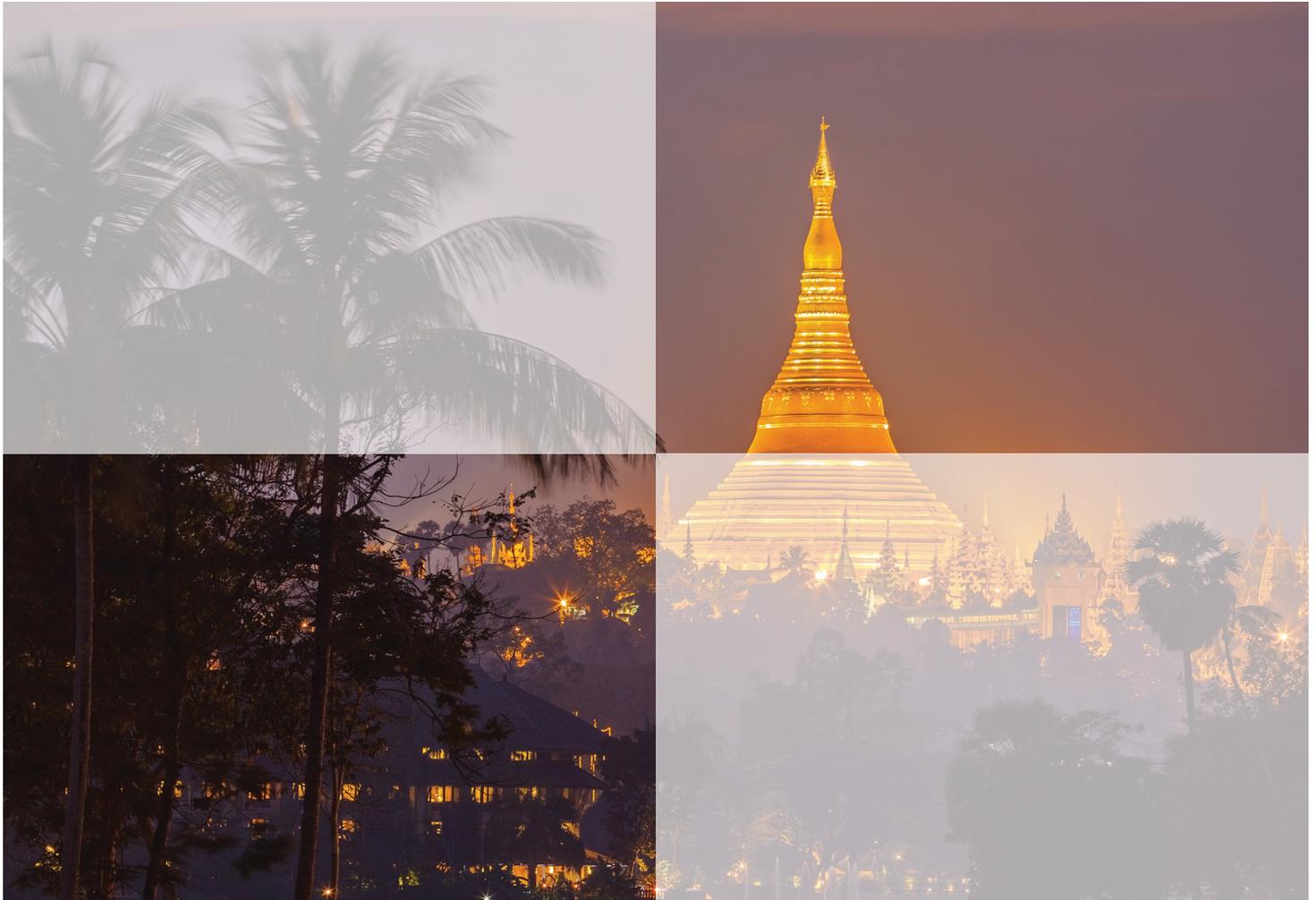


Industry Agenda

# New Energy Architecture: Myanmar Executive Summary

Prepared in collaboration with Accenture and the Asian Development Bank

June 2013





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# Foreword



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Myanmar is resource-rich and strategically located between the People's Republic of China (PRC) and India, at the crossroads between East and South Asia. It has always had overwhelming potential for rapid economic development. Yet, today, 74% of its roughly 60 million people lack access to power and endure basic infrastructure. Myanmar has spent 50 years in isolation from the global economy. But now, after decades in the shadows, an ambitious programme of reforms is seeing the country emerge from isolation, committed to integrating once more with the global economy.

Accordingly, Myanmar needs an energy sector that can power its economic and political reforms. Myanmar's energy sector must attain a position of sound institutional governance. It needs to deliver comprehensive energy access to its people and fuel the engines of commerce and industry. It should be developed and planned in conjunction with external stakeholders who offer experience, advanced technologies, new markets and investment.

With its abundant resources, Myanmar is on the brink of an exciting transformation that has the potential to see it carve its own niche in the global economy, and in history. Myanmar's energy architecture is pivotal to its transformation, and now is a critical time to craft its design.

The World Economic Forum, in collaboration with Accenture and the Asian Development Bank (ADB), is pleased to present this report on a New Energy Architecture for Myanmar. The report is the result of a consultative process engaging with the government, local and foreign businesses, and civil society. The consultations that led to this report had one main goal: to bring together the principal actors in this energy architecture – the public sector, the private sector and civil society – to deliver concrete insights to assist Myanmar in its transition towards a new energy architecture. The report offers clear support for the development of national strategies and policy frameworks to help Myanmar achieve and balance the goals of economic growth, sustainability, and energy access and security. This consultation process forms part of the New Energy Architecture Initiative, a collaboration between the World Economic Forum and Accenture to address and accelerate the ongoing global energy transition in an effective manner.

