

The Viet Nam Green Growth Strategy: A review of specificities, indicators and research perspectives¹

Authors: Jerome Meessen², Claude Croizer³, Paul Verlé⁴

Theme: B.5: Modeles de transition.

1. Abstract

Viet Nam has experienced a rapid economic growth over the last 20 years, bringing social improvements but also raising new challenges. Therefore, in 2012 the government adopted an ambitious Viet Nam National Green Growth Strategy (VNGGS) with as main objectives to reduce the intensity of the country's economy in terms of energy consumption and greenhouse gases emissions (GHG), and to boost 'green' economy sectors.

In this paper, we analyze the VNGGS by discussing (1) specificities at the light of other Asian green growth strategies and cautions against the "green growth" paradigm, (2) relevant monitoring indicators and (3) recommendations for scientific research.

2. Introduction

2.1. Energy and sustainability stakes in Viet Nam

Following economic (GDP) growth rate between 6% and 8% per year over two decades, Viet Nam has reached a GDP of 1900 USD per capita and is considered a lower middle-income country [WB 2014]. However, this historic economic growth relied on extensive exploitation of national non-renewables natural resources and on the development an intensive energy requiring industry and consumption modes [LEDS 2014]. Today's already observed consequences include a poor air quality and pollution level in the main urban areas as well as a poor energy intensity of the economy compared Viet Nam's neighbor's countries [Chappoz 2013].

Moreover, in the future, the sustainability of Vietnam development faces major environmental, economic and social risks. As an example, Figure 1 and Figure 2 illustrate the expected evolution of the GHG emissions under the 'Business-as-Usual' (BAU) scenario elaborated by the Vietnamese Ministry of Environment. Under this scenario, the GHG emissions of the country will double between 2010 and 2020 (thereby overpassing France's 2012 GHG emissions level, see Figure 1) and more than triple by 2030 to reach emissions per capita comparable to the level of developed countries in 2012 [MONRE 2014, Figure 2]. From a macro-economic point-of-view, Viet Nam is expected to soon become a net importer of primary energy.

¹ This paper has been was written under the "Viet Nam Green Growth Strategy Facility" project of the Belgian Technical Cooperation

² jerome.meessen@btcctb.org, International Technical Advisor at Belgian Technical Cooperation (BTC), PhD in engineering sciences.

³ claude.croizer@btcctb.org, BTC, MSc in Environment Management

⁴ paul.verle@btcctb.org, BTC Brussels, Medical Doctor, MSc Parasitology

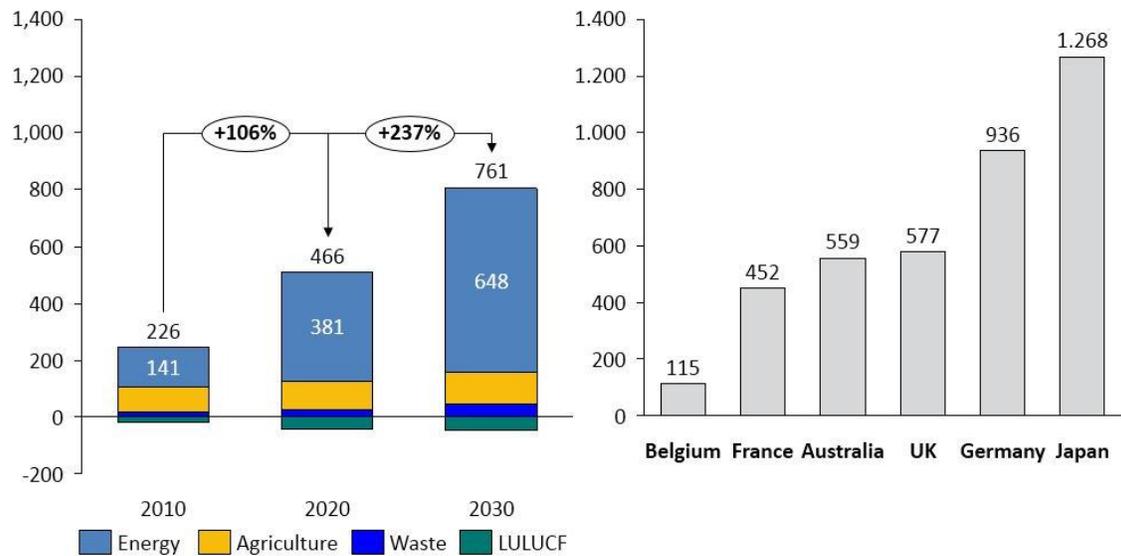


Figure 1. Viet Nam 2010 GHG emissions inventory and BAU trends (left) compared to the 2012 emissions of a few countries (right), MtCO₂e. (Sources: [MONRE 2014], UNFCCC, authors' analysis)

