

(Sources: Thailand Investment Review, Thai Electrical and Electronics Institute, BOI, PwC analysis)

The electronics sector is expected to grow in the years to come, supported also by the launch of the ASEAN Economic Community 2015 and improved exports to the US & Japan



Thailand in Context
PwC

October 2014
69

Speaker Notes:

Thailand's major electronics export markets

- In the segment of electronics, Thailand's major export markets (in the first six months of 2014) are ASEAN (18%), followed by the US (17%), EU (15%) and Japan (11%).
- As can be seen from the geographic location of Thailand's major E&E export markets, the country is destined to be an **export hub for EE-products** for the region and the world.

Thailand's major electronics export markets / Rate of change of export value in E&E

- Having been a strong export market in recent years, exports to China lost in significance during the last couple of years.
- From January to June 2014, export value to China declined by 14.8%
- Export value to all other major trading partners such as Japan, the EU and ASEAN increased.

(Sources: Thailand Investment Review, Thai Electrical and Electronics Institute, BOI, PwC analysis)

While electronics and electrical appliances exports will grow, computer and computer components as well as integrated circuits show particularly strong export growth

Top value of electrical appliances and electronic products exported (June 2014)

Electrical Appliances / Electronics	Value (USD mn)	% M-O-M	% Y-O-Y
Computer and components	1,482.0	12.5	4.6
ICs	701.6	41.6	-3.4
Air conditioners & parts	384.2	-17.9	-6.9
Radio & TV sets & parts	323.1	-14.4	-3.4
Total	4,882.0	0.05	3.37

Total export value of electrical appliances and electronics was USD 4,882 m,
✓ + 0.05% m-o-m
✓ + 3.37% y-o-y.



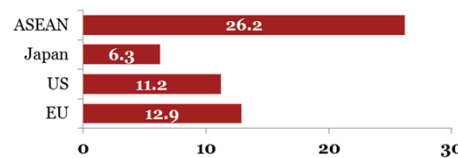
Source: The Office of Industrial Economics Industrial Economic Status Report July 2014



2014/2015
Launch of the country's digital TV system

TV system sales are increasing today!

Electronics export value growth (June 2014, %)



Source: The Office of Industrial Economics, Industrial Economic Status Report July 2014, PwC analysis

Thailand in Context
PwC

October 2014
70

Speaker Notes:

Top value of electrical appliances and electronic products exported (June 2014)

- In June 2014, the **total export value** of the electrical appliances and electronics industry was **USD 4,882m**.
- This does constitute an **increase of 0.05% m-o-m and of 3.37% y-o-y**.

Electrical appliances export value growth

- The export value of **electrical appliances** represented an increase of **7.05% m-o-m and of 3.39% y-o-y**, particularly to Japan (26.61%), compared with a slim increase of 0.06% to the ASEAN market.
- Air conditioners had the highest export value

Electronics export value growth

- Exports of electronics went up 20.3% from June 2014 and 3.35% y-o-y.
- Electronics export value mainly increased for exports to ASEAN (26.2%), Japan (6.3%), the US (11.2%), and the EU (12.9%)
- Computers and related components had the highest export value June 2014, followed by ICs.

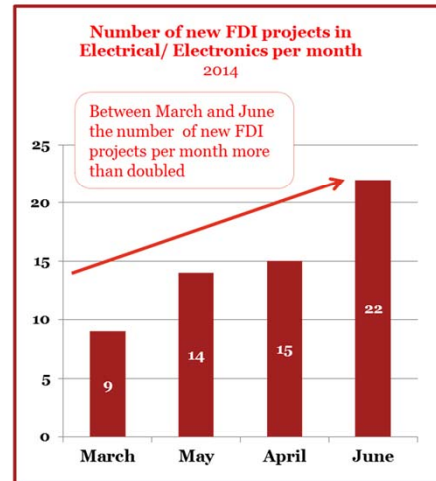
(Sources: The Office of Industrial Economics Industrial Economics Status Report July 2014, PwC analysis)

Increased demand will cause production and sales to grow further in 2015, with the number of EE-FDI projects increasing steadily during the last months

Thailand offers a combination of advantages for EE-investors



Source: BOI, PwC analysis



Source: Thailand Investment Review, PwC analysis

Thailand in Context
PwC

October 2014
71

Speaker Notes:

Thailand offers a combination of advantages for EE investors

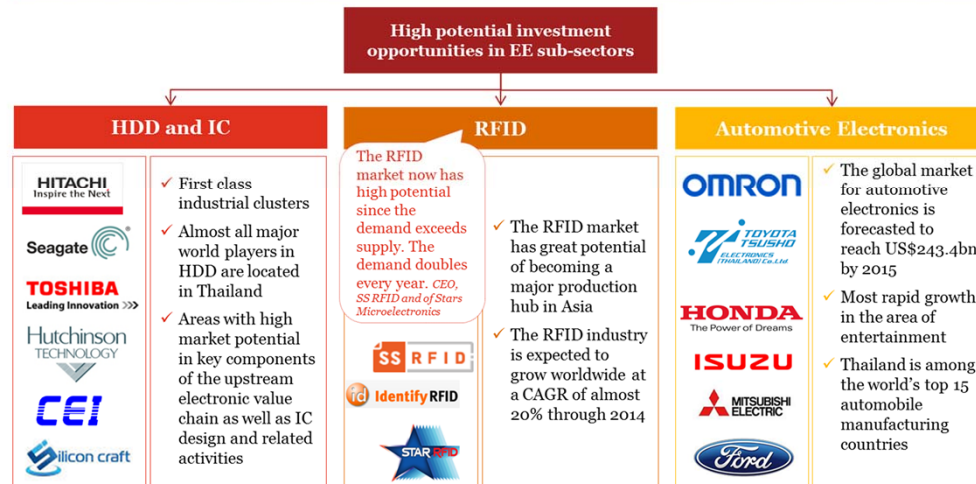
- It is a **combination of unique advantages in EE** that endow Thailand with a unique selling point for FDI:
- **Competitive workforce**: well-qualified, but still **extremely affordable** workforce. For an adequate supply of qualified personnel, the government has implemented a **HR Development Plan**.
- **Access to markets**: **Free Trade Agreements** between Thailand and various countries give Thailand, and its foreign investors, a considerable advantage in reaching out to the different markets. The establishment of the **AEC** in 2015 will further enhance Thailand's attractiveness.
- **Excellent logistics systems**: Thailand undertakes considerable investments to further advance the already significantly improved infrastructure.
- **Development of electronics clusters**: encouraged by the government leads **enhanced communication, facilitates flow of goods** between firms, reduces logistics costs and enables the sharing of technological innovations and HR development programs.