The World Economic Forum and Accenture partnered with the ADB in this consultation process because although the latter had not extended loans or technical assistance to Myanmar since the late 1980s – just like other development partners – it had maintained some involvement with the government through the Greater Mekong Subregion (GMS) Programme of Economic Cooperation, the energy component of which has provided fragmented information on Myanmar's energy system. This involvement led to it preparing the energy sector initial assessment in 2012. That continues to be the most authoritative source of technical information on the sector, and ADB has taken a lead among donors and development partners in the energy sector.

# Introduction by His Excellency U Than Htay, Union Minister of Energy of Myanmar

It is my greatest pleasure and honour to offer a few introductory words to this report on *New Energy Architecture: Myanmar*.

At the World Economic Forum on East Asia held in Bangkok, Thailand, in 2012, the World Economic Forum proposed to assist Myanmar through participation in the New Energy Architecture Initiative. Since that meeting, the Ministry of Energy of Myanmar has laid much emphasis on ensuring a workable and sound New Energy Architecture suitable for Myanmar, with the participation of all stakeholders from the government, industry and civil society.

Myanmar is very much aware and recognizes the need to respond to the changing dynamics in economic growth, environmental sustainability and energy security that is the result of global transition, as well as the importance of the combined goals to have energy security and access, sustainability, economic growth and development.

However, during the previous Government, the energy sector of Myanmar was diversified with many Government entities vested with the responsibilities of each and every energy sub-sector. Implementation was conducted on ad-hoc basis without proper plan or strategy, which made energy sector consolidation very difficult.

With the new civilian Government taking office as of March 2011, the need to integrate all energy sub-sectors under one umbrella was recognized and given priority, and the initiative to form a National Energy Management Committee (NEMC) and an Energy Development Committee (EDC) was expedited, bringing forth together all energy-related Government entities and private institutions, propelled and managed by a single national committee and supported by a development committee.