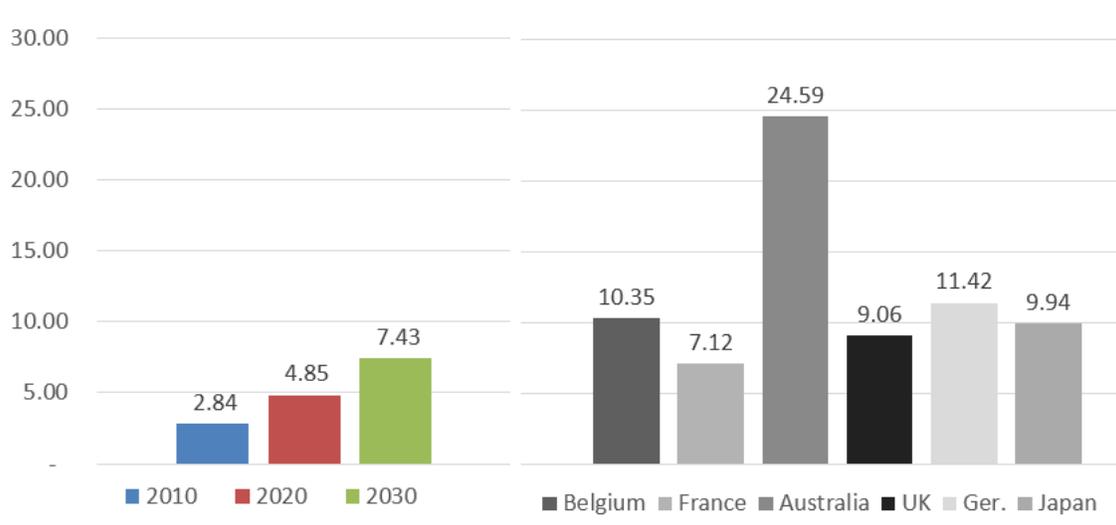


Figure 2. GHG emissions per capita, in VN in 2010 (incl. LULUCF & Industrial processes) and BAU projections [Left], and for a few developed countries in 2012 (incl. LULUCF) [Right], tCO₂e per capita. (Sources: [MONRE 2014], UNFCCC, authors' calculation)

The main driving factors of this trends are a rapidly increasing energy demand (about +10% electricity consumption per year) - due to the expected economic and demographic growth but also rising living standards - and the planned increasing share of coal-fired electricity production to meet that demand [WB 2014-2, UNDP 2014].

2.2. Trends and driving factors in neighbor countries

Similar trends and driving factors were observed in other countries of the region.

In Asia, over the last two decades, environmental degradation has been caused by rapid urbanization and motorization but also by policy-economic factors summarized in [Zhang 2008] as: ‘market failures’ –referring to energy prices artificially capped and not integrating externalities but also to subsidies favoring coal and other fossil fuels -, inefficiencies in production and use of energy and resources, weak commitment, coordination and functioning of the various government levels (national, regional, local), lack of integrated planning and weak environmental agencies [Zhang 2008]. Zhang also discussed possible policy responses, some of them being already initiated at that time.

In South-East Asia⁵ (SEA), IEA analyzed that, despite improvements between 1990 and 2011, considerable scope remains to improve energy efficiency: *“in 2011, the region’s energy intensity (i.e. the amount of energy necessary to produce one unit of GDP) was more than one-third higher than the global average and more than double that of the OECD”*. GHG emissions caused by energy consumption in SEA have more than tripled between 1990 and 2011 [IEA 2013]. The SEA region also faces increasing energy imports and consequent geopolitical and economical risks. In the future, the situation will become ever more challenging as SEA’s energy demand could increase by over 80% between 2013 and 2035 according to the IEA’s reference scenario. In terms of health impact, OECD calculated that outdoor air pollution caused nearly 200 000 deaths in SEA in 2010 (ca 30 000 for Viet Nam) with heavy associated costs [OECD 2014].

To cope with these future challenges in SEA, IEA also recommends technology improvement & market instruments, including phasing out fossil fuels subsidies and developing policy incentives to attract investment in efficient and sustainable energy supply and services. OECD insisted that *“political leadership is the key to putting the right policies and institutions in place”*.

