



DEVELOPMENT IN LAO PDR: The Food Security Paradox

by David Fullbrook

Working Paper Series
Mekong Region

Lao PDR



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Development in Lao PDR: **The Food Security Paradox**

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By David Fullbrook

This working paper was conceived as a meta-study to provide a strategic view of the situation in the Lao PDR drawing on data and findings from dozens of field studies, which were subsequently analyzed in the light of local and global trends and developments to synthesize fresh insights and an assessment of the outlook for food security plus scenarios and options. Boundaries drawn up for the study precluded consideration of the complexities of climate change.

The paper was proposed in October 2008 and commissioned in December 2008. The first draft was presented in March 2009 followed by a second draft in April 2009. A third & fourth draft were requested and respectively submitted in August & November 2009. The final 5th draft was finalized in February 2010.



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ABBREVIATIONS	1
GLOSSARY	2
1. EXECUTIVE SUMMARY	3
2. KEY FINDINGS.....	5
3. INTRODUCTION.....	8
4. FOOD SECURITY IN LAOS – GLIMMER OF HOPE	12
4.1 PRICES.....	12
4.2 POLICY.....	13
4.3 OPPORTUNITIES	14
5. THE BIG PUSH – DAMS, MINES AND TREES	16
5.1 POWER, PROFITS, AND REVENUES	17
5.2 MINING'S PROSPECTS.....	19
5.3 MINING'S REVENUE POTENTIAL	22
5.4 COMMODITIES, CARBON AND TREES	23
5.5 TREES AND REVENUE	26
5.6 CONCLUSION.....	26
6. LIVELIHOOD IMPACTS	27
6.1 DAMS, LIVELIHOODS AND FOOD.....	27
6.2 THE FOOD SECURITY OF TWO MILLION PEOPLE	29
6.3 FOOD SECURITY UNDERMINED	30
6.4 PLANTATIONS BLOOM, FOOD SECURITY WITHERS.....	31
6.6 CONCLUSION.....	35
7. ENVIRONMENTAL CONSEQUENCES	37
7.1 MINING POLLUTION.....	37
7.2 EMPTY FORESTS.....	39
7.3 COSTING THE EARTH.....	40
7.4 THE TROUBLE WITH WATER	42
7.5 THERE GO THE FISH	43
7.6 CONCLUSION.....	44
8. MARKET AND FOOD	46
8.1 ABUNDANT FOOD MARKETS	46
8.2 FOOD MARKETS AND MIGRATION	47
8.3 CONCLUSION.....	48
9. CHALLENGING CONTEXT FOR FOOD SECURITY	49
9.1 INDUSTRIAL PREROGATIVES TRUMP FOOD SECURITY	50
9.2 OVERWHELMED – STATE REGULATORS AND INVESTMENT.....	50
9.3 (MIS)MANAGING DEVELOPMENT	52
9.4 CURSED BY RESOURCES.....	54
9.5 THE CURSE ELSEWHERE	58
9.6 CONCLUSION.....	59
10. PEAKS AND CRUNCHES	61
10.1 OIL, FARMING, FOOD AND LAOS	61
10.2 ALTERNATIVE ENERGY QUESTIONS HYDRO-POWER	62
10.3 ENERGY OPTIONS HEATING UP BY 2020?.....	63
10.4 COMPETITION RISING FOR FERTILE LAND	64

10.4.1 Demand for food	64
10.4.2 Natural rubber bounces back	66
10.4.3 Agrofuels.....	66
10.4.4 Starch and bioplastics	68
10.5 FOOD, FIBRE, FUEL AND STARCH MARKETS MERGING	68
10.6 WILL THE WELL RUN DRY?	69
10.7 DISEASE AND BLIGHT	70
10.8 PEAK FISH.....	71
10.9 SCARCE FOOD.....	73
10.10 CONCLUSION.....	75
11. FOOD (IN)SECURITY ANALYSIS.....	76
11.1 SUSTAINABLE FOOD SECURITY	76
11.2 FOOD LIVELIHOOD SYSTEM.....	77
11.3 SUSTAINABLE SECURITY	77
11.4 COMPREHENSIVE NATIONAL POWER.....	78
11.5 FOOD SECURITY AND NON-TRADITIONAL SECURITY.....	79
11.6 POLICY PERSPECTIVES	80
12. FOOD SECURITY ASSESSMENT	82
12.1 STRUCTURAL SHIFTS	82
12.2 REPRESSED FOOD PRODUCTION	83
12.3 CONSEQUENCES	84
12.4 RESPONSE.....	84
13. FOOD SECURITY SCENARIOS FOR LAOS TOWARDS 2020.....	86
13.1 ROBUST FOOD SECURITY	86
13.2 VULNERABLE FOOD SECURITY	87
13.3 ACUTE FOOD INSECURITY	89
13.4 CHRONIC FOOD INSECURITY.....	90
13.5 MATRIX: FOOD SECURITY SCENARIOS.....	92
14. CONCLUSION	93
15. OPPORTUNITIES, ALTERNATIVES AND OPTIONS.....	96
15.1 OPPORTUNITIES AND ALTERNATIVES	96
15.1.1 Land.....	96
15.1.2 Agriculture.....	97
15.1.3 Fisheries	98
15.1.4 Energy	98
15.1.5 Mining.....	99
15.2 OPTIONS	99
15.2.1 Fundamental.....	99
15.2.2 Land and Security.....	100
15.2.3 Regulatory	100
15.2.4 Agriculture and Development	100
15.4.5 Development Agencies and Partners	101
16. APPENDIX ONE – FOOD SECURITY ANALYTICAL CONCEPTS	102
16.1 SUSTAINABLE FOOD SECURITY	102
16.2 FOOD LIVELIHOOD SYSTEM.....	105
17. APPENDIX TWO – HUNGER, DEVELOPMENT & STABILITY INDEXES ...	108
18. REFERENCES.....	110

ABBREVIATIONS

ADB – Asian Development Bank

GDP – Gross Domestic Product

CPI – Committee for Planning and Investment

DDFI – Department for Domestic and Foreign Investment

DGM – Department of Geology and Mines

FAO – Food and Agriculture Organization

Lao PDR – Lao People's Democratic Republic

OECD – Organization for Economic Cooperation and Development

OZ – OZ Minerals

REDD – Reduced Emissions from Deforestation and Forest Degradation

THPC – Theun-Hinboun Power Company

WB – World Bank

WREA – Water Resources and Environment Agency

XTBG – Xishuangbanna Tropical Botanic Garden

ZTE – Zhongxing Telecom Equipment



.Acute food insecurity: a temporary shortage of food.

.Agro-fuels : fuels derived, often as liquids, from field crops and plantation timber.

.Bauxite triangle: a region rich in bauxite where meet the borders of Cambodia, Laos and Vietnam

.Big Push: a shorthand originally coined by Jeffrey Sachs which for this report describes a development strategy fostering investment in land-hungry, big-footprint projects.

.Biofuels: an alternative term for agro-fuels.

.Bio-plastics: a substitute for oil-derived plastics made from plant starch.

.Calorie insecurity: insufficient dietary calories.

.Chronic food insecurity: a shortage of food persisting from season-to-season.

.Comprehensive National Power: a security concept being developed by China.

.Food security: when people, at all times, have physical, social & economic access to sufficient, safe & nutritious food for an active and healthy life.

.Food insecurity: when access to food is uncertain with insufficient calories and/or nutrients.

.Nutrition insecurity: insufficient dietary nutrients.

. Rural Livelihoods System: a comprehensive & holistic understanding of livelihood from the perspectives of those living that life.

.Sustainable Livelihoods: a holistic framework for tackling poverty informed by the perceptions of poor people.

.Sustainable Security: a security concept under development by the Oxford Research Group that examines the causes of insecurity, not only symptoms



Food security will remain out of reach for many people, especially women and children, in the Lao People's Democratic Republic, or Laos, if the country continues to emphasize commodities and resources development at the expense of the environment and livelihoods while ignoring global trends for food and energy. Development might be expected to improve food security, but the indications and trends suggest otherwise. This is the paradox of food security in Laos.

Policy is pumping up the economy with investment in resources through dams, mines and plantations. The promise of this big push for development is jobs, incomes and revenues to end poverty. It is a worthy and ambitious effort threatened by its scale and weak administration. The allure of windfall riches masks the high toll on the environment. Developments are tearing at the environment breaking down the foundations of food production and livelihoods.

Opportunities are passed up for sustainably increasing food production for domestic and foreign markets. Chronic food insecurity is therefore unlikely to decline and may indeed intensify.

Furthermore vulnerability to acute food insecurity will persist and may well increase.

It is understandable to pursue resources-led investment given the extent of poverty in Laos amid so much natural wealth. However similar strategies elsewhere have with but a few exceptions fallen short of expectations. There is much to suggest that expectations will also fall short in Laos.

This dynamic is not evolving in isolation. Its mechanisms are increasingly interlocking with the big wheels of global trends, shifting gears as part of the transition from an age of plenty to an age of scarcity. Questions of great uncertainty hang over prospects for global production of food with implications, not least Laos, for supplies, prices and food security. Imports of food into Laos at affordable prices are at risk. Events elsewhere are more likely than before to echo in Laos as acute food insecurity.

These challenges – domestic and global – are not yet reflected in perceptions of risks and opportunities. Food insecurity policy is fragmented and secondary to investment policy.

Prime Minister Bouasone Bouphavanh has drawn connections between land policy and food production. Meanwhile land is being divided between concessions and proposals for dams and mines continue.

This will not be enough to safeguard Laos against vulnerability to the twin perils of acute and chronic food insecurity. The hunger, poor nutrition and disruption they cause weaken people, the cornerstone of national security. The cause of vulnerability lies not in food-production potential but with policy gambling all on resources to underwrite development while inadvertently sacrificing ecosystems underlying food production. Left unchanged policy is on track to ensure food insecurity will continue to threaten national security.

Food security depends upon an intact, robust and healthy environment, secure livelihoods and political recognition of the costs and risks of uncontrolled resources development.

Laos is not condemned to being a weak state.

By tuning policy to nurture natural advantages in agriculture and secure the environment, Laos can achieve food security enabling its people to focus on development to build a stronger society and enhance national security.



Other developments may then follow in harmony without compromising food security while opening opportunities for sustainable pathways out of poverty. The food security paradox is not inevitable, but it will require a change in perception to open the door to new paradigms of development playing to the natural advantages of Laos. Without change, it will be business as usual which will deepen problems and sustain threats to national food security, leaving many to face a future of hunger, sickness and poor well-being security.

2. KEY FINDINGS

FOOD SECURITY IN LAOS

- Some signs of improving situation
- Food security is a rising priority
- Policies: National Nutrition Policy 2008 and plans for national rice reserve
- Official concerns: land concessions and agriculture
- Declining poverty & new opportunities for livelihoods

THE BIG PUSH

- Resources are attractive and abundant
- Hydro-power dams, mining and plantations are developing rapidly on a vast scale
- They form a Big Push reordering the environment, economy and society
- Investment trends are likely to continue for a decade or more and may intensify
- Big Push projects are land and water intensive
- Big Push projects promise substantial revenues that the state could use to reduce poverty and eliminate food insecurity

LIVELIHOOD IMPACTS

- Big Push costs are immediate because they damage or eliminate food-producing livelihoods
- Benefits lie in the future mostly as revenue promises for the state plus some jobs
- Communities suffer impacts from multiple projects leaving food security precarious
- People affected may be hidden because they live beyond the immediate impact area
- Dams may affect up to 2 million people and their livelihoods including food production
- Mining and plantations are replacing farms and forage forests undermining the food security of local communities and production for national food security
- Depeasantization is underway weakening communities and risking the loss of traditional farming know-how that will undermine food production capacity
- Collective trends and cumulative impacts are crippling livelihoods and food security

ENVIRONMENTAL CONSEQUENCES

- Mining poses a serious pollution risk to food production for local and national needs
- Forests are being stripped of foods at unsustainable rates undoing their ecologies
- Mono-culture plantations pose a risk to the ecology and are at risk from disease and unsustainable water use posing long-term threats to food production
- Water flows, quality and availability are suffering damaging food production especially fish
- The scale of change and development carries consequences that can interact, compound and cascade across the ecosystem posing unforeseen dangers to food security

A CURSE LOOMS FOR FOOD SECURITY

- Policy reflects decision-making which under-values food security and its foundations upon strong environment, sound ecology and sustainable livelihoods
- Environmental regulators lack manpower, budgets, knowledge and political will to monitor compliance and enforce legislation that would protect food security and livelihoods
- Administration is ineffective, unable to produce or maintain comprehensive land data nor exercise full power over investment across national and provincial authorities
- Investment is out of control
- The resource curse stands over Laos, it may already be taking effect
- Administration and regulation are inadequate to protect sustainable agriculture and food security in the face of the huge demands and powerful influence of investment

PEAKS AND CRUNCHES

- Land-linked Laos is exposed to global trends of intensifying energy and food stress
- Hydro-power exports face uncertainty from domestic, decentralized energy production
- Competition for land to grow fuel, food, fibre and bio-plastics to meet global demand and reduce use of oil

- Water stress – drought, irrigation, aquifer depletion – in China and Thailand will impact water and food production in Laos
- Crop and livestock diseases are a growing threat that may partially be countered by agricultural biodiversity, stocks and sufficient capacity to withstand shocks
- Falling global fish stocks and rising demand could increase hunger for fish from healthy, free-flowing rivers like those that remain in Laos
- Global food production is at its limits and vulnerable to shortages and price spikes
- Today's transition from an age of abundance to an age of scarcity is a threat and an opportunity for Laos