The two bodies have many challenges to overcome in order to create an integrated energy policy including a plan and a strategy for the short, medium and long term, with a view to supporting Myanmar's transformation into a developed nation – democratically, economically and socially.

By establishing a partnership with the World Economic Forum and with the support and collaboration of Accenture, as well as the Asian Development Bank, the New Energy Architecture Initiative for Myanmar is on course for success, as witnessed by this report's outcomes.

This comprehensive and informative study showcases the endeavours and emphasis expedited by the World Economic Forum together with Accenture and the Asian Development Bank. It also reveals the true sincerity and goodwill of the Forum towards the betterment and overall development of Myanmar and especially its energy sector.

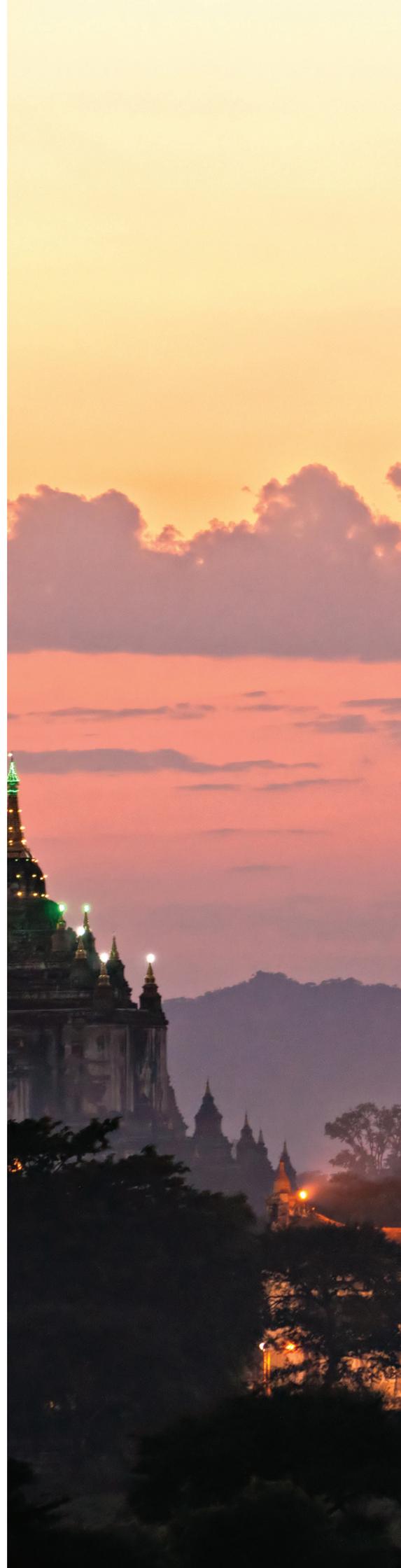
Last but not least, I would like to express my deepest gratitude for the Forum's diligent efforts to expedite this New Energy Architecture Study, which Myanmar truly needs in the reform process currently taking place in Myanmar in the political, economic and social spheres.

My profound thanks to all relevant Government, industry and civil society stakeholders for their active and diligent participation by providing views, comments, ideas and suggestions towards the successful completion of this report.

My hearty wishes for the success of the World Economic Forum on East Asia to be held in Nay Pyi Taw, Myanmar, on 5-7 June 2013.

Best wishes to you all.

Than Htay  
Union Minister  
Minister of Energy of Myanmar





# Executive Summary

## Introduction

A global transition towards a new energy architecture is under way, driven by countries' need to respond to the changing dynamics of economic growth, environmental sustainability and energy security. The World Economic Forum, in collaboration with Accenture, has created the New Energy Architecture Initiative to address and accelerate this transition. The Initiative supports the development of national strategies and policy frameworks as countries seek to achieve the combined goals of energy security and access, sustainability, and economic growth and development.