In addition, the SEA region is among the most vulnerable to climate change. This is particularly relevant for Viet Nam where the sea level rise and salinization affect the economic activity concentrated in coastal regions and of the Red River and Mekong Delta’s, while extreme meteorological events severely impact poor populations [UNDP 2015].

2.1. Objectives, methodology and structure of this paper

The primary objective is to discuss the VNGGS in terms of specific characteristics, influencing factors and monitoring indicators. A secondary objectives is to draw research recommendations. Let us underline that this paper aims neither at studying the well-being of Viet Nam nor at criticizing today’s political or social situation. We rather try to support the VNGGS stakeholders (government, development agencies and institutions, NGO’s, etc.) by suggesting holistic insights to further accompany the VNGGS. With this paper, we also hope to encourage the scientific community to further investigate safeguards and solutions to ensure fair and sustainable development of countries such as Viet Nam.

Our approach is structured as follows. First, we introduce the Green Growth (GG) paradigm, its main limitations and alternative development paradigms (Section 3). Next, we summarize the VNGGS (Section 4.1), and compare it with other SEA green growth strategies (Section 4.2). The VNGGS is then analyzed w.r.t. the potential risks of the green growth and alternative paradigms (Section 4.3). The rationale behind this is that by adopting such “wide lenses” we hope to investigate all green growth influencing factors, including those who are external to the traditional

⁵ In IEA’s “Southeast Asia Energy Outlook”, Southeast Asia refers to Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam

GG scope. Monitoring indicators are discussed in Section 5 before suggesting further research directions as a conclusion of this paper (Section 6).

3. The Green Growth paradigm

3.1. “Green growth” definition and related concepts

Under the framework of the Rio+20 conference, the concept of “Green growth” emerged as a central tool to contribute to sustainable development. Several definitions have been proposed, but the OECD definition is commonly considered today as a reference: *“Green growth means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies”* [OECD 2011].

The main underlying assumption is that economic growth, globally necessary to further improve human well-being, can be boosted by transforming the economic system (production and consumption) towards less natural capital erosion. More precisely, after some historic evolution of the concept⁶, the “green growth” paradigm today includes on one hand favoring new economic growth opportunities (e.g. from growing “green” sectors) and on the other hand mitigating risks that compromise growth, such as the indirect costs of managing pollution or health degradation, or reaching the planet resources boundaries. This later principle includes decreasing the damageable economy sectors. To ensure this, OECD promoted clear levers: *“(Green growth) must catalyze investment and innovation which will underpin sustained growth and give rise to new economic opportunities”* [OECD 2011].

The recent report entitled “Better Growth, better Climate – the New Climate Economy” (NCE) may be considered, to some extent, as illustrative of these core “Green Growth” principles – i.e. ensuring economic growth through overall costs reduction, environmental risks mitigation and developing new economic opportunities - even though the report mainly focuses on GHG emissions (see [NCE 2014]).

Variations of the “green growth” concept have been proposed, such as the “Green Economy” introduced by UNEP which underlines the need for associated development and for social inclusion : *“a green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”*[UNEP 2011]. Similarly, the EU and World Bank used the term “inclusive green growth” to also stress that green growth should not be separated from social improvement such as job creation and poverty alleviation.

In Asia, the Association of Academies of Sciences in Asia (AASA) presented in 2011 a program entitled “Towards a Sustainable Asia: Green Transition and Innovation.” The associated report synthesized a large-scale collaboration project having as objective to *“address the common issues on sustainable development of the region, (...) with the goal to provide advice and recommendations (...) on decision-making related to sustainable development”* [AASA 2011]. In [Janicke 2012], the authors pertinently identified two key specificities of the AASA approach. First, the objectives, the approach and even the formulation are very similar to those of OECD, UNEP or European Commission, focusing on both improving efficiency of the economic model and developing new economic opportunities, a key target lever being innovation. Second, the AASA

⁶ See for instance [Janicke2012] for a detailed review of the evolution of the “Green Growth” concept

“green development” objectives reflect the ambition of Asia to seize a leadership position and ensure sustained development thanks to regionally specific favorable conditions:

- “highly efficient and strong government”,
- *cultural tradition that not only emphasizes hard work and frugality, but also the “harmony between man and nature,”*
- *the “largest potential green consumer market in the world” a growing capacity for innovation, and*
- *a sizeable potential for hydro power, solar energy, wind energy, or bioenergy [AASA 2011, Janicke 2012].*