FOOD (IN)SECURITY ANALYSIS

- Sustainable Food Security – current political policy paradigms are not generating enough assets for a sustained and rapid reduction in food insecurity
- Food Livelihood System – the Big Push is not only threatening food security but is also stressing and undermining the families, communities and their social ties that produce food
- Sustainable Security – food security, a key pillar of national security, is under threat because it is not being defended against assault from many quarters behind which lie the power of global demand for energy and land
- Comprehensive National Power – threats to food production and food security in Laos drain the holistic strength of society destabilizing the country from within
- Policy – recent initiatives are encouraging but the incomplete, reactionary ad-hoc approach is unlikely to make a qualitative difference to the food security situation in the face of mounting local and global challenges

FOOD SECURITY ASSESSMENT

- Structural shifts are fundamentally affecting the environment, ecology, society and economy to the loss of food security
- Repressed food production hampers efforts to protect and expand food security
- Consequences are not always apparent, suggesting a 'slow-burn' crisis that may manifest as a phase-change from peace to violence
- Response is inadequate because policies are borne of the prevailing development paradigm which is the fundamental cause of food insecurity vulnerability

3. INTRODUCTION

Packs of children run around villages laughing, joking and playing in the Lao People's Democratic Republic, or Laos. Life looks good. Sadly this charming picture conceals the curse of hunger. A survey led by the Ministry of Health found among children under five years of age 40 per cent were stunted and 16 per cent severely stunted.¹ Every other rural child is chronically malnourished, as were their brothers and sisters ten years ago. Women, the mothers of these malnourished children, are in no better condition. A third are anaemic, one-in-eight are at risk of goitre.²

Two out of three rural people experience fragile food security or struggle with food insecurity. Many people are not eating enough fats and protein, which they have traditionally gained from eating wild game and fish that are now threatened³ if not in decline.⁴ Almost a quarter of the population are regularly going to bed hungry. The situation may even be worse because data on what people are eating is, like their food, insufficient.⁵



Even at the best of times many people in Laos go without sufficient food to secure their physical and mental well-being. Hunger and poor nutrition leave people more vulnerable to debilitating and even deadly pandemic diseases such as tuberculosis, HIV and avian influenza.

¹ In some remote highland communities up to 60 per cent of children are stunted: World Food Programme "Executive Brief: Lao PDR Comprehensive Food Security and Vulnerability Analysis" November 2007 Rome: World Food Programme

² Government of Lao PDR "National Nutrition Policy" December 2008 Vientiane: Ministry of Health p6

³ WFP 2007

⁴ Numerous reports cast doubt on the stock of wild game and fish. Some conclude severe declines are underway due to environmental destruction and the demands of regional markets. An comprehensive overview is Galland, Morgan *et al* "Consuming the future – The real status of biodiversity in Lao PDR" July 2007 Vientiane: IUCN, WCS and WWF

⁵ Lao PDR 2008 p6

This underfed population is the greatest threat to national security. People weakened by hunger and preoccupied with securing food will find it difficult to achieve their potential in personal endeavour and experience, take up opportunities for development, and resist shocks. Such vulnerability and weakness will only be comprehensively tackled by among other things achieving food security, quickly.

There are reasons to be hopeful. Food prices globally have fallen significantly since they hit record highs in the middle of 2008. Laotians are constantly evolving new ways to cope preventing matters from worsening. Some are finding work on industrial projects like plantations or in Thailand. If such trends continue they may support an improvement in food security.

The government has despite many pressing issues acknowledged the gravity of the food security and nutrition situation and identified access to sufficient land as a key factor which requires a policy response.

"If there is no clear land policy to promote rice cultivation and food production, it is impossible to ensure effective and sustainable food production," said Prime Minister Bouasone Bouphavanh in March 2009.⁶

There are though reasons for concern. Fields, forests and water, which were not so long ago almost entirely available for producing food, now face growing demands from the surge in resource production projects, such as hydro-electric dams, mines and industrial crops like rubber, sugar, pulp and cassava. These developments promise wages for people and revenues for the government. However they may come at significant cost to food security.⁷

Agricultural land, half of which is arable, has not reached its productive potential, held back by political upheaval, inappropriate policy, and mistaken allocation of resources leaving a growing population, 6.32 million in 2009, struggling with acute and chronic food insecurity. To take land away from production before a substantial programme of investment in research, training and infrastructure to bring out agriculture's potential is not, in the short-to-medium term, going to reduce the risks to food security nor alleviate food insecurity.

⁶ Vientiane Times "PM urges clearer agriculture policy" 30 March 2009

⁷ Lao PDR 2008 p6; Verniau, Serge "Putting nutrition at the centre of development" 27 December 2008 Vientiane Times

Laos could be falling under the resource curse, which may give rise to growth without development doing little to reduce endemic food insecurity. Warding off the curse is perhaps the key challenge facing the government, ensuring these projects do not undermine but instead enhance the environmental security that plays a fundamental role in securing adequate food for a healthy and active population required for national security.

Set against this backdrop is the government's goal of reducing poverty and shedding the status of least developed country by 2020. This will not be possible without a significant expansion of food security. As expressed in the National Nutrition Policy, the government's will seems all but certain to face severe tests during the years to 2020.

Not all tests will arise from developments in Laos. Society and the government will face trying times arising from events well beyond the open borders of land-linked Laos. In many quarters worries loom large over the prospects for oil, along with fears about producing enough food at prices which are affordable for the poor, in the face of a growing world population and the beginning of a shift away from oil to crops for satisfying material needs from fuel to fibres and plastics.

Macro-trends appear likely to manifest in Laos as micro-shocks which could have negative implications for food security. While we await the invention of the crystal ball to view events yet to come, we can in the meantime explore possibilities by constructing scenarios to help in preparing policy to strengthen and secure society.

The implications of local and global trends for food security in Laos can be understood by applying and adapting frameworks of food insecurity vulnerability, sustainable livelihoods, household livelihoods, sustainable security and comprehensive national security. The outcomes reinforce the critical importance of understanding food security in its broader context, as symptomatic of the underlying health and security of society. They moreover suggest alternative approaches to development, sustainably combining food security and business opportunities to generate wages and revenues without requiring placing national security at risk through massive and ultimately flawed reorganization of the environment.

Laos is not compelled to follow any particular development path. As a sovereign state it has an element of choice in which path it takes and will find partners who will support and assist that choice. It is possible to tune priorities and paradigms amid the great changes now taking place in the world to enhance national and environmental securities to deliver sustainable food security.



4.1 Prices

Food security⁸ in Laos has weathered the strain imposed by food prices rising sharply to a peak in the middle of 2008 better than some other developing countries. Nevertheless many people did suffer from rising prices and the consequences of inflation linger, affecting the value of salaries.

In line with the return of stability to global food prices - for now, food inflation in Laos has been moderate. Latest figures show that in July 2009 food prices across the country were 1.51 per cent lower compared to July 2008. The Food and Agriculture Organization's food price index in August stood at 147, barely

unchanged since January 2009 and down from a peak of 215 in June 2008.⁹ For example, Thai rice prices in October 2009 were about 40 per cent lower than the peaks of 2008, although they were about 40 per cent higher than the prices of January 2008.¹⁰

Higher prices have brought pain, suffering and distress, disrupting livelihood calculations drawn from the preceding period of relatively stable prices. Grains, for example, are forecast to cost 60 per cent more than the

average for 1996-2007, the only consolation is an expectation for relatively stable prices.¹¹ However the prospect of relative stability should create space for some people to adjust and evolve their ways and means for purchasing what food they cannot grow or catch.



⁸ Definition: Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Source FAO "Trade reforms and food security – conceptualizing the linkages" 2003 Rome: Food and Agriculture Organization chapter two

⁹ FAO Food Price Indices Source <http://www.fao.org/worldfoodsituation/FoodPricesIndex/en/>

¹⁰ In October 2009 Thai white 100 per cent B second grade was quoted at \$535 tonne, against \$963 per tonne in May 2008 and \$385 per tonne in January 2008 Source www.fao.org/es/ESC/en/15/70/highlight_533.html

¹¹ OECD-FAO "Agricultural outlook 2008-2017" 2008 Paris: Organization for Cooperation and Development

4.2 Policy

Rising prices heightened concerns in Laos about food insecurity. Concern translated into action when with support of bilateral development partners the government adopted the National Nutrition Policy in December 2008. This policy establishes a framework to improve nutrition by 2020 guided by strategic principles of sustainability and resilience through *“sustainable production, harvest and consumption of nutritive plant and animal foods.”*

The policy requires the government and investors to develop projects in accordance with the recommendations of environmental and social impact assessments and enforcement of laws, particularly in the hydropower, mining and plantation sectors, to prevent adverse impacts on nutrition. Environmental regulations will be applied to protecting household food security.¹²

While the National Nutrition Policy does not detail how to achieve gains in nutrition and is not a strategy for achieving food security *per se* it does suggest food production as a factor in government strategy and policymaking. This will require consideration of the question of land use planning and titling. Work on this matter over the last decade has slowly begun to clear up some of the confusion over land-use rights and start tentatively zoning land for specific purposes.

As this work progresses, in light of the nutrition policy, prospects may rise for securing more land for producing food and protecting that land from pressures of other competing uses such as plantations, mines or hydropower dams.¹³

In March, Prime Minister Bouasone Bouphavanh drew a connection between national food security and the preservation of land for producing food in the face of competing demands from other uses. He broached the proposition that developers of hydro-electric dams should ensure reservoirs support irrigation for agriculture – as China is doing with dams on the Mekong in Yunnan province.

¹² Government of Lao PDR “National Nutrition Policy” December 2008 Vientiane: Ministry of Health pp 12-15

¹³ An indication of the evolving approach to land and agriculture was hinted at by Kham-ouan Boupha, president of the National Land Authority, who said agriculture would be given primacy over other projects on the fertile soils of the Bolaven Plateau. Vientiane Times “Bolaven Plateau to be protected from development” 10 November 2008

He noted the 2020 Agriculture Development Strategy¹⁴ was inadequate to deal with this complex challenge. The Prime Minister indicated that the government will inject clarity into a revised strategy giving greater emphasis to national food security.¹⁵

The Ministry of Industry and Commerce was in April requesting funding from the national bank to finance establishing a rice reserve, initially for Vientiane. The government has also approved a proposal for private rice stockpiles after farmers were unable to sell their rice.¹⁶



4.3 Opportunities

Concurrent to stabilizing prices and new policies come emerging opportunities for greater incomes. Expanding markets and rising demand, especially for cash crops, are providing opportunities for higher incomes for some villagers who have the capacity to adjust and refocus their skills and resources. The opportunities are however not shared evenly.¹⁷ The expansion of industrial agriculture, especially plantations for rubber and pulp, has also created work, in some cases paying relatively good wages.¹⁸ Elsewhere villagers are driving harder bargains with companies after their land or even refusing to sell¹⁹ which may signal well for food security.

¹⁴ This may be a reference to “The Government’s Strategic Vision for the Agriculture Sector” published by the Ministry of Agriculture in 1999.

¹⁵ Vientiane Times “PM urges clearer agriculture policy” 30 March 2009

¹⁶ Vientiane Times “National rice stockpile set to start soon” 24 April 2009

¹⁷ Rigg, Jonathan “Forests, marketization, livelihoods and the poor in the Lao PDR” 2006 Land degradation and development volume 17 pp 131-32

¹⁸ 30,000-40,000 kip per day in Muang Sing. Source Shi, Weiye “Rubber Boom in Luang Namtha - A Transnational Perspective” February 2008 Vientiane: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) p36-37

¹⁹ Baird, Ian “Land, Rubber and People: Rapid Agrarian Changes and Responses in Southern Laos” January 2009 draft p31 (subsequently published in the Journal of Lao Studies (2010) volume 1 issue 1)

Such small-scale responses forged by individuals are paralleled by large-scale changes as the economy transitions and is reorganized to produce different products on a different scale. Perhaps the biggest and most striking emblems of the growing scale of change are the hydroelectric dams being built across the country. Revenues from the largest, the World Bank-sponsored Nam Theun II, will the government promises be spent on tackling poverty. Harnessing of the Nam Ngum basin to generate power should improve access to markets for households selling cash crops or non-timber forest products, while irrigation projects should support a modest increase in rice harvests.²⁰ Dams are expected to indirectly improve living conditions and reduce poverty.²¹

While it would be premature to draw a strong trend from such developments, the overall decline in the poverty rate²² may be an indication of these broad dynamics of transition that may in time rescue people from chronic food insecurity.

However, although the poverty rate has declined to 27 per cent, the absolute number living in poverty remains high, at 1.5 million according to the National Steering Committee for Rural Development and Poverty Reduction.²³ Other estimates run to around 2 million, a figure barely unchanged for decades because of population growth. In other words, poverty is at best falling slowly.

The prospects for eradicating food insecurity in Laos have not looked so promising for decades. Nevertheless the recognition of nutrition as a critical issue by the government and the incremental gains in income for some households, resulting from the changing nature of the economy over the last decade, will have to be sustained and expanded to eliminate food insecurity. The large ripples seen in food prices during 2007 and 2008 are a stark reminder of the country's vulnerability to food shocks, especially the landless rural or urban poor and households caught in transit between one livelihood and another.