The World Economic Forum has formed a partnership with the Ministry of Energy of Myanmar to help apply the Initiative's approach to this developing and resource-rich nation. The Asian Development Bank and the World Economic Forum's Project Adviser, Accenture, have collaborated with the Forum on this consultation process, and have been supported by relevant government, industry and civil society stakeholders.

The consultation process aims to understand the nation's current energy architecture challenges and provide an overview of a path to a New Energy Architecture through a series of insights. These insights could form the basis for a long-term multistakeholder roadmap to build Myanmar's energy sector in a way that is secure and sustainable, and promotes economic growth as the country makes its democratic transition. While not all recommendations can be implemented in the near term, they do provide options for creating a prioritized roadmap for Myanmar's energy transition.

This report is the culmination of a nine-month multistakeholder process investigating Myanmar's energy architecture. Over the course of many visits to the country, the team has conducted numerous interviews, multistakeholder workshops, and learning and data-gathering exercises to ensure a comprehensive range of information and views. The team has also engaged with a variety of stakeholders to better inform their findings, which have come from national and international public and private sectors and from civil society.

This report is structured as follows. First, the New Energy Architecture methodology is outlined. In Step 1, the performance of the country's current energy architecture is assessed. Step 2 describes the setting of the objectives of the New Energy Architecture. Step 3 outlines insights to support the development of a New Energy Architecture, and highlights potential risks in achieving this. Step 4 then discusses the need for leadership and multistakeholder partnerships to support the implementation of a New Energy Architecture in Myanmar.

## Current Energy Architecture

Myanmar's present energy architecture faces many challenges and opportunities as the country makes its transition to democracy. Myanmar faces significant energy access and security challenges. Only 26% of the population has access to electricity,<sup>1</sup> and 70% of the population lives in rural areas.<sup>2</sup> Myanmar relies heavily on traditional biomass for its energy needs, getting approximately 75% of its total primary energy supply from that source, mainly fuel wood from natural forests.<sup>3</sup> For those who do have access to power,

supply is intermittent at best due to the seasonality of hydropower production and inadequate transmission and distribution infrastructure. Even if electricity output doubled every five years, it would take five years just to meet today's needs. In that time, demand would have grown by 12% a year.<sup>4</sup>

Natural gas poses a similar problem. Myanmar's proven natural gas reserves of 7.8 trillion cubic feet<sup>5</sup> are significant and are an important source of government revenue. However, there is insufficient supply to meet local demand. One of the principal reasons for this local shortfall is that the pre-2011 government had limited avenues for raising finance while international sanctions were in place. To raise finance, it entered into contracts for the export of natural gas to Thailand and the PRC, limiting the amount available for domestic use. Combined with historically poor maintenance and a lack of compression in gas pipelines, the existing gas-powered plants are old and operate at a significantly lower plant capacity and efficiency. The country's three ageing oil refineries, with utilization rates as low as 41%, need urgent rehabilitation as well as technical upgrades to handle heavier crude oil.

Since the reform process began in 2011, however, Myanmar's energy architecture has seen many positive developments. In early 2013, the government formed the National Energy Management Committee to oversee the sector. It had earlier set in motion a series of reforms – including the initiation of new laws and institutional arrangements to improve decision-making, enhance human capacity and increase levels of private investment – in order to help Myanmar transition to democracy and integrate with the global economy. Additionally, the government is beginning to take a more integrated approach to policymaking across the various energy value chains to improve overall supply and demand.

## A Vision for the Future

If the country continues its political and economic reforms, Myanmar has the potential to emerge as South-East Asia's next frontier. The country's growth prospects are already enhanced by a number of valuable assets: a large and young population numbering some 60 million,<sup>6</sup> a vital geostrategic location between India and the PRC, and sizeable untapped resources. The government is targeting an average annual GDP growth rate of 7.7%.<sup>7</sup> If that is achieved, GDP per capita could reach US\$ 2,000-3,000 by 2030, more than three times the current level, propelling Myanmar into the ranks of middle-income countries.<sup>8</sup> As was the case under military rule, the energy sector will continue to play a pivotal role in enabling development. The energy sector's centrality is clearly demonstrated by the fact that natural gas is by far the most important source of income for Myanmar.