The attention paid by the AASA to the cultural tradition is not anecdotic in its program⁷. Indeed, it not only refers to agriculture practices in Asia but also to upcoming challenges related to people’s individual consumption patterns: *“Asia’s traditional culture advocates diligence and frugality. (...)the same cultural tradition can provide Asia’s green transition with important ideological support (...) and contributing to the formation of a non-westernized moderate consumption pattern adapted to Asia’s resources and environment conditions and energy saving and emission-reduction criteria. Asia’s per capita consumption is low, but demands for higher living quality are rising, consumption upgrading, domestic demand being expanded and western consumerism is gaining popularity. This will inevitably lead to conflicts between different consumer concepts in Asia. Therefore, establishing a green, sustainable pattern in advance is of crucial significance for Asia’s green transition.”*[AASA 2011]

3.2. Caution against “Green Growth”

“Green Growth” has also been criticized including by the scientific community. Of course, as pointed out in [Vazquez 2014], one should be very careful not to blindly reject all green growth strategies because of any excessive simplification or generalization of the different green growth interpretations. However, cautions formulated against the Green growth paradigm should be born in mind in order to better analyze GG strategies⁸. In the following, we propose a brief summary of the main arguments.

A fundamental worry is the doubt that economic growth can actually be decoupled from socio-environmental damages and natural resources exploitation. Indeed, only “relative decoupling” has been observed so far (i.e. environmental damages still increasing but at lower rate than GDP), but no “absolute decoupling” (i.e. absolute decrease of damages) which however is necessary considering the finite planet resources boundaries [Jackson 2009]. This is mainly due to rebound effect (i.e. the fact that improved efficiency of products or services leads to increased sales and usages and that the environmental benefit is eventually counterbalanced by increased consumption, see e.g. [Jackson 2009]), limitations of the eco-efficiency that can be achieved through market and technology evolution (on the limitations of technology, see e.g. [Jeanmart 2013]) and an increasing structural dependence to GHG emissions sources [York 2012]. Such considerations have led some authors to advocate for a “*moderate growth*” rather than high growth rates (see e.g. [Janicke 2012]). Note that moderate growth at worldwide level does not mean equal growth rate for all the countries. A distinction between rich and poor countries indeed

⁷ One of four ‘science groups’ was focusing on culture and heritage stakes and one specific report covered “the cultural perspectives”

⁸ This looks even more important when it comes to support those strategies in the case of international development agencies.

is necessary. Regarding Asia, the necessity for further economic growth was justified by Zhang in his review of Asian energy policies as follows: “*Asia has to continue its rapid economic growth in order to alleviate the poverty of the two-thirds of the world’s poor living in this region*” [Zhang 2008].

Next, green growth suffers from weaknesses of cost-benefits approaches, or more generally from those of traditional environmental economics [Spash 2014]. A key limitation here is the difficulty to take into account the price of all the (market) externalities such as environmental damages or degradation of human quality of life. Indeed, even though GHG emissions or health costs could be approximated under assumptions, many other environmental benefits and human impacts can hardly be estimated in terms of price. Other important weaknesses here are the potential inefficiencies of market-based mechanisms and the difficulty to effectively implement them.

Another important argument is the restricted scope of green growth policies which excludes (or only superficially includes) essential social stakes such as social justice (within the current generation and w.r.t future generations) or poverty eradication [Spash 2014].

In short, green growth is usually blamed for omitting important sustainability issues or lacking a holistic approach integrating the systemic complexity and interconnections of political, governance, cultural, economic and ecological dimensions.

3.3. Alternative development paradigms

The potential shortcomings of green growth are more obvious if the green growth paradigm is dominating the overall policy and development vision.

One way to cope with this is by extending the scope of the green growth paradigm beyond the core principles. We have discussed in Section 3.1 characteristics of the Asian green growth approaches going in that direction, in particular by taking cultural dimensions into account.

Another solution is to conduct other complementary policies in parallel with green growth to cover other sustainability stakes. The challenge then becomes the right balance between the policies, their enforcement as well as their mutual coherence. Some authors also suggested to use green growth as an initial stepping stone towards a larger and deeper society transition [Arnsperger 2009].

However, alternative development frameworks have been proposed to integrate all the sustainability stakes. This is the case with the “New development paradigm” (NDP), submitted by the kingdom of Bhutan under the context of the UN post-2015 discussions [NDP 2013]. The NDP fundamentally adopts a holistic approach deeply derived from the concept of interconnectedness between human, natural, social and economic resources and systems. The NDP is based on four pillars together forming the structure of Gross National Happiness (GNH) indicator: environmental conservation, sustainable and equitable socio-economic development, preservation and promotion of culture and good governance.