Number of projects in Electrical/ Electronics

- As an attractive investment destination for electrical appliances and electronics, the increasing number of new FDI projects in the EE sector in recent months is the automatic result of the **positive sectoral forecast** as well as Thailand's unique combination of advantages for profitable FDI.

(Sources: BOI, Thailand Investment Review, PwC analysis)

The electronics sector offers diversified investment opportunities in innovative and future-oriented technologies from hard disk drives (HDD) and integrated circuits (IC) to automotive electronics



Source: Company websites, The Nation, BOI, PwC analysis

Thailand in Context
PwC

October 2014
72

Speaker Notes:

High potential investment opportunities in EE sub-sectors

- Opportunities are amongst others especially in the field of hard disk drives and integrated circuits (HDD and IC), radio-frequency identification (RFID) and automotive electronics.

HDD and IC

- As all major world players in HDD manufacturing can be found within a radius of 250-kilometer of Bangkok, Thailand's supplier benefit from **first class industrial clusters**.
- Market potential is seen in a variety of key components of the **upstream electronic value chain** including e.g. discrete components such as diodes and transistor as well as semiconductor devices and ICs.
- Moreover does **IC design and related activities** offer a large market to be explored amongst others in wafer design.

RFID

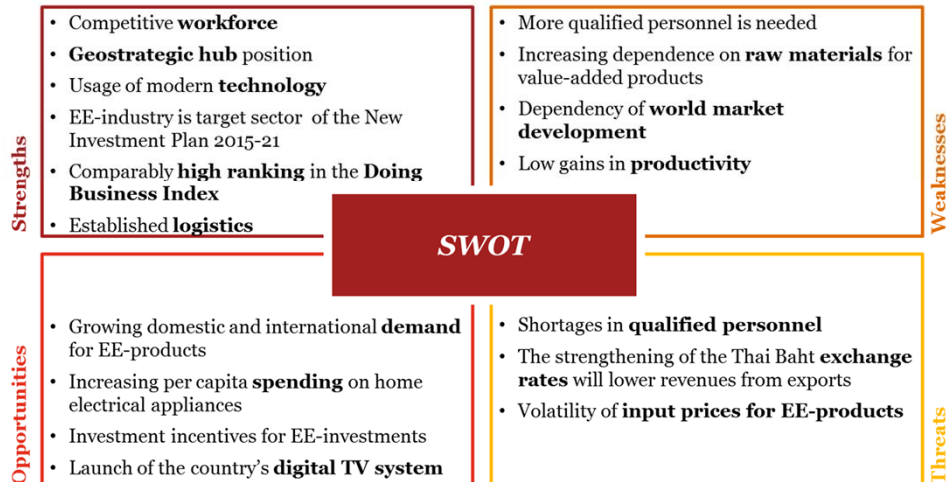
- Thailand produces cutting-edge RFID technologies. It's market is currently **valued at about USD 26.1m** and is forecasted to experience unprecedented growth, as it has the potential to become a major production center in Asia.

Automotive electronics

- Thailand is among the **world's top 15 automobile manufacturers** (rank 10) with largest companies within Thailand being Toyota, Mitsubishi, Honda, Isuzu und Renault-Nissan.
- This is a strong driving force behind the development of all relevant supporting industries, including automotive electronics. Various sectors within this industry are expected to undergo strong volume growth, especially in the area of entertainment.

(Sources: Company websites, The Nation, BOI, PwC analysis)

Thailand profits from several strengths and opportunities regarding the electronics and electrical appliances sector that make the country attractive for investors



Source: PwC analysis

Thailand in Context
PwC

October 2014
73

Speaker Notes:

SWOT Analysis for the EE-Industry

- **Strengths:** In general, Thailand benefits from an attractive investment climate as underpinned by the comparably high **Doing Business** ranking. This is supported by the favourable **geostrategic location**, making the country attractive as an **export hub** to ASEAN and the world. Thailand has a **competitive workforce** at its disposal, especially the comparably high number of engineers (in 2011, 1/3 of the employees in the EE-industry were certified engineers). The **government-supported R&D initiatives** ensure the usage of modern technology and continuous development in the EE-industry.
- **Opportunities:** **Growing domestic and international demand** for EE-products makes the sector attractive. Demand recovery already started in Q3 2014 (see increase in the consumer confidence & business sentiment index). In addition, **disposable income of Thai households will increase** in the future and increasing fractions will be spent on electrical appliances. As one of the target industries, a number of **investment incentives** are available for the sector.
- **Weaknesses and Threats** relate mainly to the fact that more qualified personnel is needed. Shortages in qualified personnel are expected in the future not only for the EE-industry. Volatility of input prices and the dependency of the world market are further risks. In addition, the strengthening of the THB lowers revenues from exports.

(Source: PwC analysis)

Section 2.2

Electronics

2.2.2 The global context: how to stay competitive

The Thai government supports many initiatives, institutes and research programmes to upgrade technology and stay competitive, in particular for electrical appliances and electronics



Hard Disk Drive Industry Research Program

The program aims to encourage Thailand to be a competitive R&D hub for hard disk drives in the region and to maintain existing manufacturing bases.