## The Required Enabling Environment

Based on an assessment of Myanmar's current energy challenges, a series of New Energy Architecture insights have been drawn. These offer a vision for how Myanmar can deliver on its objective of crafting an energy architecture that better meets the goals of the "energy triangle": achieving economic growth and development to provide energy access and security in an environmentally sustainable fashion.

**Figure 1: Overview of insights mapped to the New Energy Architecture's four pillars of an enabling environment**

<b>1. Effective and Transparent Governance and Institutions</b>	● ● ● ●
1.1 Create an integrated energy plan (IEP)	●
1.2 Establish institutions and frameworks to deliver the Integrated Energy Plan	● ●
1.3 Strengthen public participation and support, and improve energy literacy	● ●
1.4 Strengthen regulatory framework for environmental and social standards	●
1.5 Increase transparency of extractive industries and implement Extractive Industries Transparency Initiative (EITI)	●
1.6 Strengthen the capabilities of Myanmar Oil and Gas Enterprise and consider the appropriate National Oil Company model	● ● ● ●
<b>2. Investment Frameworks to Enhance Supply and Efficiency</b>	
2.1 Reform energy subsidies	● ●
2.2 Establish energy efficiency standards and regulations	● ● ●
2.3 Expand rural energy access	● ● ● ●
2.4 Develop a clear vision and legal framework for private investment	● ● ●
2.5 Create an investment framework and reform state enterprises to expand domestic energy supply	● ● ●
2.6 Assess power generation options and integrate these into a power development plan	● ● ●
2.7 Strengthen transmission and distribution networks	●
<b>3. Strategies Generating Long-term Value</b>	
3.1 Assess options for building local industry	● ●
3.2 Improve human capacity within energy sectors	● ●
3.3 Identify "green growth" opportunities	● ● ●
3.4 Strengthen the macroeconomic environment	● ● ● ●

**"Four Pillars" of an enabling environment**

- Policy initiatives
- Technology & infrastructure
- Market structures
- Human capacity

In formulating these insights, some urgent short-term needs are apparent:

1. The creation of a governance structure that underpins the long-term development of the sector in line with appropriate energy sector reforms and a roadmap for the same.
2. The provision of energy to supply essential goods and services to rural communities, turn the wheels of commerce and industry, and ignite the economy by ensuring energy efficiency and expanding energy supplies. This should be done by constructing new sources of generation, transmission and distribution networks, and large-scale infrastructure to improve power supply to metropolitan areas. For rural areas, small-scale hybrid renewable systems and off-grid renewable systems should be constructed.
3. The development of an energy sector that supports Myanmar's long-term growth.

**The Role of Stakeholders in Creating Enabling Environments**

The creation of an enabling environment that is resilient to risk and responsive to the imperatives of the energy triangle is beyond the scope of an individual corporation or government. Research on New Energy Architecture has shown that five key groups of stakeholders have a role to play:

1. Government, to create a stable policy and regulatory framework to facilitate change
2. Industry, to drive implementation through innovation and investment
3. Small-scale and local private sector, to provide goods and services and empower rural communities
4. Civil society, to build greater transparency and public support into the system
5. Donor and development partner institutions, to provide technical expertise, comparative experience and finance