²⁰ Vattenfall Power Consultant AB et al (2008) TA 4921-LAO: Preparing the Cumulative Impact Assessment for the Nam Ngum 3 Hydropower Project Components A, parts 1 and 2 – Draft CIA Report - Main Report, Executive Summary Vientiane: Asian Development Bank p5,13-14,17

²¹ A position attributed to the governors of Attapeu and Sekong by a Vientiane Times report cited by Lawrence, Shannon (ed) (2008) Power Surge: the impacts of rapid dam development in Laos Berkeley: International Rivers p61

²² In 1990 53 per cent of the population lived on less than \$1 a day. In 2002, the last year for which data appears available, the figure was 28.8 per cent, reports the Asian Development Bank in its series Key Indicators for Asia and the Pacific 2008, Millennium Development Goal 1. www.adb.org/statistics

²³ Vientiane Times "More than 1.5 million still living in poverty" 30 June 2009

The economy of Laos is in the midst of a fundamental transformation. Until recently the nature of the economy had changed little in decades, if not generations, composed of subsistence agriculture, household commercial agriculture and handicrafts along with timber. Now resources are expanding rapidly and will during the next decade mature into a major sector likely to dominate the economy. Dams are enclosing water to extract and transform the kinetic energy of rivers into electricity. Mines are being sunk or gouged to yield minerals such as bauxite, coal, copper and gold. Plantations are spreading across the land to use the soil for rubber, acacia, eucalyptus, cane and cassava to produce base commodities like latex, pulp, sugar and starch. Mining, as illustrated later, has this decade become a major source of state revenue. Such rapid change bears comparison with similar expansions in Latin America in the 1970s.

The catalyst for the surge of investment during this decade is government strategy and policy. The country's natural wealth is on offer to investors in expectation that their efforts at resource production will deliver substantial revenues to finance national development to eradicate poverty and accelerate modernization. Whether by accident or design, this is a catalyst for rapid development, or what has been identified since at least the 1940s as massive expansion of the economy to break out of poverty, a big push. Attempts to use such resource-intensive development, like that occurring in Laos, have rarely led to a sustained increase in gross-domestic product in developing countries.²⁴ The prospects for the Big Push in Laos are examined further in section 9.4.

This poses a challenge for food security because the balance in the use and management of the environment is shifting with priority moving from food production and traditional livelihoods to industrialized extraction to produce raw materials for export. Where the demand for land from dams, mines and plantations overlaps with the 8 per cent of land suitable for agriculture,²⁵ a tussle ensues. Agriculture is often elbowed out because other uses can pay a higher price. A review brings into focus the scale of change and sheds light on the consequences for food security.

²⁴ Sachs, Jeffrey & Warner, Andrew "The big push, natural resource booms and growth" 1999 *Journal of Development Economics* volume 59 pp43-76

²⁵ Source FAOSTAT, Food and Agriculture Organization <http://faostat.fao.org>

5.1 Power, Profits and Revenues

Across Laos there were 10 dams in operation with 669 megawatts of generating capacity as of January 2009. Another 8 will be operational by 2012 delivering 2,531 megawatts. There are 19 under planning, and 42 are the subject of feasibility studies. Almost without exception they are financed and developed by foreign investors expecting to turn a profit primarily by supplying electricity to Thailand, and to a lesser extent Vietnam, plus some for Laos and possibly China.²⁶ Broadly speaking, dam projects have grown in size and scale, from one dam to a flood of dams across river basins and projects piping water from one river to another. Since 2006 developers, with the permission of the governments of Cambodia and Laos, have been surveying seven sites for dams in Laos and one in Cambodia along the Mekong mainstream. Vietnamese developers are preparing to start construction on a 1,410-megawatt dam across the Mekong near Luang Prabang in 2010.²⁷

The global recession may cause delays. The World Bank fears construction on four hydropower projects, with a combined generating capacity of 3,000 megawatts, could stall because of the global credit crunch.²⁸ Nevertheless, joint-ventures are scheduled for agreement this year with foreign investors for five dams with a total generating capacity of 1,565 megawatts aimed at exporting electricity to Thailand and Vietnam.²⁹ Egco, a Thai utility which has a stake in the Nam Theun II dam, intends to resume the 525-megawatt Nam Theun I and 1,300 megawatt Nam Ou this year.³⁰

Dam developers are welcomed by the government because of the promise of a steady revenue stream to finance higher spending intended to accelerate development and reduce poverty. Thailand will import up to 7,000 megawatts by 2015 from Laos under a revised power supply understanding agreed in December 2007. Vietnam will import up to 3,000 megawatts by 2015 possibly rising to 5,000 megawatts by 2020 according to an understanding reached in December 2006.³¹

²⁶ Department of Energy Promotion and Development "Electric power plants in Laos as of September 2009" Vientiane: Ministry of Energy and Mines

²⁷ Vientiane Times "Luang Prabang hydro project targets 2016 completion" 27 October 2008

²⁸ Ten Kate, Daniel "Laos to Ask Donors for More Aid as Copper Plunge Drains Revenue" 14 January 2009 Bloomberg

²⁹ Vongsay, Phonsavanh "More hydropower plant shareholdings to be signed" 25 February 2009 Vientiane Times p7

³⁰ Praiwan, Yuthana "Egco revives plans for Laos power plants" 24 April 2009 Bangkok Post

³¹ Shannon 2008 p13

These are not hard contracts but expressions of intentions subject to change according to circumstance and which may prove unenforceable.

All those turbines spinning out megawatts could generate sizeable revenues for the government. The Nam Theun II, which with a generating capacity of 1,070 megawatts will be the largest dam in Laos upon completion in 2009, will its promoters, including the World Bank, promise earn the Laotian government \$1.9 billion over 25 years, or almost \$1.8 million per megawatt. This crude benchmark suggests the understandings reached with Thailand and Vietnam could be worth \$18 billion over 25 years or about \$720 million annually. The government budget was \$1.78 billion for 2008-2009³² and bilateral aid of about \$300 million. From the perspective of the Laotian government, the case for enclosing the kinetic energy of Laotian rivers to generate electricity for export is understandably compelling.



³² Baccam, Dara "Laos National Assembly Approves 2008-09 Budget" 26 July 2008 Voice of America

5.2 Mining's Prospects

Dams are one way of generating electricity to power much of the machinery to dig up and process the mineral treasures scattered across Laos. The scale of mining could be significant given the diversity of minerals, surveys revealing substantial deposits, and prospects for rising demand from China,³³ India and elsewhere.

The government's draft master plan for developing northern Laos notes the abundance of minerals, ferrous and non-ferrous mineral deposits are varied and abundant in northern Laos. The Vientiane Plain, with an estimated 4.929 billion tons, "...is a treasure bowl of potash resources in Asia."³⁴ Potash is an important mineral for fertilizers only available in bulk at a few sites around the world. However, preliminary mapping data from the Department of Geology and Mines indicates up to 50 billion tonnes of potash under the Vientiane Plain. By comparison the substantial potash deposit south of Vientiane in Thailand's Udon Thani province is estimated to be worth \$4.3 billion over 22 years.³⁵ Prospects for these and other minerals, including gold, copper and iron, were highlighted by government surveys in 2009.³⁶ At least 119 companies have interests in exploring or developing 193 mining sites.³⁷

Mining investment in Laos during this decade has focused on copper and gold. The next decade will be about bauxite, the ore used to make aluminium. Bauxite deposits beneath the fertile soils of the Bolaven Plateau are of a similar quality, grade and size (about 2-2.5 billion tonnes) as Western Australia's Darling Ranges, which produce 14 per cent of the world's alumina.³⁸

³³ China uses 26 percent of the world's alumina, 36 percent of aluminium, 23 percent of copper, 30 percent of zinc, 53 percent of iron ore, 37 percent of steel and 8 percent of gold. Hanna, Peter "China's Economic Outlook" 30 January 2009 Washington D.C.: Carnegie Endowment/Citigroup Global Markets slide 14

³⁴ Northern Laos Industrial Economic Development and Cooperation Planning Preparation Group "2008~2020 Planning for Industrial Economic Development and Cooperation in Northern Part of Lao People's Democratic Republic (Mid-term Draft for Opinions)" May 2008 Vientiane: Ministry of Planning and Investment Development Attachment 1 Principle and Basis for Selection of Key Industries p1

³⁵ Source Department of Geology and Mines, Government of Lao PDR <http://www.dgm.gov.la/>

³⁶ Vientiane Times "Large gold reserves augur a bright future" 29 May 2009

³⁷ Barney, Keith "Power, progress and impoverishment: plantations, hydropower, ecological change and community transition in Hinboun district, Lao PDR" 2007 Toronto: York Centre for Asian Research p11

³⁸ Ord "Laos Bolaven plateau bauxite project update" 23 October 2006 (a) Sydney: Ord River Resources

The first bauxite mine is already under development by Ord River Resources, whose major shareholder is a Chinese-government controlled company China Nonferrous International Mining. A 1.5 million tonne per year alumina refinery, which will be built as part of the Ord bauxite project, would produce 3.5 million tonnes of ‘red mud’ that could yield commercial quantities of iron ore and possibly titanium.³⁹ Ord will seek smelting business from BHP Billiton and Alcoa if they open mines in the Cambodian and Vietnamese sectors of the bauxite triangle.⁴⁰

Investors expect electricity from nearby hydro-dams will result in lower costs for the \$4 billion bauxite-mining plan improving competitiveness and viability. The mine will enter into operation just as China’s bauxite deposits run down to exhaustion in 2015.⁴¹ The implication being investment will remain attractive and likely to continue even during sluggish times, which suggests that although mining is a fairly cyclical industry it promises structural change to the economy and environment of Laos.

Growing Chinese interests in mining in Laos are indicative of a changing mind set among investors. The United States Geological Survey foresees Chinese investment in potash or iron ore.⁴² In early 2007 the Bureau of Geology of Jiangxi Province, China, reportedly sent Geologic Survey Team No.912 with 43 staff to survey for iron ore for 100 days with a budget of \$75 million.⁴³ China’s Yunnan Copper Industry Group received a five-year credit line from the China Export and Import Bank to develop mines in Laos.⁴⁴

China Nonferrous International Mining, Ord’s biggest shareholder, is owned by China Nonferrous Metals Group under China’s State Council, or cabinet. This suggests China Nonferrous Metals may enjoy diplomatic access at the highest levels to the Laotian government. Consequently given the close relations between China and Laos the Ord project seems unlikely to encounter significant obstacles.

³⁹ Ord “Commencement of Pre Feasibility Study - Bolaven Bauxite project” 10 July 2008 (a) Sydney: Ord River Resources

⁴⁰ Ord “Developing an integrated aluminium industry in Laos” 23 October 2006 (b) Sydney: Ord River Resources p7, 9

⁴¹ Ord 2006 (b) p9, p13

⁴² Wu, John “2007 Minerals Yearbook: Laos [advance release]” August 2008 Washington, D.C.: United States Geological Survey p3

⁴³ Wu 2008 p1

⁴⁴ Li, Jennifer “China’s Rising Demand for Minerals and Emerging Global Norms and Practices in the Mining Industry” 2006 Falls Church, Virginia: Foundation for Environmental Security and Sustainability p8

China's MinMetals, a state-owned enterprise, bought troubled OZ Minerals, operator of the Lane Xang gold and copper mine in Savannakhet province, in June 2009 after its lines of credit from western banks dried up. A subsequent reorganization following the takeover appears to have shifted Lane Xang from what remains of OZ and placed it under the umbrella of MinMetals group. MinMetals announced in October it considering expanding production at Sepon in light of the recovery in copper prices⁴⁵ that in turn partly reflect optimism over prospects for China's economy. Coincidentally a few days earlier Green Indochina Development, a Vietnamese company, announced it would prospect for copper in Xieng Khouang and Houaphan provinces.⁴⁶

Vanguard investors were originally Australian firms who opened up the gold and copper mines earlier this decade proving that major investments could come to fruition in Laos despite the difficult business climate. They were private companies with commercial motives. Many of the Chinese firms, as well as companies from Vietnam and to a lesser degree Thailand, are state-owned or have close links to the state. China in particular is pursuing a grand strategy globally through its state-linked firms to secure long-term supplies of commodities which suggests it does not trust the market to supply the needs of China. Thus investments by Chinese companies in Laos may have strategic as well as commercial motives. Strategic concerns may manifest as longer investment horizons and a willingness to develop prospects that might not be viable for strictly commercial companies. The emergence of state-linked mining firms is a fundamental change in the nature of investment in Laos. It suggests the trend of investment in mining will be more robust.

While it might be premature to draw strong conclusions from these recent developments, they do illustrate the strength of interest in the minerals of Laos even during a time of great uncertainty for the global economy. It would be surprising indeed if mining was not the largest activity by value in the economy of Laos by 2020. This may have major implications for agriculture and food supply given mining's demand for land, water and electricity, as well as potential for soil, water and air pollution affecting crops and farmers.

⁴⁵ Riseborough, Jesse "MinMetals reviewing shelved copper mine expansion" 26 October 2009 Bloomberg

⁴⁶ Vietnam News "Joint venture to mine Lao copper" 24 October 2009 Hanoi: Vietnam News Agency

5.3 Mining's Revenue Potential

Mining will account for 10 per cent of GDP by 2010, projects the government.⁴⁷ Revenues from mining will fund a considerable part of the government's budget. In 2007 OZ Minerals, which operates the Lane Xang gold and copper mine, generated \$130 million for the government, which earned \$141 million from the mining sector. That year mineral exports were worth \$538 million.⁴⁸ Pan Australia's gold and copper mine is yielding similar quantities to the OZ mine, suggesting its contribution to the treasury might be of a similar magnitude, assuming the figure given for OZ is annual and not accumulative. Factor in Ord's large bauxite project, and interest from Chinese miners in potash, copper, iron and zinc could result in mining accounting for a share of GDP greater than 10 per cent. Government revenues from mining of \$250-500 million annually by 2020 do not seem implausible.