In the following, we use these NDP pillars to further analyze the VNGGS. This is justified by three reasons. First, as already stated, the NDP tackles one of the main potential limitations of green growth by adopting a holistic view. Second, the philosophical concepts underlying NDP (such as interconnectedness) are at the heart of traditional Asian philosophies, such as Buddhism. Third,

the NDP recently became a source of inspiration for Western countries which are facing a drop of confidence in growth policies dominantly guided by GDP [Cassiers 2014].

4. Viet Nam Green Growth Strategy

4.1. The Vietnam National Green Growth Strategy and Action Plan

With the ambition of combining further economic growth with more environmental sustainability, the Viet Nam National Green Growth Strategy (VNGGS) has been officially approved in 2012 [VNGGS 2012]. The VNGGS is structured around three strategic tasks summarized as follows:

1. *“Reducing the intensity of GHG emissions and promoting the use of clean and renewable energy;*
2. *Greening production: Implementation of a “clean industrialization” strategy is conducted via reviewing and adjusting existing sectorial master (...); encouraging the development of green industry and green agriculture (...), technologies and equipment; enhancing investment in natural capital; pro-active prevention and treatment of pollution.*
3. *Greening lifestyle and promoting sustainable consumption: The rich and beautiful traditional lifestyle is combined with civilized and modern means to create comfortable, high quality and traditionally rooted living standards (...). Implementing rapid and sustainable urbanization while maintaining the living in harmony with nature in rural areas and establishing sustainable consumption behaviors (...)*”

Two years later, the National GG Action Plan (VGGAP) has been officially launched in order to structure and prioritize the actions covered by the VNGGS [VNGGAP 2014]. Most of the priorities (i.e. the implementation focus up to 2020) aim at integrating the green growth objectives within the planning process and strengthening the related legal and institutional framework. In particular, the provinces are required to elaborate their local green growth action plans based on their own specificities.

On-going VNGGS implementation also includes the design of national green investment guidelines and the establishment of a funding entity to financially support green projects and access international climate finance⁹.

Obviously, the VNGGS objectives are formulated in terms that are directly matching the core green growth principles (reduce environmental damage combined with growth of green sectors) but also echoing the AASA objectives encompassing a cultural dimension (“*traditional lifestyle*”, “*harmony with nature*” ...).

The energy and GHG targets of the VNGGGS are summarized in the Figure 3 here below. Though the intensity reduction targeted by 2020 seems integrated in the government BAU scenario, the target yearly reduction between 2020 and 2030 is definitely ambitious.

⁹ The establishment of the “Viet Nam Green Growth Strategy Facility” is supported by Belgium, through the Belgian Technical Cooperation, within its current development cooperation program

2011 - 2020	Orientation towards 2030	Orientation towards 2050
<ul style="list-style-type: none"> • Reduce intensity of GHG emissions by 8-10% as compared to 2010, • Reduce energy consumption per unit of GDP by 1-1.5% per year • Reduce GHG emissions in the energy sector by 10% relative to BAU and by a further 10% with international support; 	<ul style="list-style-type: none"> • Reduce GHG emissions by 1.5-2% per year. • Reduce GHG emissions in the energy sector by 20% relative to BAU and by a further 10% with international support; 	<ul style="list-style-type: none"> • Reduce GHG emissions by 1.5-2% per year

Figure 3. Summary of the VNGGS energy and GHG objectives (source: [VNGGS201 2] and [VNGGAP2014])

4.2. VNGGS compared to other Asian strategies

Many other countries are implementing or establishing their own GG policy. In Asia, China and South-Korea have been the first to deeply integrate the development of green technology sectors into their innovation and industrial policy [Janicke 2012, Jakob 2013]. South-Korea is also very active in promoting green growth at international level, as witnessed by its leadership position within the 'Global Green Growth Institute'.

Viet Nam is thus not the first country to engage in green growth but is one of the only SEA countries to have a dedicated national green growth strategy, together with Cambodia and Indonesia [OECD 2014, Jakob 2013].

VNGGS is ambitious compared to strategies of neighbor countries. First, the VNGGS covers a larger scope than any other neighbor country, with explicit inclusion of stakes that are omitted by others, such as climate change mitigation [OECD 2014]. Second, Viet Nam targets a net reduction of its GHG emissions (after 2020) while the other countries only target reduction of their economy's GHG intensity (CO₂e/GDP unit) and/or a reduction w.r.t BAU scenario.