National Electronics and Computer Technology Center

Air-conditioning and Refrigerator Industry Program

Aims to encourage industry to participate in R&D work for air-conditioning products to add value for products and exports.

The more sophisticated and advanced the respective technology, the better are CIT Incentives for the electrical appliances and electronics sector

CIT Incentives	A1* 8 yrs	A1 8 yrs	A2 5 yrs	A3 3 yrs
Sophistication of production process	high			low

Without cap. (out of 102 activities, which are granted CIT incentives, 40 activities are selected for comparison)

Source: Program websites, BOI, PwC analysis

Thailand in Context
PwC

October 2014
75

Speaker Notes:

Text Boxes

- The Thai government supports many initiatives, institutes and research programmes to upgrade technology and stay competitive, in particular for electrical appliances and electronics. The Slide only includes selected examples.
- The **Hard Disk Drive Industry Program** aims to encourage Thailand to be a competitive R&D hub for hard disk drives in the region and to maintain existing manufacturing bases.
- The **Air-conditioning and Refrigerator Industry Program** aims to encourage industry to participate in R&D work for air-conditioning products to add value for products and exports.
- The **National Electronics and Computer Technology Center (NECTEC)** is a statutory government organization under the **National Science and Technology Development Agency (NSTDA)**, Ministry of Science and Technology. Its main responsibilities are to undertake, support and promote the development of electronics and computer technologies through research and development activities. NECTEC also provides linkage between research communities and industries through the established industrial clusters.

CIT Incentives in the EE-Industry

- Similar as for other industries, there are several incentives for investment in the EE-industry in Thailand.
- These incentives also contribute to Thailand's EE-sector staying competitive in the medium- and long-run.
- CIT incentives as a key incentive depend on the sophistication of the production process and range between 3 and 8 years (2013).

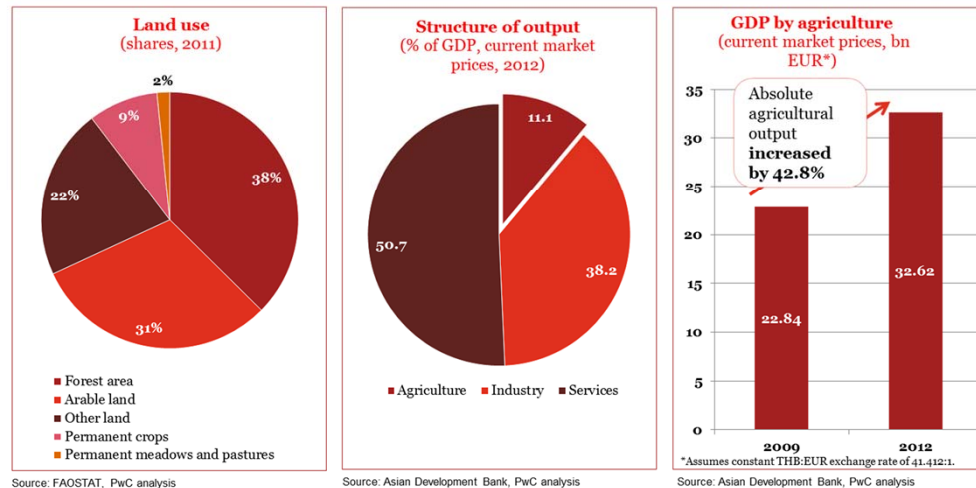
(Sources: Program websites, BOI, PwC analysis)

Section 2.3

Agribusiness

2.3.1 Industry role, structure & trends

Compared to services and industry, agriculture currently contributes only a small share to GDP, but showed a steep increase in GDP contribution from 2009 to 2012



Thailand in Context
PwC

October 2014
77

Speaker Notes:

Land use

- **Arable land** includes land under temporary agricultural crops, temporary meadows, land under market, kitchen gardens and land temporarily fallow (less than 5 years) and makes up **31% of total land use**, ranking second after forest area.
- Only **11%** of land is currently used for **permanent cultivation**.
- It is expected that this number will not grow significantly in the future, as **agro-processing and services sectors will grow faster** than agriculture itself.

Structure of output

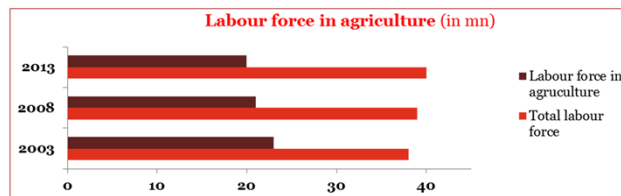
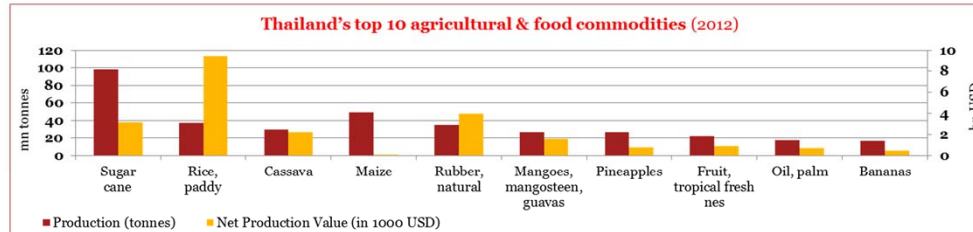
- In the past Thailand's growth relied on agriculture as a main driver. However, since the late 1980s **supply of labour decreased** and the Thai economy **shifted** the concentration to **industrial and service sectors** instead.
- Accordingly, the output generated by agriculture makes up **only 11% of the GDP**.

GDP by agriculture

- Still, agriculture remains an important sector of the Thai economy, showing a steep **increase in GDP** by agriculture from EUR 22.8bn to EUR 32.6bn.