However managing revenues to smooth out the effects of booms and busts on budgets could be challenging, putting spending on poverty and food security at risk. Copper prices fell almost 75 per cent between July 2008 and January 2009. In the wake of the price plunge, the World Bank forecast copper-mining revenues, which accounted for a quarter of income, could fall by as much as half to \$150 million.

Bloomberg estimated, based on prevailing prices, revenues could fall to \$75 million. To patch part of the shortfall, soft loans were discussed by the government with the Asian Development Bank.⁴⁹ However, the see-saw of commodity prices this year dramatically illustrates the uncertainty that goes with commodity revenues.

Copper prices in November 2009 were up 127 per cent from 1 January 2009, but 29 per cent below the price of 1 January 2008. Prices for aluminium, made from bauxite, have risen sharply in 2009, as global demand edged up stoking hopes of an end to the severe recession, with further rises expected in 2010.⁵⁰ Of course, prices could plunge if the rally is fuelled by speculators and the economic recovery stalls.

⁴⁷ Business Issues Bulletin No.6 "Improving the Investment Climate for the Mining Sector in Lao PDR" March 2008 Vientiane: Lao Chamber of Commerce and Industry

⁴⁸ Pansivongsay, Manichanh "OZ LXML hopeful on Asian demand for copper" 27 January 2009 Vientiane: Vientiane Times p7

⁴⁹ Ten Kate 2009

⁵⁰ Stablum, Anna "Aluminum Climbs to Highest in Nine Months as Economies Recover" 5 August 2009 Bloomberg; Stablum, Anna "Aluminum Heads for Longest Gain in at Least 22 Years on Demand" 28 July 2009 Bloomberg; Kyoungwha, Kim & Park, Sungwoo "Demand for copper, metals strong in 2010 Calyon, Citigroup say" 25 November 2009 Bloomberg

To protect programmes and plans for reducing poverty and improving food security from down swings in commodities revenue, Laos will have to carefully manage revenues and perhaps err on the side of caution in assumptions for budgets.

If prices steady or continue rising on genuine demand, investors are likely to resurrect plans or seek out new sources. The metals of Laos, particularly the bauxite triangle, will for some shine a little brighter, the pace of mining may even increase, accelerating and intensifying the Big Push dynamics over the next few years. Mining will create jobs and payroll taxes, but the numbers may not be enough to offset livelihoods that are left unsustainable when fields, forests and rivers are lost to the Big Push.

In Botswana, where poverty and food security conditions are similar to Laos, diamond mining dominates the economy yet accounts for only 4 per cent of the workforce.⁵¹

5.4 Commodities, Carbon and Trees

Rubber, pulp, fuel and starch are being demanded in ever-greater quantities by industry changing the face of the landscape and agriculture in Laos. Promises of high prices and good incomes are tempting many farmers to switch from meeting the food needs of people to meeting the material needs of industry. Rubber is especially popular. Meanwhile investors are making arrangements with national and provincial authorities to concession or lease for plantations for mono-cropping rubber, eucalyptus, acacia, jatropha, sugar cane or cassava.

For example Yunnan State Farms has obtained rights to develop 166,700 hectares of rubber in four northern provinces of Laos over the next few years, something that took almost 50 years in neighbouring China's Xishuangbanna prefecture.⁵² Officials are assessing 50,000 hectares for cassava plantations after reaching an agreement with China's Zhongxing Telecom Equipment, or ZTE, a leading manufacturer of telecommunications systems. In total ZTE may be seeking 100,000 hectares across four southern provinces.⁵³

⁵¹ Hillbom, Ellen "Diamonds or development? A structural assessment of Botswana's forty years of success" 2008 Journal of Modern African Studies volume 46 number 2 p196

⁵² Shi, Weiye "Rubber Boom in Luang Namtha - A Transnational Perspective" February 2008 Vientiane: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) p64

⁵³ Vientiane Times "Champassak gears up for cassava plantation" 14 October 2008 and VNA

By 2007 the Committee for Planning and Investment had granted six foreign companies concessions totalling 150,000 hectares with a combined investment of \$500 million. Five firms had applied for a further 70,000 hectares requiring an investment of \$142 million.⁵⁴ Industrial crops are evidently seen by the government, investors and some farmers as a good long-term bet despite taking land from farming and foraging.

An accurate and timely picture of the total size of land concessions and leases and the area planted with each industrial crop is not readily available. Provincial and district figures probably under estimate the true extent of industrial crops, particularly rubber because of inadequate know-how, budgets and equipment.⁵⁵

Investment proposals to central authorities for plantations are close to 2 million hectares.⁵⁶ Land concessions reported publicly in 2006 and early 2007 total over 1 million hectares.⁵⁷ Already rubber occupies at least 200,000 hectares prompting a cap of 300,000 hectares.⁵⁸ The Ministry of Agriculture holds a target of 500,000 hectares of industrial plantations by 2020.⁵⁹

Interests of investors in industrial tree crops may coincide with the government's goal of increasing 'forest' cover from 9 million hectares (42 per cent of land) to 12 million hectares (53 per cent) by 2010.⁶⁰

By 2020 15 million hectares should be under tree cover (70 per cent).⁶¹ If forests are taken to mean a great variety of trees and other flora along with fauna growing symbiotically in a diverse, resilient and bountiful ecosystem then this will be impossible. Or if forests mean uniform variety of trees standing together then the targets might be hit by planting industrial trees, which is not without precedent elsewhere.



⁵⁴ Barney 2007 p10-11

⁵⁵ Shi 2008 p14-15

⁵⁶ Department of Forestry "Forestry sector development report for 2006/07 (draft)" 2007 Vientiane: Ministry of Agriculture and Forestry p3

⁵⁷ Hanssen, Cor "Lao land concessions, development for the people?" 2007 Vientiane: CIDSE-Laos p6

⁵⁸ Vientiane Times "Ministry protects forests from rubber plantations" 18 November 2008

⁵⁹ Barney 2007 p10

⁶⁰ Department of Forestry 2007 p3-4

⁶¹ Sub-working Group on Uplands Development "Policy brief #2: rural land management and land administration – DRAFT" 28 August 2008 Vientiane: Ministry of Agriculture and Forestry p2

The government's draft development plan for northern Laos, citing the Kyoto Protocol, proposes a *"protection forest system of international rivers"* through afforestation using trees which grow fast and offer a high yield specifically rubber as well as unspecified *"rare"* and *"valuable"* trees.⁶² Such trees are not defined by the plan. This may be a reference to the Reduced Emissions from Deforestation and Forest Degradation, or REDD, programme. It is unclear what effect, if any, on tree planting will be caused by the participation of Laos, as one of 20 countries, in the pilot Forest Carbon Partnership Facility to refine and develop reference scenarios, strategies, and programmes for reducing biomass reduction rate below the scenarios.⁶³

In Indonesia, where the government classifies plantations as forest cover, Asia Pacific Resources International Limited intends to apply for credits under REDD for some of its plantations.⁶⁴ There is then a precedent for Laos to classify plantations as forests and seek credits under REDD or other schemes.

The bargain – cash for growing trees, possibly industrial plantations of water-hungry eucalyptus or rubber, to soak up carbon – may prove to be a poor one if the cost is food security. Making complicated schemes like REDD and the Forest Carbon Partnership Facility work presents a significant challenge. Experiences elsewhere suggest prospects of matters going wrong are high.⁶⁵



⁶² Northern Laos Industrial Economic Development and Cooperation Planning Preparation Group 2008 p74

⁶³ Department of Forestry 2007 p6

⁶⁴ Onishi, Norimitsu "Tree harvester offers to save Indonesian forest" 29 November 2009 New York Times

⁶⁵ Competence, capacity and the weak track record of similar schemes as well as the Kyoto Protocol itself raise serious questions over REDD. Brown, David & Bird, Neil "The REDD road to Copenhagen: Readiness for what?" December 2008 London: Overseas Development Institute

5.5 Trees and Revenue

What the investment means for government revenues and poverty and food security budgets is unclear. Land in Laos is officially made available to investors at \$6 per hectare per year, whereas in Vietnam similar land incurs a charge of \$20 and China \$50.⁶⁶ This indicates there is room for prices in Laos to rise yet remain competitive. At current rates 500,000 hectares of plantations would earn the government \$3 million a year in land fees alone. Income from land licensing fees and land rents is expected to be \$20-\$50 per hectare a year, yielding \$12.5 million for the government in 2016 and \$47.5 million in 2020, estimates the Asian Development Bank.⁶⁷ Revenues generated by provincial or district deals may not be transferred to the central budget but instead spent locally where they might conceivably make a contribution to food security.

5.6 Conclusion

The Big Push for resource-intensive development extracted from the environment should generate substantial annual revenues for the government, something like a \$1 billion per year, perhaps more, by 2020 if not earlier. This is the seductive promise of the Big Push that generates a logic and rationality accepting negative consequences, such as threats to food security, as necessary costs that will be exceeded by the promise of greater revenues. The Big Push has developed a momentum that only grows as more projects take shape, fattening the promise.

Wise policy using this windfall carefully could do much to improve the well-being of society, particularly with regard to health and education. Farmers might squeeze more food out of their fields benefitting from an expansion of research as well as irrigation. Revenues from natural resources might also finance a developmental-state strategy building on improvements in health and education to build an economy that is more diverse and adds value resulting in more jobs with higher incomes.

Food security could improve because households, society and the state would be stronger and more prosperous, able to secure adequate, nutritious, affordable food even in difficult times. However these prospects stand in the face of high risks and great challenges that are more than a match for a poor, weak and ineffective state.

⁶⁶ Hanssen 2007 p9

⁶⁷ Dwyer, Mike "Turning Land into Capital - A review of recent research on land concessions for investment in Lao PDR - Part 1 of 2 – Existing literature" 2007 Vientiane: CIDSE-Laos p23

The benefits promised by the Big Push accumulate mostly in the future, as revenues that might power the country's development and escape from poverty and endemic food insecurity. However, costs are imposed almost immediately upon people whose livelihood sustainability and food security are bound up with the land and ecosystems marked out for enclosure by dams, mine or plantations. Other impacts, especially further afield, on people or ecologies may accumulate out of sight before coming into view or springing a surprise through phase change. Furthermore, when livelihoods and food security of farmer suffers than invariably they have less stock to take to the market which underwrites national food security.

6.1 Dams, Livelihoods and Food

What do dams mean for food security? A visit to Pak Veng village, downstream from the Theun-Hinboun dam, is revealing. After the dam was built, severe wet-season flooding and other hydrological and ecological changes damaged fisheries, riverside gardens and livestock which were the basis of livelihoods. Health and housing also suffered.

To cope villagers switched from wet rice to dry rice on upland fields. However these uplands are earmarked for Oji-Laos to expand its concession-based pulp plantation, which already requires 94 villages with 56,000 people to make way for eucalyptus or acacia to supply a \$1.7 billion 1.2 million tons per year paper and pulp mill near Shanghai.⁶⁸ More upheaval is on the cards because the area includes the Nam Theun II inter-basin transfer project, or Theun-Hinboun Expansion Project creating the Nam Gnouang 8 dam. The Theun-Hinboun Power Company, or THPC, is now proposing to resettle the village in 2010.⁶⁹ Pak Veng villagers will have to find land elsewhere if they want to continue growing rice.

Villagers coping capacities are facing severe challenges. Their food security, livelihoods, communities and culture are put into question by damage to the traditional foundation of fisheries. Their turn to upland rice has only delayed the day of reckoning. Impacts and consequences of the dams and plantation are falling almost simultaneously compounding and exacerbating the damage to villagers' food security.

⁶⁸ Barney 2007 p47-8

⁶⁹ Barney 2007 p4

They will have to adjust to a new paradigm of greater acute and chronic food insecurity, tearing at the fabric of their livelihoods and raising doubts over the sustainability of their community.

What is happening in Pak Veng is already reality for villagers living near hydropower dams elsewhere, such as the Houay Ho and Theun-Hinboun, and will be repeated at perhaps hundreds, maybe thousands, of villages standing in the way of dams, mines and plantations.⁷⁰

Scenarios exploring impacts of dams across the Nam Ngum basin overall suggest negatives and risks outweighing positive outcomes. The Nam Ngum 2 will force 6,000 people to move under resettlement plans which will leave them at significant risk of poverty, conflicts and economic marginalization.⁷¹ Food production stands to suffer. Fundamental deteriorations in the quality of water upon which flora and fauna, especially fish, have come to depend will pose significant challenges to the livelihoods of people in the basin. Women and children could suffer the worst losses of nutrition.⁷²

Poverty has increased for tens of thousands because resettlement has failed to restore incomes or fisheries, paddy and riverbank gardens have been lost without drawing sufficient compensation.⁷³ Programmes to restore the livelihoods of 6,200 people resettled to make way for the Nam Theun II are behind schedule and still defining and testing some approaches. According to some investigators there has not been any compensation for 10,000 people who lost land or other assets downstream, violating World Bank policy and the concession agreement.⁷⁴



⁷⁰ Figures for the scale of projected land loss if all dam projects come to fruition are not readily available.