4.3. VNGGS compared to GG shortcomings and alternative development paradigm

Table 1 and Table 2 summarize the specificities of the VNGGS compared to the usual cautions against green growth and the NDP pillars. These tables are a result of literature review and numerous consultations of the VNGGS stakeholders. Based on our analysis, specific challenges are underlined here after.

The post-2020 target of yearly net GHG reduction emissions forms an ambitious objective. As introduced in Section 2.1, the upcoming BAU emissions are driven by the increasing power demand (from industry and residential) to be met by an increasing amount of coal-fired power plants.

The residential power demand should not be underestimated and is closely linked to the emerging rich urban middle class with new consumption modes, which could lead to rebound effect¹⁰ [Figure

¹⁰ The delimitation of the middle-class in SEA and Viet Nam is complex as it includes a wide range of diverse and changing identities. In Viet Nam, the energy driving class we mention seems to correspond to

2014, King 2008]. Moreover, as suggested in [AASA2011], tensions could appear between traditional Asian lifestyle and these new consumption patterns which could reflect new needs of material goods accumulation (and demonstration) and new forms of existential fears (as suggested in [Arnsperger 2009]). The emphasis of the VNGGS on traditional lifestyle may be the key to avoid such tensions.

Table 1. VNGGS vs usual GG shortcomings

GG Shortcomings	VNGGS specificities
Failure of GHG-GDP decoupling	<ul style="list-style-type: none"> - Targets: Relative decoupling followed by Absolute decoupling after 2020 - Rebound effect threat depends on new emerging consumption modes
Weakness of Cost-benefit (externalities & market solutions)	<ul style="list-style-type: none"> - The VNGGS is based on marginal carbon cost-abatement studies, which do not integrate quantified externalities and rely on typical green growth lever.[WB 2014-2] - However, the aim of the VNGGS includes reducing external costs
Exclusion of non-environmental sustainability dimensions	<ul style="list-style-type: none"> - The VNGGS includes attention to the ‘traditional lifestyle’ which mainly refers to the urban and rural lifestyle to be balanced with ‘modernization’ (urban development, new technologies, access to water and energy services) - One of the goals of the VNGGS is to create “green jobs” - Other stakes covered by other policies

Table 2. Main specificities of the VNGGS strategic tasks along the NDP pillars

NDP pillars	Energy and GHG	Green production (industry)	Lifestyle
Environmental conservation	<ul style="list-style-type: none"> • Target Absolute GHG decoupling • Forestry conservation • Indirect environmental Impact of new energy sources 	<ul style="list-style-type: none"> • Actual GHG-GDP decoupling • Environmental impact of green industry and modern agriculture 	<ul style="list-style-type: none"> • Health and security • Indirect GHG emissions of new consumption modes • Rebound effect
Sustainable and equitable socio-economic development	<ul style="list-style-type: none"> • Fossil fuels subsidies and Climate finance • Investment cycles and energy market uncertainty • Energy dependency (coal) • Health and security • Land-use 	<ul style="list-style-type: none"> • Energy pricing • Energy efficiency potential • Quality of new green jobs 	<ul style="list-style-type: none"> • Long-term Energy price for residential sector and citizens • Land-use
Preservation and promotion of culture	<ul style="list-style-type: none"> • Population Resettlement • “Harmony with nature” 	<ul style="list-style-type: none"> • Agriculture modes 	<ul style="list-style-type: none"> • Gap between traditional Asian culture and new consumption of emerging middle-class[AASA 2011]
Good governance	<ul style="list-style-type: none"> • Decentralization of energy production sources • Reliability and efficiency of GG finance flows 	<ul style="list-style-type: none"> • Industry Accountability for energy efficiency • Public-private partnerships 	<ul style="list-style-type: none"> • Renewable energy production by residential sector or communities

the category King identified as growing, young, educated urban population, with higher income and clearly ‘consumption oriented’ [King 2008].

On the power supply side, reducing the reliance on coal is technically and economically possible but barriers remain. In particular, Viet Nam will need to shift current subsidies away from fossil fuels in order to create incentives for energy efficiency and development of renewable energy capacity [UNDP 2014]. The development of distributed renewable capacities also raises institutional challenges as it implies a strengthened role of new actors such as provinces, private companies or communities [LEDS 2014].

In order to make sure that the VNGGS does not omit other sustainability dimensions, coherence between the different policies and line ministries and their enforcement is essential. The constitution of an inter-ministerial VNGGS board is already a good sign in that direction. Socio-environmental safeguards of the future green climate fund should also add such guarantee to the GG finance framework.