(Sources: FAOSTAT, Asian Development Bank, PwC analysis)

With Thailand's steadily increasing output, especially concerning rice, it has been an important international granary at times of global food need



Despite falling numbers of labour force occupied in agriculture, Thailand managed to keep **sufficient agricultural growth** to feed the fast-growing population.

Thailand in Context
PwC

October 2014
78

Speaker Notes:

Thailand's top 10 agricultural & food commodities

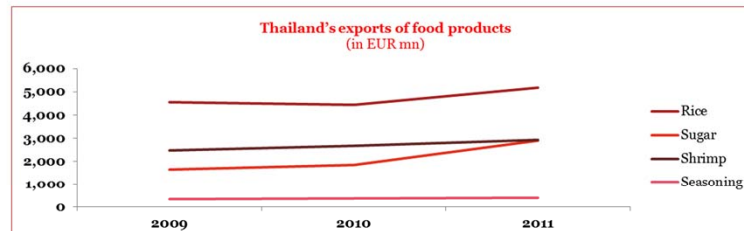
- In terms of **net production value** **Rice**, is Thailand's top agricultural product, followed by rubber and sugar cane.
- In terms of **production output**, **sugar cane** is in the lead, followed by maize and rice.

Labour force in agriculture

- The share of labour force occupied in agriculture has been **falling** since the 1990's.
- Despite decreasing numbers of farmers, agriculture in Thailand has **grown more than the population** over the past 50 years
- Initially it grew at rates of 4% per year, later slowing down to 2% a year.
- This development has taken place within an economy that has become **more industrialised and urbanised**.

(Sources: FAOSTAT, PwC analysis)

Thailand's food processing industry is strongly supported by the government, striving to further promote Thailand as "The Kitchen of the World"



Source: BOI, PwC analysis

From 2009 to 2011 **Sugar** exports saw an **increase of 44%**, while **Rice** and **Shrimp** still top the list in terms of value



Source: SEA-LAC Trade Center, BOI, PwC analysis

Thailand in Context
PwC

October 2014
79

Speaker Notes:

Thailand's exports of food products

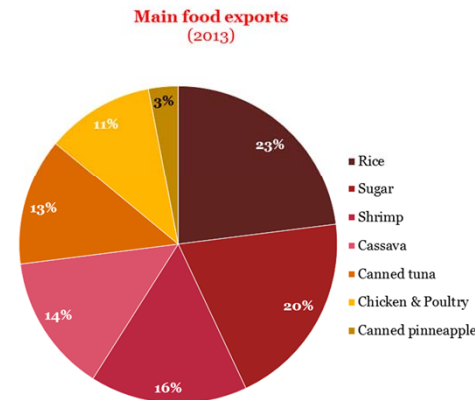
- All food product exports **increased** from 2009 to 2011.
- **Rice** and **Shrimp** exports showed the highest export values from 2009 to 2011, and **increased by 12% and 15%** respectively.
- Even though **Sugar** exports only rank third in this analysis, they experienced a **steep increase** of a total of 44%.
- This strong development of food exports is expected to continue, as Thailand's government strongly promotes this sector and aims at making Thailand "**The Kitchen of the World**".

Textboxes

- Thailand clearly has a **comparative advantage** in the food industry, due to the country's natural resources, extended growing seasons and comparatively low labour costs.

(Sources: BOI, SEA-LAC Trade Center, PwC analysis)

The Thai agriculture successfully diversified into high-value products, livestock and fisheries and ranks among the world's top exporters for some produce



Source: National Food Institute, PwC analysis

Thailand's rank in world exports (2012)



Source: National Food Institute, PwC analysis

Thailand in Context
PwC

October 2014
80

Speaker Notes:

Main food exports

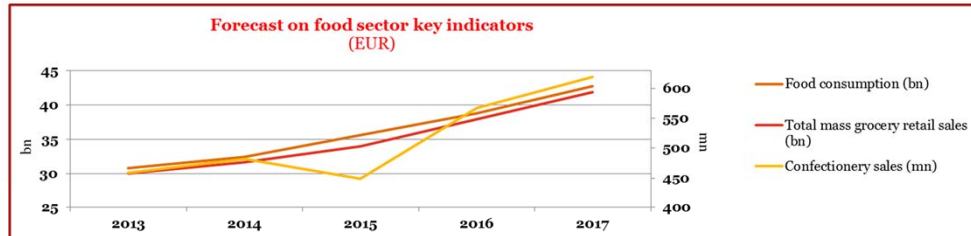
- Thailand used to export mainly rice and teak.
- Recently, Thailand was able to **diversify** its agriculture successfully into **high-value products**, livestock and fisheries – including crops such as cassava, pineapple, rubber and shrimp.
- Despite a **growing demand for imported goods**, the national food processing industry **still uses 80%** of raw materials **locally**.
- The country managed to keep **sufficient agricultural growth** to feed a fast-growing population while successfully exporting, thanks to a strong increase in the **general popularity** of Thai food worldwide.

Thailand's rank in world exports

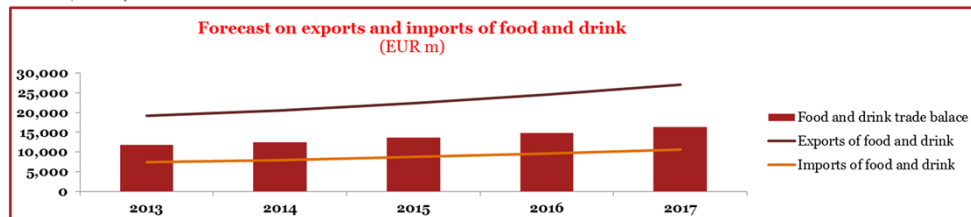
- In the past Thailand did not play a significant role in international trade for consumer foods.
- This has changed and Thailand's is among the six largest producers world wide for cassava, (#1), sugar (#2), fishery (#3) and rice & grains (#6).
- Thailand has evolved as one of the **leading agricultural exporters**, being able to produce a range of tropical produce at very low costs, making Thailand to a prime example of successful agriculture development in an industrialising country.