⁷¹ Vattenfall 2008 p7

⁷² Vattenfall Power Consultant AB et al (2008) TA 4921-LAO: Preparing the Cumulative Impact Assessment for the Nam Ngum 3 Hydropower Project Components A, parts 1 and 2 – Draft CIA Report - Main Report, Executive Summary Vientiane: Asian Development Bank p2, 5, 6-11

⁷³ Lawrence 2008 p3

⁷⁴ Lawrence 2008 p41

Prospects for villagers to regain their original food security seem remote especially given the difficulties resettlement has encountered elsewhere in the country. Nevertheless, the World Bank argues that progress is being made, highlighting abundant fish catches from the new reservoir.⁷⁵ Whether these can be sustained is an open question. There is little indication that large dams are making significant improvements to local human and national food security. Rather if anything they are having the opposite effect.

6.2 The Food Security of Two Million People

A summary of the consequences of 19 dams which have begun operation, are under construction, or in the final planning stages since 1996, indicates 38,318 people will have to resettle. This however miscalculates the human impact. Communities downstream can suffer because the dam changes the flow of the river and the quality of water damaging fisheries, paddies or vegetable gardens as the illustrated by the case of Pak Veng.

Including downstream communities increases the number of affected people to 464,284.⁷⁶ Some assessments of impacts count villages or households instead of people. Conservatively counting each village as 100 people and each household as 5 people brings the affected number to 470,434, about 7 per cent of the 6.5 million people of Laos, or 24,759 people per dam.⁷⁷ Applying this rough and ready figure to the 16 projects at some stage of development, suggests a further 396,144 people will be put at risk. In total 866,578 people, or 13 per cent of the population, could experience a fundamental change in their livelihoods because of the 35 dams operational, under construction or planning to. If 44 dams advance from feasibility studies to operations, they could affect 1.09 million people. There are in total 79 dam projects potentially affecting 1.96 million people, or 30 per cent of the population. This back of the envelope number represents an extreme outcome that may well not come to pass, nevertheless it does indicate the scale of change and impact which looms for people, livelihoods and food security.

⁷⁵ World Bank "Nam Theun 2 making steady progress" 12 August 2009 Vientiane

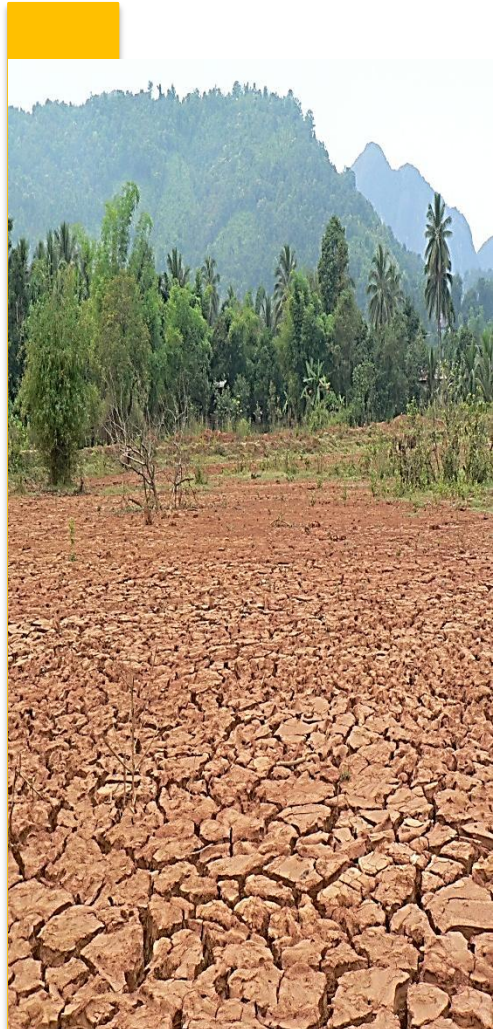
⁷⁶ Lawrence 2008 p7-9

⁷⁷ The distribution of dams from projects estimated to affect a few hundred to those affecting tens of thousands lends some credence to the validity of this figure.

6.3 Food Security Undermined

The downside of mining for livelihoods is its demand for land, either dug up for open-cast mines, as is often the case with ores like bauxite, or for dumping millions of tonnes of tailings. Land lost undermines livelihoods leaving people denied critical resources for producing food to support food security. Relocation to places not as bountiful or with less water worsens food insecurity. Whether people who have seen their livelihoods damaged or destroyed and their food security compromised benefit from government revenues and jobs created by mining is not guaranteed. Land and forests cleared to make way for strip or shaft mines also pose a threat to food production surpluses for the national market.

The complex challenge facing the government is to ensure the trade-off between mines and food production results in real gains in incomes to compensate for the erosion of food security and the unsettling of the vulnerability-resilience balance.



6.4 Plantations Bloom, Food Security Withers

Land earmarked by the authorities for investors to use frequently overlaps with fields and forests used by villagers to produce their food as well as surplus harvests for sale in the market. Demand for land to plant industrial crops, especially trees, is elbowing-out rice and other crops.

Villagers of Chagnee in Luang Nam Tha province, northern Laos, lost all their paddies when an investor turned up along with officials and soldiers.⁷⁸ The villagers would doubtless have much to talk about with the people of Bachieng in Champasak province, southern Laos. They paid for the upheaval and costs when thousands of hectares of land were cleared and planted with rubber by Vietnamese investors. Moreover, illegal Vietnamese workers were common in the new plantations.⁷⁹

Other villages in Bachieng saw their perennial crops destroyed to make way for rubber.⁸⁰ In such instances officials are compliant agents for investors' plans. They have also urged villagers to work on the plantations.

"The resulting shortage of land for agriculture will force some families to leave their homes in search of alternative land to earn a living," reported the Vientiane Times.⁸¹



⁷⁸ Shi 2008 p32 (case 5.1)

⁷⁹ Baird 2009

⁸⁰ Baird 2009 p35

⁸¹ Vientiane Times "Reducing poverty, or perpetuating it?" 23 April 2007 in Baird 2009 p34

The transformation for villagers is stark, replacing resilience with vulnerability, notes Barney:

“Peoples’ lives have changed from being more or less self-sufficient to becoming heavily dependent on rubber company labour, or when that has not been possible, many have become idle due to a lack of farming and foraging opportunities. Villagers reported that whereas in the past they bought very little food, now they have to buy 90 per cent of what they consume, thus dramatically increasing their need for cash”.⁸²

It is a situation repeated across Laos. Conflicts over village land and forests are rising suggest a growing volume of reports, involving privatization of land by powerful people, unauthorized logging by companies and sometimes villagers, all wanting land for commercial plantations.⁸³ The spoils are being divided unevenly with the poor seemingly facing greater food insecurity, observe Sithong and Thouthone:

“Many forest areas have been cleared without recognizing the negative, but difficult to assess, impacts on people whose livelihoods have traditionally depended on forests. Most of the people who grow rubber are mainly from wealthier families, while poor farmers are losing access to agricultural land”.⁸⁴

Furthermore, work available on plantations does not fully substitute for the income, food or cash, people reaped from paddies or forests. Village income records indicate the poorest households did not benefit from wage labour opportunities on the plantation. Less labour is needed after the forests have been cleared. Remaining work does not always fit the imperatives of local livelihoods leaving investors to import labour⁸⁵ that must be somehow fed.

⁸² Baird 2009 p25

⁸³ Department of Forestry 2007 p12

⁸⁴ Sithong, Thongmanivong & Thouthone, Vongvisouk “Impacts of cash crops on rural livelihoods: a case study from Muang Sing, Luang Namtha province, northern Lao PDR” in “Hanging in the balance: equity in community-based natural resource management in Asia” 2006 Bangkok: RECOFTC Honolulu: East-West Center p121

⁸⁵ Barney 2007 p90-91, 93

The net effect is deepening vulnerability, if not immediate food insecurity, for a growing number of people across the country. Widening holes in the safety net of fields and forests do not bode well for their chances should they suffer misfortune, such as severe weather, disease or a recession.

Farmers who have kept their land and are planting rubber are not however out of the woods. Yields and incomes could fall short of expectations because Laotian farmers possess only rudimentary knowledge for cultivating rubber.⁸⁶ They have limited access to market information and absence of community production groups to leverage opportunities.⁸⁷

Climate is another risk for rubber. Villagers of Had Ngao, who pioneered rubber, suffered five hard years after a rare severe frost killed many of their rubber trees in 1999.⁸⁸ Whether frosts will become more frequent because of climate change remains to be seen. A Thai meteorologist, interpreting data from America's National Aeronautics and Space Administration, has warned that snow might dust the peaks of Thailand's northern mountains before 2020.⁸⁹



It is a one-shot livelihood strategy carrying a high-risk of food insecurity should it fail. Whether all the farmers betting on rubber are fully aware of this or have been able to make preparations should things turn sour is questionable and probably requires investigation and education to determine food insecurity risk and vulnerability. The situation is compounded because it is not uncommon for prosperous or connected farmers to clear common forests or pastures to plant rubber. Such developments imperil the food security of poor farmers who rely on forest or pasture commons.⁹⁰

⁸⁶ Sithong & Thounthone 2006 p119

⁸⁷ Fujita, Yayoi (ed) "Key issues in smallholder rubber planting in Oudomxay and Luang Prabang provinces, Lao PDR" August 2007 Vientiane: National Agriculture and Forestry Research Institute p2.i

⁸⁸ Shi 2008 p12

⁸⁹ ไทยรัฐ (Thai Rat) "โลกร้อนหิมะตกไทย ยุคน้ำแข็งกำลังมา" (Global warming snow falling in Thailand, an ice age coming?) 20 September 2009 Bangkok: หนังสือพิมพ์ไทยรัฐ (Thai Rat newspaper) p5

⁹⁰ Fujita 2007 p2.ii

In times of scarcity people can find nothing to eat amid the rows of rubber, eucalyptus or acacia marching on endlessly where once stood primary or secondary forests rich in food. Rubber crowds out livestock and furthermore during the tapping season leaves villagers with little time for tending animals.⁹¹ Forest produce other than timber was contributing over \$350 million a year to the economy earlier this decade.⁹² Remaining forests are being rapidly depleted of foods and other products due to over-harvesting.⁹³ This is a heavy blow for poor households.⁹⁴ Even during times of plenty they, as well as prosperous people, depend on the forest for much of their diet, especially for nutrients to balance the calories from rice.



⁹¹ Sithong & Thounthone 2006 p120

⁹² Galland *et al* 2007 p6 *citing* Emerton 2005

⁹³ Department of Forestry 2007 p8

⁹⁴ Fujita 2007 p22

6.5 Conclusion

The programme of large-dams development underway in Laos, which could be complete by 2020, poses great risks to the immediate food security and livelihoods of people whose homes will be submerged by reservoirs or those downstream. People living farther afield whose food security depends upon fish from free-flowing rivers will also feel the effects. Resettlement and mitigation planning appears wholly inadequate. Alleviating the impacts and reducing the risks for food security and livelihoods will not come cheaply and will require a long-term spending commitment. This assumes the revenues from the dams materialize quickly and are available in the face of other demands.

Prospects for mining to make a positive contribution to the development of Laos, through revenues and jobs, will only deliver a strong net gain for the country if the money, regulations and capabilities are there to counter detrimental consequences for food production and livelihoods.

Industrial agriculture and plantations over the years to 2020 could raise incomes for some farmers and deliver revenues to the government which might be used to reduce poverty and enhance food security. However the current approach shows no evidence of being primarily designed to reduce poverty or food insecurity. Impacts so far suggest many people are qualitatively finding they remain stuck in a state of poverty or food insecurity, some are even sinking deeper. Shrinking forests and other habitats are reducing villagers' opportunities for growing or foraging for food which is hardly an encouraging situation for the future.

Whether the revenues due to the government from industrial agriculture will outweigh the costs and risks to society is doubtful. A resilient and sustainable approach would integrate industrial crops into existing practices for growing food through polycropping and instead of eliminating the forest insert industrial trees, such as north-eastern India where the land and people resemble Laos.⁹⁵

Dams, mining and plantations are also fuelling, if not driving, the exodus of people – many with deep wisdom accumulated by generations of farming, fishing and foraging in their local ecology – off of the land. This is the early stages of depeasantization in Laos. As people leave the land taking their knowledge and hands, who will be left to produce food to feed the country and avoid excessive dependence upon imports?

⁹⁵ The case for the sustainable high yields of such holistic approaches to agricultural production is made by agroecologist Miguel Altieri at the University of California, Berkeley <http://www.agroeco.org/>

The trends, vectors and consequences of dams, mining and industrial crops do not inspire confidence that they will collectively reduce vulnerability and improve resilience to food insecurity, nor do a great deal to tackle poverty, expand prosperity and deliver sustainable livelihoods with dignified well-being. If anything their cumulative and intertwined impacts upon people, culture, livelihoods and food ecosystems point towards quite the opposite.

This development pattern is creating the food security paradox.



A vast accidental experiment is taking place in Laos testing the resilience of the fragile environment and its food-producing ecosystems by rapidly imposing dams, mines and plantations. The consequences of dams, mines and plantations are not confined to their immediate neighbourhood but can spread far beyond, overlapping and compounding their effects. Impacts, given the number of projects and their rapid development under inadequate regulation and oversight, have the potential to spill over from one area into another, threatening chain-reaction effects that are hard to foresee and even harder to mitigate or correct.

The nature of the development of dams, mines and industrial crops in Laos is profoundly reshaping the environment and its ecology. This is the foundation for the production of food and traditional livelihoods, especially for rural people representing most Laotians. The balance and interaction between the environment and food production is being upset, altering the premises which underlie established livelihoods and communities and their food-production symbiosis. This raises the question of how much stress and change can natural systems endure without posing a major threat to food production and national food security?