5. Monitoring indicators

As witnessed by the above discussion, VNGGS is multi-dimensional by essence and the indicators to monitor its progress must therefore also be multi-dimensional.

Over the last two decades, several multi-dimensional indicators frameworks have been proposed. They mainly address 3 prosperity dimensions omitted by the GDP: social progress (i.e. wealth equality), subjective “life satisfaction” and environment preservation [Cassiers 2014].

The OECD proposed a generic set of green growth monitoring indicators focusing on the environmental concern [OECD 2011] as well as a subset of usable and clear indicators specifically adapted to the SEA challenges [OECD 2014]. The SEA specificity is to account the share of Official Development Assistance (ODA) dedicated to environmental protection including renewable energy supply. The suggested SEA indicators are grouped into 5 categories:

- The socio-economic context and characteristics of growth (background data such as GDP, Inflation, Poverty rate, Life expectancy)
- The environmental and resource productivity (CO2 productivity – including CO2 emissions of production sector and CO2 intensity- , Energy productivity – including renewable share- , Material productivity)
- The natural asset base (Freshwater resources, Forest resources and land use changes, Wildlife resources)
- The environmental dimension of quality of life (Pollution induced health problems and related costs, Access to sewage treatment and drinking water)
- Economic opportunities and policy response (e.g. share of ODA)

Based on the OECD generic framework, indicators are currently under discussion for monitoring the VNGGS and guiding the Viet Nam investments decision process. The method followed to select the indicators is based on the experience from South-Korea [Kim 2014, KEI 2014]. First, the key objectives of the GG strategy were summarized. Next, a pool of candidate indicators was selected from the OECD set according to the GG objectives. Last, usable indicators were identified within the pool, based on existing data and practical implementation possibility.

The advantages of that method is to output indicators that meet consensus among the GG stakeholders and makes sense in terms of usability.

However, the VNGGS specific ambitions suggest to investigate complementary monitoring indicators. Indeed, the original OECD indicators is restricted to key GG principles. Moreover, the indicators selection method implies a VNGGS scope simplification and thus a risk of rubbing out VNGGS characteristics. One open question here is the specific ambition of Viet Nam to maintain a balance between modernization and traditional lifestyle and how to monitor it over the years. Here again, the NDP and its GNH could be an inspiration even though the way the GNH is calculated may not be fully compatible with GG objectives.

6. Conclusion and recommendations for scientific research

The VNGGS is ambitious by both taking the best of other green growth frameworks and addressing country specific challenges. Key targets include a net annual reduction of GHG emissions after 2020 and balancing ‘modernization’ with traditional lifestyle and cultural specificities.

To meet these challenges, Viet Nam needs to continue strengthening its institutional capacity, tackling economic reforms, massively adopting clean technologies and paying attention to the evolving people consumption patterns. Appropriate indicators will help.

The research community should also support Viet Nam and similar countries by studying current green growth questions. We suggest here a few of them.

From a sociological perspective, the risks of tension between new consumption patterns and traditional Asian lifestyles require further study. Drawing from the experience of China and Korea will be first step, but it seems necessary to also analyze the country cultural and spiritual evolution.

The role of the green growth stakeholders also offers interesting questions, in particular the role of experts and the mainstreaming of classical green growth principles which could rub out some nuances and characteristics of each national strategy.

In terms of environmental & ecological economics, evaluating the full cost and the sustainability of the various green growth options seems of significant importance.

Institutionally, we have shown how the evolving role of provinces and local communities in the implementation of the VNGGS needs to be studied, in particular regarding the distributed renewable capacities and decentralization of power supply.

From a policy monitoring point of view, Viet Nam and other Asian countries call for further research on sustainable development indicators.

A generalization to other middle-income countries would be useful.

A last but essential question is how western countries can be inspired by Viet Nam and other Asian green growth approaches in order to themselves engage with truly sustainable development.