(Sources: National Food Institute, PwC analysis)

The food processing industry is predicted to continue its strong performance, based on increasing food consumption as well as growing food exports and imports



Source: BMI, PwC analysis



Source: BMI, PwC analysis

Thailand in Context
PwC

October 2014
81

Speaker Notes:

Forecast on food sector key indicators

- Generally **food consumption** is predicted to increase from EUR 31bn to EUR 43bn, an **increase of 27%**.
- Similarly will **total mass grocery retail sales** and **confectionery sales** increase by **28%** and **26%** respectively.
- Additionally, the **per capita amount spent on food** is predicted to increase from EUR 445 to EUR 603 in 2017, which is equal to a **26% increase**.

Forecast on exports and imports of food and drink

- Thailand is expected to keep its **positive trade balance**, as the increase in imports, due to a growing local demand, is set-off by equally strong numbers of exports.
- The country was able to **strengthen its economic performance** amongst major food importers such as the other ASEAN member countries, Japan and the US.

(Sources: BOI, BMI, PwC analysis)

The existence and enforcement of standards and regulations in the food sector are of utmost importance for competitive engagement in international trade

Food safety inspection agencies	Quality assurance	Agricultural commodity & food standards
<ul style="list-style-type: none"> ✓ Department of medical science ✓ Thai industrial standards institute ✓ Department of Agriculture ✓ Department of Fisheries ✓ Department of Livestock 	<ul style="list-style-type: none"> ✓ Good Manufacturing Practices ✓ Total Quality Management ✓ International Organization for Standardization 	<ul style="list-style-type: none"> ✓ Good Agricultural Practices ✓ Good Hygienic Practices ✓ Hazard Analysis Critical Control Point



The **Food and Drug Administration** regulates the safety, efficacy and quality of health products.



The Standards adopted draw from **international legal regulations**.

Source: BOI, NSTDA, PwC analysis

Thailand in Context
PwC

October 2014
82

Speaker Notes:

Food safety inspection agencies

- Various **food control activities** are undertaken by several organizations and a number of **authorized food safety inspection agencies** are responsible for controlling the implementation and adherence to these standards.

Quality assurance

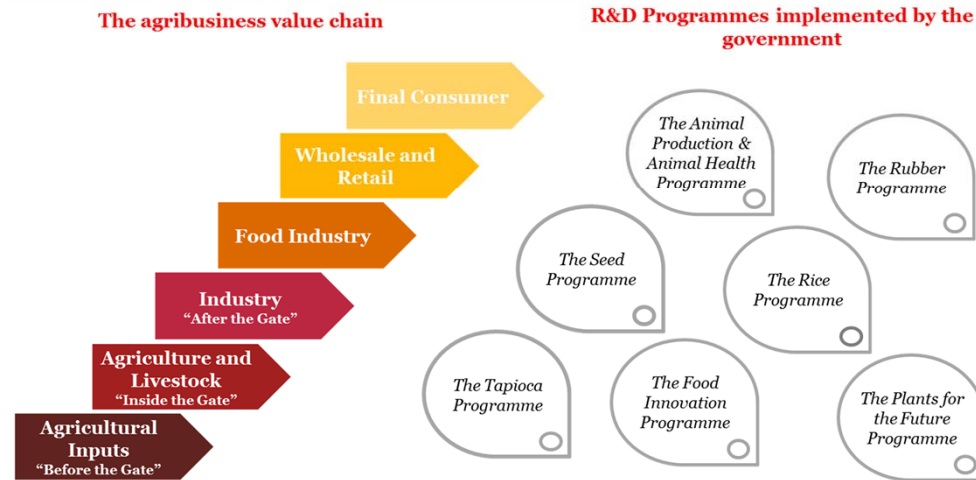
- In Thailand several quality assurance standards are **mandatory for certain products**.
- **Good Manufacturing Practices:** Based on internationally recognized WHO standards. Adherence to sanitary and processing requirements.
- **Total Quality Management:** has been widely applied in developed countries.

Agricultural commodity & food standards

- Applied standards are certified by the National Bureau of agricultural commodity and food standards.
- **Good Agricultural Practices:** Covers the agricultural production process, from inputs to the farm gate. Addresses environmental, economic and social sustainability
- **Hazard Analysis Critical Control Point:** provides a risk management tool that supports management systems standards in the food industry. It outlines good manufacturing processes and can be key for engaging in international trade.

(Sources: BOI, NSTDA, PwC analysis)

The Thai government aims at increasing the agricultural industry's competitiveness and implemented several research and development programmes along the value chain



Source: National Science and Technology Development Agency, PwC analysis

Thailand in Context
PwC

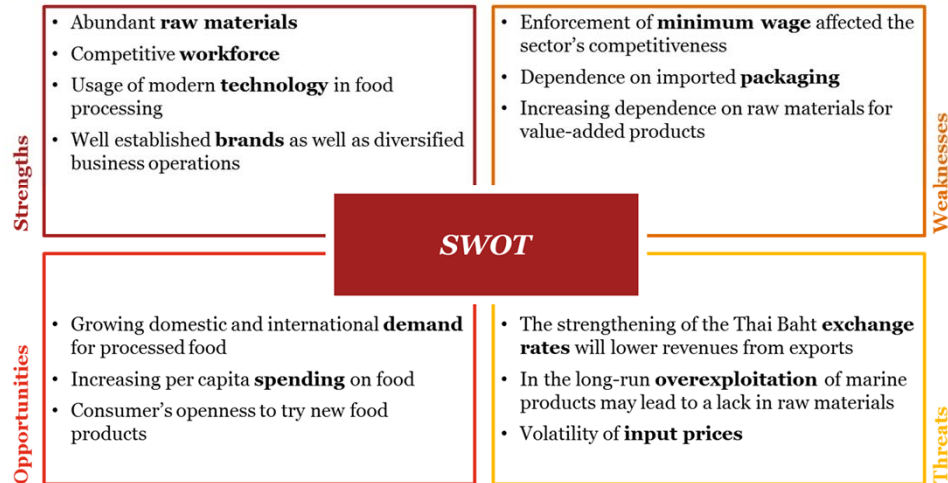
October 2014
83

Speaker Notes:

- The agricultural sector plays a **key role in economic development**, especially for Thailand, for which the food and agricultural industries have been an important part of the people's way of life.
- Even though Thailand is a major exporter of agricultural and food products, the country's competitive position **showed a slight decline** for some years.
- The National Science and Technology Development Agency realizes that **science and technology** is an **important tool** that will ensure sustainable competitive capability for the Thai food and agricultural industries.
- Operations focus on two **target groups**: Small farmers and plantation owners.
- The government has implemented in total 7 research programmes, which **cover each level of the agricultural value chain** and thus ensure a holistic approach, enabling development and technological innovation on each stage.
- Specifically, the programmes support:
 - Development of production **technology strengths**
 - Private sector **research cooperation** on biotechnology
 - Development of **breeding varieties**
 - Increase of **yield** per unit
 - Increase **quality** and **safety**

(Sources: National Science and Technology Development Agency, PwC Analysis)

Thailand has considerable comparative advantage in the food sector, however certain weaknesses and threats exist, which need to be considered



Source: SEA-LAC Trade Center, PwC analysis

Thailand in Context
PwC

October 2014
84

Speaker Notes:

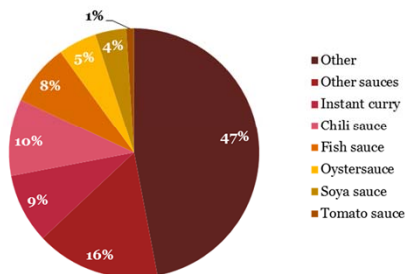
SWOT Analysis

- The government has implemented several measures and R&D programmes to enhance the food industry's **competitiveness**.
- Additionally, efforts have been made towards **meeting international** safety, sanitation and quality **standards**.
- Next to the **strengths** the Thai food sector shows in terms of raw materials, competitive technologies and workforce, the market still offers several **opportunities**.
- Worldwide demand for food and processed food products is increasing, while the amount spent on food increases as well
- Despite this positive outlook, the sector also shows some **weaknesses** and faces **challenges**.
- Varying input prices, exploitation, increasing wages are among them and need to be **considered** in long-term planning and strategic orientation

(Sources: SEA-LAC Trader Center, PwC analysis)

With an excellent reputation and growing export numbers, the “Ready-to-eat-food” sector offers vast opportunities for investment in the food technology industry

Thailand's food ingredients exports
(shares, 2011)



Source: BOI, PwC analysis

Value of Ready-to-eat food exports
(EUR mn, 2013)



Source: SEA-LAC Trade Center, PwC analysis

- **Cutting edge technologies** are constantly developed to keep up with international competition and the constantly growing demand.
- The **Food Safety Total Solutions Platform** was established to **create innovative solutions** to reduce illness from unsafe food products.

Source: National Innovation Agency, SEA-LAC Trade Center, PwC analysis

Thailand in Context
PwC

October 2014
85

Speaker Notes:

Thailand's food ingredients exports

- Thailand established a very good **reputation** for **food ingredient products** such as sauces and seasonings.
- Local skills and diverse raw material available for seasonings make the sector an appealing **destination for investment**.
- **Total value** of Thailand's food ingredients exports in **2011** amounted to **EUR 378m**.

Value of ready to eat food exports

- Thailand **exported 521,000 tons of ready to eat food and seasonings** in 2013. **Total value** of these exports reached **EUR1 bn**.
- Compared to 2012 this is a **9.2% increase**.
- With EUR 235m, mixed seasonings contributed the highest export value.

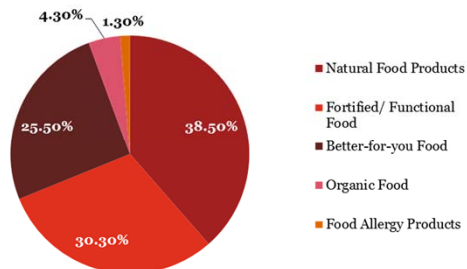
Text box

- The **National Innovation Agency** implemented an Industry Innovation Programme, focused on:
 - **Bio Business**, including a Functional Food Platform, Food Safety Total Solutions Platform and Medical Tourism Platform
 - **Eco-Industry**, including a Clean Industry Platform and Eco-Products Platform
 - **Design & Solutions**, including Agri-Solutions Platform, Logistics Platform and a Biomedical Industry Platform
- The **Food Safety Total Solutions Platform** aims at creating innovative solutions for **handling, preparation, processing, quality control** and **storage** of food. Ultimately, illnesses from unsafe food products are supposed to be reduced, or prevented.

(Sources: BOI, National Innovation Agency, SEA-LAC Trade Center, PwC analysis)

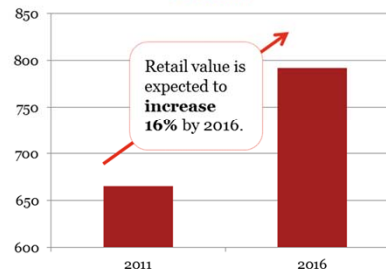
A growing consciousness for a healthy diet and an increase in demand for snacks led to a significant upsurge in the health and snacks sector

Market shares of health food products (2012)



Source: National Food Institute, PwC analysis

Forecast on market for sweet and savory snacks (EUR mn)



Source: BOI, SEA-LAC Trade Center, PwC analysis

- Consumers now **favour healthy and organic** food and snacks.
- The **Food Innovation Program** was established to create innovative food products, new business in functional food, medical and novel food as well as nutraceuticals.