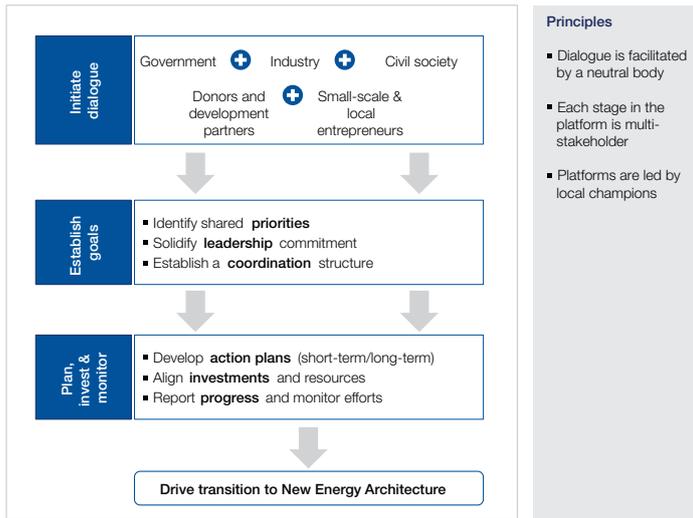
Orchestrating a broad-based, systemic transformation can be extremely challenging. By definition, an ambitious transformation requires stakeholders to go beyond business as usual, acting outside of traditional roles and structures and collaborating in new ways to create coalitions to meet the New Energy Architecture challenge.

Different bodies should therefore work together to create integrated resource plans. Where this does not take place, conflicting objectives and interests among policymakers, unclear ministerial responsibilities and insufficient coordination between the institutions involved can result in delays in the transition to a New Energy Architecture.

Based on discussions in Myanmar, stakeholders should seek to take the following steps to drive the transition to a New Energy Architecture:

- Take a more inclusive, collaborative approach
- Establish multistakeholder partnership platforms
- Build clear and consistent policies
- Communicate effectively with the public

Figure 2: New Energy Architecture partnership platforms<sup>9</sup>



## Next Steps

This report recommends that stakeholders in Myanmar review the highlighted insights in order to lay out a prioritized roadmap for the creation of a New Energy Architecture. To execute this roadmap, stakeholders need to demonstrate leadership to implement these insights and, where appropriate, form multistakeholder working groups to maintain the momentum of the government's reform agenda. The World Economic Forum, the ADB and Accenture will continue to seek to assist in this process





# Appendix

## Acknowledgements

This report was prepared by the World Economic Forum, in collaboration with the Asian Development Bank and Accenture.

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## Abbreviations

ADB	Asian Development Bank
EAPI	Energy Architecture Performance Index
EDC	Energy Development Committee
EITI	Extractive Industries Transparency Initiative
GDP	Gross Domestic Product
GMS	Greater Mekong Subregion
IEA	International Energy Agency
IEP	Integrated Energy Plan
MOE	Ministry of Energy
MOGE	Myanmar Oil and Gas Enterprise
NEA	New Energy Architecture
NEMC	National Energy Management Committee
NOC	National Oil Company
PRC	People's Republic of China
UNFPA	United Nations Population Fund

## Endnotes

- <sup>1</sup> Asian Development Bank (ADB), 2012, Myanmar In Transition, Manila
- <sup>2</sup> Asian Development Bank (ADB), 2013, 'Asian development outlook 2013. Asia's energy challenge', Manila
- <sup>3</sup> IEA Statistics. <http://centipede.iea.org/ieastore/statslisting.asp> Accessed online on 6 March 2013
- <sup>4</sup> Harvard Kennedy School. 2012, Ash Centre for Democratic Governance and Innovation, "Electricity in Myanmar: The missing prerequisite for development"
- <sup>5</sup> BP Statistical Review of World Energy. 2012, London
- <sup>6</sup> ADB's estimate. There has been no census for the past two decades. The United Nations Population Fund (UNFPA) is supporting Myanmar to conduct a proposed 2014 population and housing census according to international standards
- <sup>7</sup> Government of Myanmar, Draft Framework for Economic and Social Reforms document on policy priorities for 2012-2015
- <sup>8</sup> ADB, 2012, Myanmar in Transition, Manila
- <sup>9</sup> This model is adapted from the World Economic Forum, Putting the New Vision for Agriculture into Action : A Transformation is Happening, 2012





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