7. References

[AASA 2011] The Association of Academies of Sciences in Asia (AASA), *Towards a Sustainable Asia – Green Transition and Innovation*, Science Press/Springer, Beijing, 2011

- [Arnsperger 2009] C. Arnsperger, *Ethique de l'existence post-capitaliste*, 2009
- [Cassiers 2014] I.Cassiers & G.Thiry *A High-Stakes Shift: turning the Tide from GDP to New prosperity Indicators*, 2014
- [Figuie 2014] M. Figuié et al. *Nouvelles pratiques de consommation alimentaire, perceptions des risques et de la qualité des aliments par les consommateurs urbains vietnamiens*, in de Terssac et al. (Eds) «Viêt-Nam en transitions», 2014.
- [IEA 2013] IEA *Southeast Asia Energy Outlook – World Energy Outlook Special report*, 2013
- [Jackob 2013] K.Jacob et al. *Green Growth Strategies in Asia, Drivers and Political Entry Points*, FES International policy analysis, Dec.2013
- [Jackson 2009] Jackson *Prosperity without Growth - Economics for a Finite Planet*. Earthscan', 2009
- [Janicke 2012] M.Janicke 'Green growth': *From a growing eco-industry to economic sustainability*, Energy Policy 48, pp.13–21, 2012
- [Jeanmart 2013] H. Jeanmart and L. Possoz, *Le rêve de croissance économique confronté à la réalité des limites physiques et technologiques de l'énergie*, in Congrès Interdisciplinaire du Développement Durable, 2013
- [KEI 2014] Korean Environment Institute, *Establishment of the Monitoring and Evaluation System for Vietnam Green Growth Strategy*, 2014.
- [Kim 2014] Kim et al. *A new approach to measuring green growth: Application to the OECD and Korea*, Futures, Vol. 63, Pp 37–48, Nov. 2014
- [King 2008] V.T.King, *The middle class in Southeast Asia: Diversities, Identities, Comparisons and the Vietnamese Case*, IJAPS, Vol.4, No2, Nov. 2008
- [Chappoz 2013]L. Chappoz et B. Laponche, *Les politiques d'efficacité énergétique en Chine, Inde, Indonésie, Thaïlande et Vietnam*, AFD working paper, April 2013
- [LEDS 2014] LEDS Global partnership, *Case Study: The Subnational integration of the Viet Nam Green Growth Strategy (VGGS)*, 2014
- [MONRE 2014] Vietnam Ministry of Natural Resources and Environment, *Greenhouses gases inventory 2010*, 2014
- [MPI-DSENRE 2014] Vietnam Ministry of Planning and Investment, Department of Science, Education, Environment and Natural Resources, *Investment guidelines for Green Growth in Vietnam*, Dec.2014
- [NCE 2014] The Global Commission on the Economy and Climate, *Better Growth Better Climate: The New Climate Economy Report; The Synthesis Report*. edited by Felipe Calderon et al. Washington, D.C., 2014
- [NDP 2013] NDP Steering Committee and Secretariat, *Happiness: Towards a New Development Paradigm - Report of the Kingdom of Bhutan*, 2013

- [OECD 2011] OECD, *Towards Green Growth*, May 2011
- [OECD 2014] OECD, *Towards Green Growth in Southeast Asia*, Nov. 2014
- [Spash 2014] Clive L. Spash *Better Growth, Helping the Paris COP-out? Fallacies and Omissions of the New Climate Economy Report*. SRE - Discussion Papers, April 2014
- [UNDP 2014] UNDP Viet Nam, *Green Growth and Fossil Fuel Fiscal Policies in Viet Nam - Recommendations for a Roadmap for Policy Reform*, 2014
- [UNDP 2015] UNDP Viet Nam, *Viet Nam Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, Jan.2015
- [UNEP 2011] UNEP *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, 2011
- [Vazquez 2014] D. Vazquez-Brust, A.M. Smith, J. Sarkis *Managing the transition to critical green growth: The 'Green Growth State'*, *Futures*, Vol. 64, Dec. 2014
- [VNGGAP 2014] Decision No. 403/QD-TTg dated March 20, 2014 on the approval of National Green Growth Action Plan of Vietnam
- [VNGGS 2012] Decision No. 1393/QD-TTg dated Sep. 25, 2012 on the approval of the National Green Growth Strategy of Vietnam
- [WB 2012] World Bank. *Inclusive Green Growth: The Pathway to Sustainable Development*, 2012
- [WB 2014-1] World Bank, *Vietnam Development Report, 2014*
- [WB 2014-2] World Bank, *Vietnam 2030 - Charting a Low Carbon Development Path for Vietnam*, 2014
- [York 2012] R. York, *Asymmetric effects of economic growth and decline on CO2 emissions*, *Nature Climate Change* 2, pp.762–764, 2012
- [Zhang 2008] Z.Zhang, *Asian energy and environmental policy: Promoting growth while preserving the environment*, *Energy Policy* 36, pp 3905–3924, 2008