Source: National Food Institute, PwC analysis

Thailand in Context
PwC

October 2014
86

Speaker Notes:

Market shares of health food products

- Health food is seen as a **trend** among Thai people, with consumers favouring organic food and paying more attention to ingredients and production.
- **Total consumer spending** on health and wellness foods grew to **EUR 3.7bn in 2012**, of which EUR 1.7bn was spent on health foods only.
- Natural food products, with 38.5% make up the largest market share in this segment.
- Capitalizing on this trend, several companies started to **develop new, innovative and functional food products**.

Forecast on market for sweet and savoury snacks

- Within the category of processed food, snacks have noticed a strong demand increase. **In 2011** the sector **grew by 7%**. Until 2016 it is expected to have grown by 16%.
- Especially sweet and savoury snacks from the Thai market: **fruit snacks, chips, tortilla, popcorn**, etc.
- **Most popular** among the health food snacks are **fish snacks**.

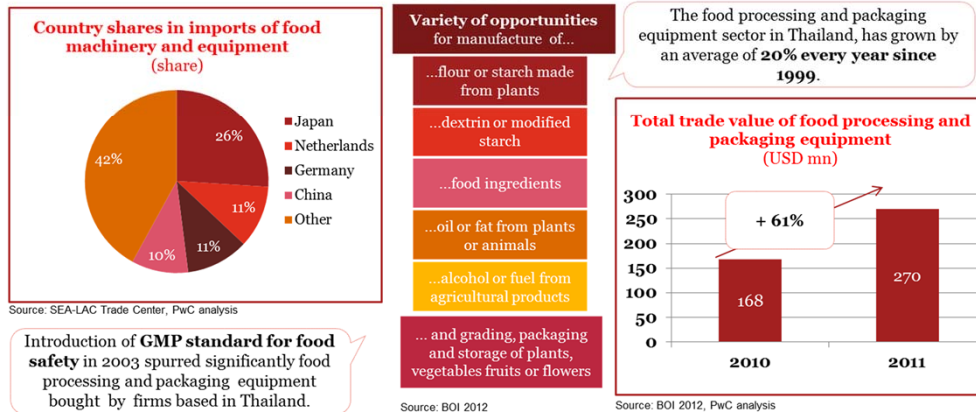
Text box

- In response to the growing consciousness from consumers for a healthy diet, manufacturers increasingly re-invented their snack products to make them more healthy, by reducing the amount of salt and sugar used for example.
- The **Food Innovation Program** was developed to establish high quality products. It includes building risk assessment capabilities and developing new products as well as improving production process efficiency.

(Sources: National Food Institute, BOI, SEA-LAC Center, PwC analysis)

Thailand's flourishing food industry offers a variety of business opportunities within the food processing machinery and equipment industry

Opportunities for import substitution through FDI in a flourishing Thai market



Thailand in Context
PwC

October 2014
87

Speaker Notes:

- The flourishing food industry in Thailand has fuelled the market for food processing machinery and equipment in Thailand. **Cutting-edge technologies** are constantly developed by leading manufacturers in the national food processing industry to meet the increasing demand in the global market.
- The introduction of the **GMP standard for food safety equipment** in 2003 has spurred significantly the volume of food processing and packaging equipment bought by Thailand-based firms.
- The market of food processing and packaging equipment has grown by an **average of 20% every year since 1999**.

Total trade value of food processing and packaging equipment:

- The total trade value of food processing and packaging equipment increased from USD 168m in 2010 to USD 270m in 2011.
- This reflects an immense **increase of 61%**.

Country shares in imports of food machinery and equipment:

- While Thailand has been successful in modernizing its national industry, the country still depends heavily on **imports of foreign industrial machinery**.
- The majority of machines and equipment is imported from Japan (26%), Netherlands (11%), Germany (11%) and China (10%).
- The major share of imports is in equipment for filling, closing, sealing, encasing or labeling followed by machinery for the preparation of food and drink.
- Overall, the flourishing food machinery and equipment industry in Thailand offers a variety of opportunities for **import substitution through FDI**.

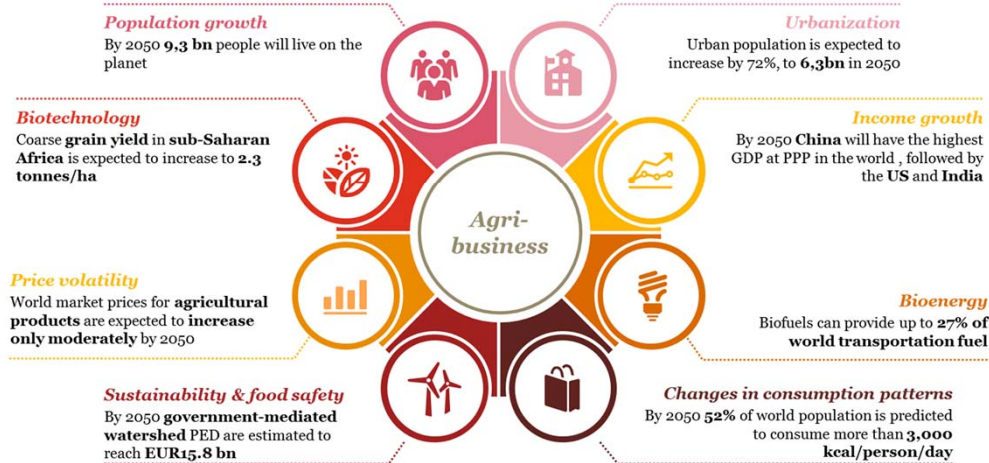
(Sources: BOI, SEA-LAC Trade Center, PwC analysis)

Section 2.3

Agribusiness

2.3.2 The global context: how to stay competitive

The variety of global drivers of agribusiness will determine Thailand's public and private scope of action and the manifold opportunities for Thailand's agribusiness sector