The changing nature of the economy, the turn away from using the land primarily for agriculture towards industrial uses is reshaping society, expanding market demands, and triggering responses that may serve to further depress food production, broaden vulnerability to food insecurity, and further erode resilience.

7.1 Mining Pollution

Water, soil and air pollution incidents have dogged mining, especially in developing countries. Even with the best regulation, mishaps can leave an enduring legacy of poisoned fields or rivers, unsuitable for producing food.

Ord, OZ and Pan Australian have pledged to apply the industry's best environmental management practices. But they are not foolproof. Pan Australian spilt cyanide at Phu Bia in 2005 polluting water courses, poisoning fish, causing an acute and possibly chronic impact for food security, and according to state media and other reports at the time hundreds of villagers.⁹⁶ Pan Australian insisted no villagers were poisoned. So far there do not appear to be any reports of pollution from copper mining by Ord and OZ. Moreover, as the industry develops and expands into processing bauxite – on the Bolaven plateau with rich soils and productive farms – and possibly other minerals, the complexities posed by pollution could intensify.

⁹⁶ Mineral Policy Institute "Phu Bia mine – already in trouble" 26 September 2005; Gibson, Jano "Australian mining company denies poisoning villagers" 10 August 2005 Sydney Morning Herald

The risk profile is worsening. Mining experiences elsewhere suggest serious problems are not unlikely.

In Zambia, for example, plants downwind from copper smelters have been killed by 300,000 to 700,000 tonnes of sulphur dioxide emitted annually.⁹⁷ Zambia, a developing country with decades of experience with the copper mining, has not succeeded in enforcing environmental laws and standards work observes Simutanyi: “In terms of observing environmental standards, all mining companies are expected to follow environmental laws. However, in practice there are both lapses and outright irresponsibility on the part of mining companies.”⁹⁸

If mining in Laos is closely regulated and applies the tightest standards and latest technologies despite the costs, then the environmental impacts may be contained to the mining and processing site. However, the industry’s record elsewhere in the developing world and the cyanide spill at Phu Bia suggest caution may be advisable when considering the likelihood for this rosy scenario coming to pass. Effects may spread far because of the pollution that mines can release into air and water. Laos already has long-standing health problems caused by household artisanal mining particularly affecting women in poorer communities.



⁹⁷ Pegg, Scott “Mining and poverty reduction: Transforming rhetoric into reality” 2006 Journal of Cleaner Production volume 14 issues 3-4 p378

⁹⁸ Simutanyi, Neo “Copper mining in Zambia - The developmental legacy of privatization” July 2008 Pretoria: Institute for Security Studies p9

7.2 Empty Forests

The role of forest foods and non-timber products is critical to food security and livelihoods for much of the rural population. Such produce satisfies about half of people's food requirements and furthermore generates 40-50 per cent of cash income, which in turn buys rice.⁹⁹ Many prosperous people, as well as poor people, habitually eat forest foods during times of plenty as well as scarcity.¹⁰⁰ Villagers enjoying abundant produce from the forest have better nutrition than those living in depleted forests or resettled near to roads.¹⁰¹

Forest foods and other non-timber products are being hit hard simply because established forests, secondary or primary with their great biodiversity, are being chopped down to make way for vulnerable homogenous chemical-dependent industrial agriculture, or to clear land for dams or mines. Even where forests are not in the way of a dam or mine, the construction of roads increases vulnerability to the axe, chainsaw or bulldozer of timber poachers.



Along roads come people foraging and trading forest foods and non-timber products for sale in faraway markets. This adds to the demand of local people whose livelihoods and communities have developed a symbiosis with the forest. Together these appetites can outstrip natural rates of reproduction.¹⁰² Villagers may cope with scarcity by going deeper and deeper into the forests where they use more sophisticated means.¹⁰³

The problem is compounded because villagers are eating and trading more forest foods to make up for falling crop harvests since soils are losing fertility due to shorter fallow periods resulting from provincial authorities curtailing upland swidden agriculture.¹⁰⁴ Apparently this is a misinterpretation of the government policy to reduce 'pioneer' slash-and-burn practices, rather than rotating sustainable swiddens¹⁰⁵ that has gone uncorrected.

⁹⁹ World Food Programme made similar findings in 2004. Foppes, Joost & Ketphanh, Sounthone "NTFP use and household food security in Lao PDR" 2004 Vientiane: Forest Research Centre in Barney 2007 p49

¹⁰⁰ Rigg, Jonathan "Forests, marketization, livelihoods and the poor in the Lao PDR" 2006 Land degradation and development volume 17 p126

¹⁰¹ Galland *et al* 2007 p6 *citing* Krahn 2005, Krahn & Johnson 2007

¹⁰² Rigg 2006 p128

¹⁰³ Galland *et al* 2007 p4

¹⁰⁴ Baird 2007 p868 *citing* various studies from 2000 and 2001.

¹⁰⁵ Sub-working Group on Uplands Development 2008 p7

Replacing traditional upland agriculture kills two birds with one stone: slash-and-burn or swidden is replaced by investment in trees for industrial purposes which could count towards the government's targets for expanding tree cover. Investment and trees go up, burning goes down. Investors and the state win, people who have nowhere to grow or forage for food lose. Ironically swidden could be crucial to food security, noted researchers earlier this decade reports Baird:

*"At the present time there is no evidence that population density in the uplands poses a threat to swidden systems, nor is there evidence of growth rates that would affect this situation in the long term."*¹⁰⁶

Unsustainable harvesting and habitat destruction occurring now in Laos is eroding biodiversity, indicating broad failure to recognize or accept its value and role in securing food production and livelihoods. The International Union for the Conservation of Nature draws a grim conclusion:

*"It is clear that in Lao PDR, like in many other parts of the world, we can no longer rely on the regenerating process of nature alone – humans are impacting significantly and without conservation and better natural resource management, more biodiversity will be lost."*¹⁰⁷

7.3 Costing the Earth

The full consequences of the rapid expansion of industrial trees, such as rubber across Luang Nam Tha in northern Laos will not be clear for a few years. However evidence from elsewhere indicates the effects can be diverse and far reaching for food production.

Plantations typically depend on regular treatment with chemicals harmful to other plants and the wider ecology affecting animals like insects providing crucial ecosystem services such as pollination or pest control. This shift is damaging soil and water quality.¹⁰⁸ They have been accompanied by increasing erosion elsewhere in Laos.¹⁰⁹ Industrial trees like rubber, and especially eucalyptus, are extremely thirsty disrupting the quantities and flows of ground water that would otherwise fill wells and streams used for drinking or watering food crops.

¹⁰⁶ Baird 2007 p868 citing Chamberlain, J. & Phomsombath, P. "Poverty Alleviation for All: Potentials and Options for People in the Uplands" 2002 Vientiane: Embassy of Sweden

¹⁰⁷ Galland et al 2007 p4

¹⁰⁸ Sub-working Group on Uplands Development 2008 p1-2

¹⁰⁹ Sub-working Group on Uplands Development 2008 p7

This situation may be exacerbated by the incentives to plant thirsty trees, like these, to earn credits under the Clean Development Mechanism. “Water allocations to Clean Development Mechanism (afforestation and reforestation) may therefore in some cases mean direct diversions of water from other uses, with implications for food security, eco-system functioning and environmental services,” warns Trabucco and colleagues.¹¹⁰

Evidence of the toll on the environment comes from villages near Jinghong, the capital of China’s Xishuangbanna prefecture bordering northern Laos, which suffers because rubber has sucked too much water out of the ground.¹¹¹ Streams and wells run dry in many villages in Xishuangbanna because the spacing of rubber trees, which have replaced dense forest canopy, allows more evaporation.¹¹² What’s more widespread deforestation is indicated as a major factor contributing to warming temperatures in the region since the 1960s.

The switch from forest to rubber around Menglun has damaged ecosystem services. “Destroying ecosystems will backfire and hit economic development in the long run,” argues Cao Min, an ecologist at the Xishuangbanna Tropical Botanic Garden, or XTBG, research centre. “We will soon hit the wall in an ecological credit crunch. This is hardly a viable investment.”¹¹³

Knock-on impacts now loom for Laos as China seeks to rectify the damage. Recognizing the environmental costs, tighter rubber-processing regulations are entering force in Xishuangbanna. Processing rubber in Luang Nam Tha could then prove cheaper because there are effectively no environmental controls on rubber processing.¹¹⁴ Coincidentally, or not, changes to the environment caused by deforestation and rubber in Yunnan have been followed by entrepreneurs and farmers buying or growing food, such as watermelons and corn, in northern Laos for sale in Yunnan.¹¹⁵

The rapid expansion of industrial agriculture, particularly trees, may instead of prosperity bring only more poverty.

¹¹⁰ Trabucco, Antonio et al “Carbon sequestration, land degradation and water” in Bossio, Deborah & Geheb, Kim (eds) “Conserving land, protecting water” 2008 Wallingford, UK: CAB International

¹¹¹ Shi 2008 p60

¹¹² Qiu, Jane “Where the rubber meets the garden” 15 January 2009 Nature volume 457 p246

¹¹³ Qiu 2009 p247

¹¹⁴ Shi 2008 p44

¹¹⁵ Fullbrook, David “Contract farming in the Lao PDR: cases and questions” 2007 Vientiane: Helvetas/Laos Extension for Agriculture Project

Recognition of the gravity of the situation comes from the Department of Forestry:

“...if the current situation of land and forest use continues, poor villagers will surely be the biggest losers and this is against the government’s top priority policy of poverty eradication.”¹¹⁶

7.4 The Trouble with Water

The most fundamental change concerns the nature of water intrinsic to food production, especially rice and fish. Food security is under pressure because when rivers become reservoirs, elements of existing ecosystems are rendered obsolete. Species, among them nutritious fish people eat daily, unable to adapt to the new ecological realities will disappear. Subsistence farmers, landless people and other marginalized groups living in poverty will be hardest hit from the changes to habitats affecting fish because reservoir fisheries are considerably less equitable than wild fisheries.¹¹⁷

Rivers and streams across Laos are suffering from rising quantities of silt because deforestation and the dirt tracks of plantations allow more water to run-off the land during the monsoon. Dwindling forests leads to less groundwater causing rivers to run lower and some streams to turn dry during the dry season, noted Phalasack Pheddara, director of the operation and maintenance division of Department of Irrigation. Growing demand for groundwater raises the risk of southern provinces suffering from rising salinity, a problem affecting north-eastern Thailand where there is similar geology.¹¹⁸

Demand for groundwater exceeding natural rates of recharge is also suspected of contributing to lower river levels and exacerbating droughts. Unreliable water supplies pose risks to food agriculture as well as fish. This poses a growing risk to harvests, food security and community sustainability.

This has been the experience in parts of Tanzania where the previously relatively intact ecosystem sustained livelihoods during droughts. *“The degradation of the ecosystem tends to reduce the resilience of linked social-ecological systems,”* observe Gordon and Elin.¹¹⁹

¹¹⁶ Department of Forestry 2007 p13

¹¹⁷ Vattenfall 2008 p15

¹¹⁸ Pheddara, Phalasack “Large rice-based irrigation systems in Lao PDR” in FAO “Large rice-based irrigation systems in Lao PDR” 2005 Rome: Food and Agriculture Organization p104

¹¹⁹ Gordon, Line & Enfors, Elin “Land degradation, ecosystem services and resilience of smallholder farmers in Makanya catchment, Tanzania” in Bossio, Deborah & Geheb, Kim (eds) “Conserving land, protecting water” 2008 Wallingford, UK: CAB International p33

Drought is more relevant for Laos than it appears. It disrupts the seasonal flow of nutrients upon which farmers developed practices for growing crops. Damming a river, turning land over to a plantation, or digging to mine minerals also obstructs flows of nutrients. Whether the obstacle is a drought or dam, the results sharpen acute vulnerability to food insecurity and may give way to chronic food insecurity if farmers fail to adjust their crops to the changes in nutrient flows.

Consequently more people will more frequently dip into stocks of food, seeds and forest foods. Each time they draw on stocks is a setback, cumulatively deepening vulnerability over time, which can develop into a negative feedback loop. "This suggests land degradation deepens the poverty trap, decreasing the likelihood of a shift to a higher welfare equilibrium," note Gordon and Elin.¹²⁰

7.5 There Go the Fish

Fish are critical to the food security of Laos and indeed the Mekong basin but they are at risk from the effects of dams, mines and plantations. Estimates of fish hauled from the Mekong river basin each year suggest this is the major source of protein and nutrients for millions of people.¹²¹ Laotians net an estimated 168,000-183,000 tonnes of fish per year from the Mekong basin.¹²² A survey of catches indicated 0.7-1.6 million tonnes of fish are threatened by dams on the Mekong mainstream, which is 1.6-3.5 times the total beef production of Cambodia, Laos, Thailand and Vietnam, or 0.9-1.8 times the pork produced by Cambodia, Laos and Thailand.