Source: Forest Trends Association, UN, International Energy Agency, FAO, PwC analysis

Thailand in Context
PwC

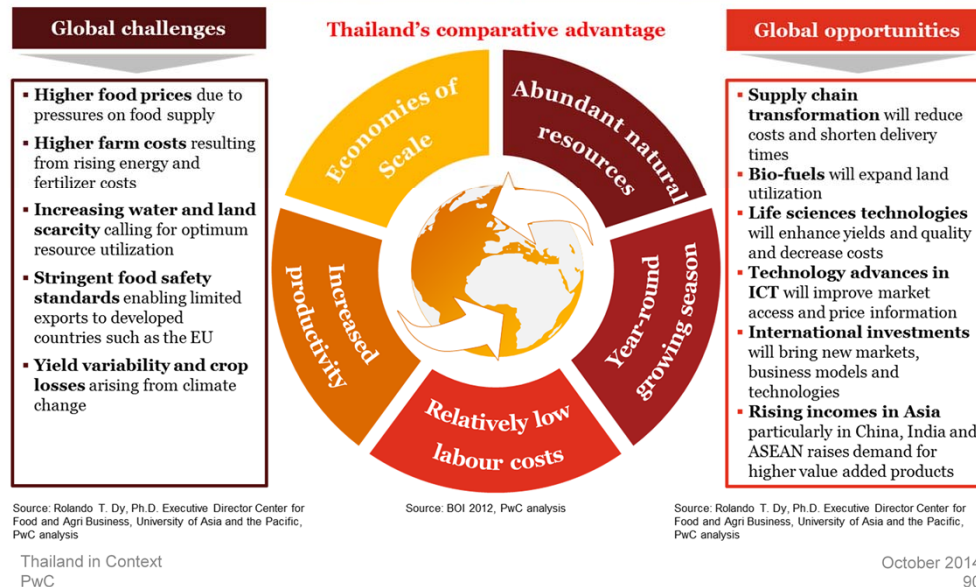
October 2014
89

Speaker Notes:

- **Agribusiness:** Does not refer merely to agricultural production but consists of various elements that drive production. There are a number of global trends that will shape the agribusiness sector globally. These include:
- **Urbanization:** By 2050 world urban population is estimated to be the same size as total population was in 2002. Major disparities in the level of urbanization exist among developed and developing countries.
- **Income growth:** Projected GDP at PPP in 2050 for China amounts to EUR 42,566bn.
- **Bioenergy:** Global share of biofuel in total transport fuel is expected to grow from 2% in 2011 to 27% in 2050.
- **Changes in consumption patterns:** People living in countries with less than 2,500 kcal/person/day may decrease from 2,3 bn (35%) to 240 m (2,6%) by 2050
- **Sustainability & food safety:** Governments around the world make payments directly to providers of ecosystem services, e.g. rural landowners to steward their land in ways that will generate or preserve ecosystem services. In 2008 these payments amounted approximately EUR 5.5bn.
- **Price volatility:** The world food price index increased by 140% during the period from 2002-2007. However, price increases until 2050 are expected to remain moderate.
- **Biotechnology:** Grain yield in sub-Saharan Africa in 2010 amounted 1,04 tonnes/ha. Grain yield in Latin America is predicted to increase from 3.36 tonnes/ha in 2010 to 4.88 tonnes/ha.
- **Population growth:** From 2010 to 2050 CAGR of population is expected to be 8%. According to the UN world population reached 7 bn people in Oct 2011.

(Source: Forest Trends Association, UN, International Energy Agency, FAO, PwC Agribusiness & Knowledge Center, PwC analysis)

Being aware of the global agribusiness challenges and leveraging opportunities, Thailand can build on its comparative advantage and its role as a leading global player in agribusiness



Speaker Notes:

Global challenges

- Within the coming decades, there are a number of global challenges that will affect Thailand. These include: 1. **Pressures on food supply** will lead to higher food prices, 2. **Rising energy and fertilizer costs** will cause higher farm costs, 3. **Increased water and land scarcity** will increase the need for optimum resource utilization, 4. **Stringent food safety standards** limit food exports from developing countries to developed countries such as the EU, 5. **Yield variability and crop losses** will result from climate change.

Global opportunities

- However, the **changing global agriculture environment** brings also opportunities. These are: 1. **Supply chain transformations** will reduce costs and shorten delivery times, 2. **Bio-fuels will expand land utilization**, 3. **Technologies** in life sciences will improve yields and their quality and will reduce costs, 4. **Advances in ICT** (information and communication technologies) will enhance market access and price information, 5. Cross border **investments** will introduce new markets, business models and technologies, 6. **Rising incomes and wealth** in Asia particularly China, India and ASEAN will spur the demand for higher value added products.

Thailand's comparative advantage:

- Thailand is **well-equipped to stay competitive globally** due to its comparative advantage: Thailand has **abundant natural resources**, a **year-round growing season**, **relative low labour costs**, **productivity gains from enhanced technology usage** as well as **economies of scale** resulting from its leading position in various agriculture and food exports.
- Rolando T. Dy (Ph.D., Executive Director of the Center for Food and Agri Business at the University of Asia and the Pacific) estimated using revealed comparative advantage that in 2012, Thailand had a comparative advantage in 11 agriculture and food products with 11 products in the world's top 20 country exporters.

(Source: Rolando T. Dy, Ph.D., Center for Food and Agri Business, University of Asia and the Pacific, BOI, PwC analysis)

© October 2014 PricewaterhouseCoopers Aktiengesellschaft Wirtschaftsprüfungsgesellschaft. All rights reserved. In this document, "PwC" refers to PricewaterhouseCoopers Aktiengesellschaft Wirtschaftsprüfungsgesellschaft, which is a member firm of PricewaterhouseCoopers International Limited (PwCIL). Each member firm of PwCIL is a separate and independent legal entity.