In Laos, for at least half of the people (80 per cent in the south) fish earning accounts for at least a fifth of household income, which among other things, buys rice seed.¹²³ Chris Barlow, a fisheries expert, noted:

*"Nor does it include the very considerable indirect values of the Mekong fisheries, such as their contribution to the nutrition, employment and well-being of millions of rural people in the lower Mekong basin, who generally have few other livelihood options."*¹²⁴

¹²⁰ Gordon 2008 p46

¹²¹ Relatively little is known about fish in the Mekong basin because the field work has yet to happen. Barlow, Chris *et al* "How much of the Mekong fish catch is at risk from mainstream dam development?" December 2008 Catch and Culture volume 14 number 3 p16

¹²² Barlow 2008 p18

¹²³ Dugan, Patrick "Mainstream dams as barriers to fish migration: international learning and implications for the Mekong" December 2008 Catch and Culture volume 14 number 3 p10

¹²⁴ Barlow 2008 p19-21

Experts from various fields convened by the Mekong River Commission warned dams on the mainstream of the Mekong through Laos and in Cambodia will inflict a heavy toll on fisheries with serious economic and social implications. A decline in river fisheries after construction of a dam can only be partially offset by stocking reservoirs with fish. Catches from reservoirs in Laos and countries facing similar situations in Africa are only a fraction of hauls from natural rivers.¹²⁵

Building fish-friendly dams is practically impossible. There is no evidence, concluded the experts, of existing fish passage technologies coping with the huge volume and diversity of fish found in the Mekong. Moreover the challenge and complexity of fish passages multiplies as more species, swimming upstream or downstream, are taken into account.¹²⁶ Preserving fish passage through dams along the Columbia River in America has since 1978 cost \$9 billion and required a reduction in power generation of 1,000 megawatts per year. Bonneville Power Administration in Oregon spends 16 per cent of its revenue protecting fish, a figure likely to rise.¹²⁷

Local declines in fish already experienced by villagers who have to adapt to dams, deforestation or plantations are unlikely to reverse in the face of increasing silt and shifting water flows and erratic unnatural floods. Pollution from agricultural chemicals and accidental spills from mines pose acute problems, which could leave enduring effects. Moreover less food in the foods could encourage people to hook or net more fish to make up for protein formerly caught in the forests.

Overall the biggest change facing fisheries, which play an equal role to forests in food security and livelihoods, comes from dams, warn Poulsen and others:

*"The overriding threat to the future of the Mekong's fish and fisheries is the impact of water management schemes, for such purposes as irrigation, hydroelectricity and flood control."*¹²⁸

7.6 Conclusion

Water, forests and fish will struggle to retain their vitality and sustain their richness because of the big consequences of the Big Push. This is eroding the resilience of food production and sacrificing environmental security for an uncertain return in the form of state revenue and jobs. Experiences and evidence suggest the environment will continue to be undermined in the future.

¹²⁵ Dugan 2008 p13

¹²⁶ Dugan 2008 p12,14

¹²⁷ Mekong River Commission "Fish migration emerges as key issue at regional hydropower conference" December 2008 Catch and Culture volume 14 number 3

¹²⁸ Poulsen, A.F et al (2004) Distribution and Ecology of Some Important Riverine Fish Species of the Mekong River Basin Phnom Penh: Mekong River Commission p19

Cutting down the forests and blocking rivers is chopping up the foundations of food production. The balance is tipping towards entrenched if not deeper food insecurity, affecting different people in different ways. Technology, such as the green revolution, may use the ecosystem more efficiently for a time but gains are not inexhaustible, have indeed flagged and are in some places in retreat.

Mining must minimize environmental impacts and ensure all pollution is neutralized at source but whether and how this will happen in a poor developing country like Laos is unclear. If the industry repeats its poor environmental record elsewhere in the developing world then villagers and their sources of food will suffer from pollution poisoning the country's fragile ecology, especially the rivers and fish.

Will the revenues from reshaping the environment to extract resources outweigh the weaknesses created by compromising environmental security? Will the costs and benefits be evenly distributed or reinforce growing inequality and vulnerabilities, failing to support sustainable livelihoods? How will food production be maintained or increased in the face of rapid environmental change, loss of land for food, turning rivers rich in fish into reservoirs poor in fish?

Experiences and evidence so far suggest the answers to these questions will not be positive. Shrinking stocks of forest foods and fish along with growing dependence on the market for food puts the poor, especially those with insufficient farming land, at graver risk when food prices rise because most are not net food sellers. Households headed by women face even greater dangers.¹²⁹



Food is the most basic product obtained from harnessing the ecosystem. If harvests cannot rise to provide calorific and nutritional food security, or begin to decline, then this may be taken as a warning that the health of the ecosystem is failing because of the pressures of dams, plantations and mines affecting its processes and resources. Without fundamental change in the value and priority of environment in development and security planning, there is a risk matters will worsen in Laos with severe consequences for food security of hundreds of thousands if not millions of people .

¹²⁹ FAO "The State of Food Insecurity in the World" 2008 Rome: Food and Agriculture Organization p26

The market in Laos is playing a greater role in the provision of food because of changes in the nature of the environment, economy and society. This transition has implications for vulnerability because more people are coming to depend on the market to supply food rather than produce it themselves. To operate smoothly markets, among other things, require adequate and secure supplies of food not subject to supply chain monopoly or monopsony. How will this be achieved in Laos where the Big Push is bulldozing food production ecologies amid tight global food supplies?

8.1 Abundant Food Markets

As natural sources of food come into question with harvests stagnating and quite likely declining or at least failing to keep up with the demands of a growing population, more people will turn to the market – if they have the means and opportunity to earn wages – for their food security.

Food was traditionally grown, foraged or caught by most Laotians. While they may not always have eaten the full complement of nutrients, they could at least be sure of enough food most of the time. Nowadays more and more people, especially the young, are not farming but working in factories, hotels or offices, for example. They are more likely to buy much, if not all, their food with cash from the market.

This on-going shift, sometimes almost overnight, is a side-effect of the accelerating pace of environmental and economic restructuring over the last decade, especially during the last five years. However the consequences, although simple and obvious, are worth considering because of the implications for food security.

When someone stops growing food, instead turns to earning money to buy food, the result in simple terms is one less person producing food (and potentially a surplus to sell) and one more person depending upon the market to supply their food. The question is who will be left to grow food? Either somebody else must take the place left vacant on the farm or farmers must increase their harvests while maintain prices affordable to market consumers. If this is not the case, then the needs of consumers can only seemingly be met by either imports or eating less.

The implication being structural change in the environment and economy is leaving more people, often on very low incomes, dependent upon the impulses of the market, and even events in places far away, to provide food at a price they can afford. Who are these people? Factory hands, plantation workers, and construction labour seem likely candidates.

Vietnam saw strikes surge at factories during 2008 as rising prices for rice gobbled up wages.¹³⁰ New wage workers, such as people in factories hunched over sewing machines or manning lathes or in plantations tending trees and clearing weeds, appear at high risk, yet they may not be the people most commonly associated with living on the edge of food insecurity.

Economic restructuring may carry some people out of food insecurity while concurrently leaving other people, particularly in industrial or urban areas, exposed to the peril of acute, and possibly chronic, food insecurity.

Analysis of the 2005 Population and Housing Census indicates that although the incidence of poverty generally rises with altitude and distance from urban centres, the density of poverty generally peaks in lowland urban centres.¹³¹ Inadequate social security in Laos only widens the vulnerability of poor people dependent upon the market and its floating prices for their food security.

8.2 Food Markets and Migration

Food security is but one of numerous factors, like rising material needs and desires, shaping Laotians' decisions to seek work in Thailand. The scale and scope is perhaps larger than commonly thought.¹³² The global recession as well as political unrest is pushing Thailand into recession leading to job losses among citizens and migrants like those from Laos. Nevertheless as Thailand's economy recovers the trend seems certain to resume.

Perversely food security can suffer if fields are left unattended by the departure of hands for work elsewhere.¹³³ Alternatively, food production potential is reduced when households, using remittances from Thailand, plant their fields with rubber.¹³⁴

This situation arises at a time when more migrant labour is expected to arrive from China and Vietnam in the years ahead to tend rubber and other crops for investors.¹³⁵

¹³⁰ IRIN "Rising inflation hurting poor, undermining poverty gains" 11 June 2008; Hookway, James "Inflation fuels Vietnam strikes" 3 June 2008 Wall Street Journal; AFP "High food prices seen leading to strikes, protests in Asia" 8 April 2008

¹³¹ Messerli P *et al* "Socio-Economic Atlas of the Lao PDR – an Analysis based on the 2005 Population and Housing Census" 2008 Bern: Swiss National Centre of Competence in Research (NCCR) North-South and Vientiane: Geographica Bernensia sections I.1 and I.2

¹³² Rigg, Jonathan "Moving Lives: Migration and Livelihoods in the Lao PDR" 2007 Population, space and place volume 13 p165

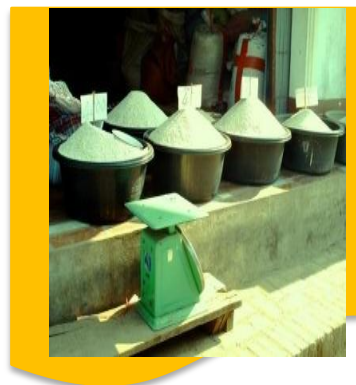
¹³³ Rigg 2007 p171

¹³⁴ Barney 2007 p5

¹³⁵ Shi 2008 p4

The rapid expansion of rubber appears to have exceeded the availability of labour, suggests Kham-ouan Boupha, National Land Authority president.¹³⁶ So not only are plantations intruding upon land and water for food production and replacing food-rich forests, they are also drawing in labour which requires feeding. At best migrant workers will only be able to grow a portion of their own food, if they have time and access to land, water and seed. For the rest they will turn to the market, either directly or through their employers, increasing pressure on stocks and prices.

This is at a time when the food producing capabilities of Laos – whether field crops, forests foods or fish – are being displaced by dams, mines and industrial crops. One outcome may be higher food prices and a greater dependence on imports. Although the price of imports may be offset to some degree if rising exports of commodities result in the Laotian currency, the kip, gaining strength against the dollar, yuan and baht. But with much of the mining industry using dollars in operations and for pricing exports, the effect of rising exports on the value of the kip might not be so great.



8.3 Conclusion

More people are obtaining food from the market instead of their own fields and labour, exposing them to vulnerabilities that go with ups-and-downs of local and global food markets, for which they and the state appear unprepared. People are being pushed into greater dependence upon the market for food by because agriculture and food production are losing out to environmental change brought about by the Big Push. More uncertainty comes from the flows of migrants across Laos that exacerbate the fragile situation and increase pressure on the market for food.

Where local production does not suffice, people will turn in hope to the market and increasingly food imports that bring with them exposure to global food prices. People who spend a substantial portion of their income on food will be more sensitive to increases in market food prices, putting them at greater risk of acute food insecurity that may linger into chronic food insecurity if prices stay high and incomes do not rise sufficiently. In difficult times the government may face greater pressure to assure affordable supplies of food through subsidies or other arrangements, imposing demands that may exceed the budget forcing the government to try to borrow more or turn to international agencies and development partners for relief.

¹³⁶ Vientiane Times 11 November 2008

National food security is suffering because of the nature of the Big Push for resource-intensive development in Laos described in section 5. It consumes substantial quantities of natural resources such as land, nutrient flows, and a river's kinetic energy, with consequences for the ecological systems that underpin communities and shape their ways and means for producing food. The cause of these changes lies with paradigms and perspectives that inform policy which takes shape in the actions of the Big Push. Insufficient weight is given to the role, nature and synergies of the environment, agriculture, livelihoods and communities in producing food and building food security. Furthermore, the state's capacity to administer and regulate large-scale resources development is inadequate. Consequently the country may already be falling under the resource curse.

It is the state, ultimately, which stands between food security and insecurity. The environment cannot protect itself. Land cannot decide whether it is reserved for growing food or is put to work for industrial needs. The state sets, monitors and enforces legislation and regulation. The state decides the terms and conditions for an industrial project. When the state's capacity is not equal to the capacity and influence of investors then public interests, like food security, are in danger.



9.1 Industrial Prerogatives Trump Food Security

An indication of priorities and the paradigms and perspectives dominating policy formulation is found in the government's draft development strategy for northern Laos.¹³⁷ This lays out a grand plan, closely modelled on China's 1980s industrialization, for large-scale development of resources and industry including extensive riverine shipping, railway and air transport networks.

L "We may stress construction of a series of key agriculture, forestry and animal husbandry projects with rubber as the focal point in the agricultural development plan of North Laos," state the authors of the draft development strategy for northern Laos.¹³⁸

The plan appears well suited to an era without concerns over energy, food or the environment. In the current rapidly evolving local, regional and global context at the dawn of transition to a post-carbon sustainable economy it is obsolete. Food security and biodiversity are only mentioned briefly. Furthermore the plan's internal contradictions, such as how extensive shipping along the Mekong and its tributaries will proceed in the face of dams without ship-lifts or why lots of tourists will be drawn to a homogenous and charmless plantation landscape peppered & polluted with dams, mines and refineries, raise doubts over its prospects for ensuring food security, livelihoods and empowered well-being.

9.2 Overwhelmed – State Regulators and Investment

An effective government or reputable company will proceed with a project after appointing highly capable people and establishing clear and robust regulations overseen by rigorous supervisors and auditors to ensure everything is going to plan. In Laos this approach is turned on its head. Dams, mining and industrial agriculture projects are proceeding in Laos *before* the state has the capacity to manage, monitor and enforce laws, regulations, compensation and penalties to effectively supervise energy and mining.¹³⁹

¹³⁷ Northern Laos Industrial Economic Development and Cooperation Planning Preparation Group 2008

¹³⁸ Northern Laos Industrial Economic Development and Cooperation Planning Preparation Group 2008 Attachment 1 Principle and Basis for Selection of Key Industries p8

¹³⁹ Phetsomphou, Phonetip (2007) Laos country report on environmental management in the Lao PDR mining sector Vientiane: Environmental Research Institute, Water Resources and Environment Agency prepared for "A greater Mekong? Poverty, integration and development" conference at the University of Sydney, Australia 26-27 September 2007 p4-5; "Allowing large scale commercial development where there is a weak regulatory enforcement framework is having an adverse social and environment impact on local people's livelihoods," said Ahsan Tayyab, senior natural resource economist, Asian Development Bank. Phouthonesy, Ekaphone "ADB funds environmental protection" 26 February 2009 Vientiane Times

For instance the Water Resources and Environment Agency, or WREA, is required by law to approve environmental and social mitigation plans and assessments – if they are made – before projects commence.¹⁴⁰ The Agency is unable to execute this duty effectively in practise because its budget and staff are inadequate for monitoring compliance during construction and operations, nor generating the basic data now insufficient or missing. Were the Agency to identify problems, there appears it could do little because it does not have the authority to stop projects.¹⁴¹ Consequently, assessments that are undertaken lack credibility because the state lacks the capacity – and perhaps interest – to make thorough and challenging reviews. Companies often conduct them in secret frequently not making provisions to restore livelihoods. Their assumptions are fragile because of inadequate basic hydrological, ecosystem and biodiversity data.¹⁴²

Yet without effective and well-resourced oversight, regulation, and enforcement, the prospects are slim for mitigation to support communities, their livelihoods and food production. Companies naturally seek to pare costs to maximize profit, they are not in the business of charity. Mitigation is difficult and expensive. Environmental and social mitigation is even failing to fully help people affected by the Nam Theun II, a flagship dam partially financed and supervised by the World Bank.

Other key regulatory agencies are in no better position. Between 2000 and 2005 the Department for Domestic and Foreign Investment, or DDFI, had four staff to monitor 626 projects worth \$2.79 billion. Meanwhile the Department of Geology and Mines, or DGM, charged no more than 10 staff with limited professional skills to monitor 66 mining companies running 122 projects.¹⁴³

Given the scale and trajectory of investments into projects with significant consequences for the use and consumption of natural resources that underpin food production, plus the threats of pollution and declining water quality, how can food production be protected and maintained when the state agencies responsible for keeping investors on the right side of the law – and the country's best long-term interests – are simply overwhelmed?

¹⁴⁰ Lawrence 2008 p29, 47

¹⁴¹ Lawrence 2008 p3

¹⁴² Lebel, Louis et al "The politics of scale, position, and place in the governance of water resources in the Mekong Region" 2005 Ecology and Society volume 10 number 2 p12

¹⁴³ Dwyer 2007 p32

The government has acknowledged the shortcomings, entering into cooperation with the Poverty Environment Initiative of the United Nations Development Programme and United Nations Environment Programme in 2009 with funding from the Global Environment Facility. This four-year experimental programme to address shortfalls in policy, planning and technical capacities is due to begin in 2010 running for at least four years. Its full impact may not be fully apparent until the middle of the next decade amid dynamics and trends described in this working paper which suggest growing challenges.

9.3 (Mis)Managing Development

Toothless regulators are a symptom of weak administration. The government struggles to communicate intentions and policies to provinces. Provincial authorities diverge from national goals exacerbating the country's development disparities.¹⁴⁴ The division of responsibilities is unclear and possibly difficult to enforce. Decision-making is fractured because of muddled communication and unclear rulings.¹⁴⁵ Provinces and districts often exceed their authority to win investment and fail to make technical and social assessments.¹⁴⁶

Nowhere is this clearer than in matters of land, a crucial asset for almost all investment in Laos and one of the key resources for food security. For example, companies, in exchange for supporting their land acquisition, have given rubber plantations to senior officials in Bachieng and Champasak.¹⁴⁷ Village headmen have accepted bribes from rubber companies in exchange for agreement to land deals not in the interest of the community. Villagers are often left in the dark about proposals discussed between village and provincial officials.¹⁴⁸ Local investment processes exhibit signs of inconsistency or corruption, not least land contracts involving the primary national-security institution - the army.¹⁴⁹ Informal concessions have emerged with associates of local governments acquiring land.¹⁵⁰

This is poor administration. The government lacks the capacity and resources (and will?) to immunise itself from the influence of investors, especially over provincial and district agents.

¹⁴⁴ Lawrence 2008 p22

¹⁴⁵ Schumann 2006 p17

¹⁴⁶ Sub-working Group on Uplands Development 2008 p3

¹⁴⁷ Baird 2009 p35

¹⁴⁸ Baird 2009 p31

¹⁴⁹ Shi 2008 p31

¹⁵⁰ Sub-working Group on Uplands Development 2008 p3

The most basic systems do not functionally exist. DDFI is unable to provide detailed information about arrangements made for land between provinces and investors. A centralized contract filing system for concessions and leases does not functionally exist, exacerbating problems related to the development of a comprehensive inventory of state land.¹⁵¹ This matter appears likely to get worse before it gets better because the land allocation programme has run into major administrative issues. The exercise may have to begin again from scratch.¹⁵²

The absence of a centralized investment management system or a complete inventory of state land opens space for provinces to serve investors seeking land on mutually beneficial terms that may impose costs or losses upon the central state. It is a situation conducive to food insecurity because it undermines the government's ability to put society's interests above commercial interests.

The Committee for Planning and Investment, or CPI, which prepared the 2006-2010 development plan, acknowledged the government's shortcomings:

*"It is necessary to invest immediately to improve the skills, but there is limitation of the budget, which restricts the ability of the nation's development. The effectiveness of state administration is still limited."*¹⁵³

Project coordination is effectively absent. The government, according to consultants for the Asian Development Bank, does not have the *"...financial and technical capacities to implement large-scale complex hydropower projects."*¹⁵⁴ Absent coordination calls into question the management of river basins, the positioning and scale of dams, control of water flow, and estimates of power generation and revenues, as well as capacity to oversee, develop and implement measures to restore livelihoods and food security.

The scale and speed of investment often appears to exceed the state's monitoring, management and coordination. There are reports of overlapping allocations of land for different purposes by the state. Provinces are incapable of effective monitoring.¹⁵⁵

¹⁵¹ Dwyer 2007 p12, 13, 29, 31

¹⁵² Land Issues Working Group meeting January 2009

¹⁵³ Government of Lao PDR "National socio-economic development plan (2006-2010)" October 2006 Vientiane: Committee for Planning and Investment part 2 p56

¹⁵⁴ ADB Technical Assistance Report "Lao People's Democratic Republic: Preparing the cumulative impact assessment for the Nam Ngum 3 hydropower project" February 2007 Vientiane: Asian Development Bank section II.9

¹⁵⁵ Dwyer 2007 p30

Abandonment of land leased for plantations, up to 50,000 hectares, after clearing of valuable timber or in the event of plantation failure is common, querying the quality of contracts the state makes with investors and the capacity to enforce and sanction. This is hardly an ideal context in which to defend and strengthen food security.

The state may not be entirely dysfunctional but some aspects of administration and rule critical for food security appear inadequate for tasks and risks now and on the horizon. The government appears to have lost control over investment, instead of one door controlled by central authorities, there are many in the hands of provincial agencies. The state admits it lacks the know-how, skills and abilities to administer and manage investment, and monitor environmental damage. Its inability to strategically plan and manage investment has left environmental security, and with it food security, vulnerable without any clear or effective protection.

In the short term this is disturbing, however in the medium-to-long term such costs and risks might be outweighed by the benefits of the current Big Push approach to resource-intensive development. This hinges on rising revenues being used wisely to mitigate risks and strengthen resilience, while tackling poverty through improved healthcare, education, welfare and higher income, stable jobs. Experience elsewhere in the developing world, particularly very poor countries 'rich' with commodities and minerals like Laos, suggests the prospects for such outcomes are slim.

Joseph Stiglitz, a development economist, warned publicly during a speech to policymakers in Vientiane that without careful, transparent administration and a strong focus on social spending, Laos will not reap the benefits of its resources.¹⁵⁶ The outlook for sustainably improving nutrition and reducing hunger is cloudy and will require vigorous and determined attention of the government and its partners if gains are to be made and held.

9.4 Cursed Resources

Come 2010 mining will account for 10 per cent of GDP forecasts the Laotian government. On top of which are hydro-dams and industrial plantations. Mining is emerging as the most valuable sector of the economy but one with a slim chance of making a significant and purposeful contribution to reducing food insecurity and tackling poverty, except perhaps making imports cheaper should the kip strengthen on the back of mineral exports.¹⁵⁷

¹⁵⁶ Vientiane Times "US economist: resource income should benefit all" 31 October 2007

¹⁵⁷ Mining generally works in dollars in Laos so the direct effect on the kip may be small. However revenues to the government along with mining's local purchases like salaries and food may stimulate demand for the kip which may strengthen if demand for imports does not greatly increase.

Extractive industries are not however associated with equitable distribution of income or providing jobs for the poor.¹⁵⁸ Poverty is more likely to rise than fall, suggests the recent experiential record for countries where mining accounts for even as little as 6 per cent of exports.¹⁵⁹ This is one form of the resource curse.¹⁶⁰

A few developing countries have done well out of resources, but most have not, observed Sachs and Warner: *"...the simple evidence is far from supportive of the idea that [resource] booms should serve as catalysts for development."*¹⁶¹

Of the 34 countries the Global Hunger Index considers alarming or extremely alarming, resources were a significant factor in the economy of 15 countries including Laos. Whether there is a causal relationship between the resource curse and food insecurity is unclear, however there appears to be an intermediate correlation which is highlighted in Appendix Two.

Capital-intensive industries, such as energy and ores, are more likely to be accompanied by higher levels of corruption than labour-intensive industries like agriculture and food.¹⁶² The Laotian government has been waging public campaigns against corruption, seemingly with little success. International perceptions of corruption are highly unfavourable placing Laos equal to Central African Republic and Tajikistan.¹⁶³

Whether the resource in question is energy exported as electricity, minerals or industrial crops, they all promise fast increases in concentrated revenues for the government. There is some variation, with the intensity greatest for minerals and electricity. Their cost for environmental and ecological security is significant. Compromised environmental security does not, as previous chapters describe and discuss, forecast well for food security in Laos.

¹⁵⁸ Pegg 2006 p377

¹⁵⁹ Pegg 2006 p376

¹⁶⁰ Another common resource curse is the Dutch disease where exports of resources result in the local currency strengthening making other exports less competitive

¹⁶¹ Sachs & Warner 1999 p45

¹⁶² Leite, Carlos & Weidmann, Jens "Does mother nature corrupt? Natural resources, corruption, and economic growth"

1999 Washington, D.C.: International Monetary Fund in Pegg 2006 p379

¹⁶³ Transparency International "Corruption Perceptions Index 2008"

How resource revenues are protected, managed and applied is a barometer for the effectiveness of governance and institutions in making a bounty or curse of resources concludes Weber-Fahr:

*The contribution of a mining sector to a country's economy does not take place in isolation, but rather in the overall context of the country's economic management and institutions. It is thus the quality and competency of these policies and institutions that will determine whether a mining sector can promote economic growth, or whether revenues generated by the sector might impede development.*¹⁶⁴

The character of the context within which resources, such as mining, are developed shapes the prospects for reducing poverty. Mining, for example, can, according to the World Bank, support poverty reduction if there is pro-poor public and corporate governance, strong social and environmental policies, and respect for human rights.¹⁶⁵ How institutions work in determining and supporting primacy of the law, efficient administration and repudiating contracts, are crucial to determining whether a country falls under the resource curse argues Kolstad.¹⁶⁶



¹⁶⁴ Weber-Fahr, Monika "Treasure or trouble? Mining in developing countries" 2002 Washington, D.C.: World Bank and International Finance Corporation p12

¹⁶⁵ Extractive Industries Review "The World Bank and Extractive Industries, volume 1: Striking a better balance" 2003 Washington, D.C.: World Bank in Pegg 2006 p384

¹⁶⁶ Kolstad, Ivor "The Resource Curse: Which Institutions Matter?" 2007 Bergen: Chr. Michelsen Institute p4

The vulnerability of Laos to the resource curse appears high when measured against criteria drawn from a speech by Ian Porter, World Bank Laos country director¹⁶⁷:

Criteria	State	Compliance
Good governance and transparency	Governance 21% (low) (World Bank World Governance Indicators)	Transparency 2/10 (low) (Transparency International Corruption Perceptions Index 2008)
Mitigation of environmental and social impacts	Government agencies lack the capacity and authority to measure, regulate, enforce and rectify	Few developers produce comprehensive assessments and implement effective mitigation
Quality investments	Government lacks the capacity to impose and judge quality; current focus appears to be on quantity of investment	Little is known about many developers because there are few effective requirements to provide information publicly
Management of resources to benefit future generations	Current situation suggests Laos is unable to properly manage resources for the benefit of today's Laotians	Comprehensive and robust planning for the future in terms of sustainability and resilience is not being made public, if it exists

The development trajectory and the uncoordinated and poorly managed nature of investment does not give much hope for future generations benefitting from resources or enjoying a productive environment and rich ecology on the current scale. Significant problems of integrity and corruption cast doubt on prospects for revenues from resource industries being fully and wisely invested in tackling poverty, improving health and education, and developing the economy and eliminating food insecurity.

¹⁶⁷ Ian Porter, the World Bank country director for Laos, identified these four actions in a speech given in Vientiane. Porter, Ian "Lao PDR can beat the resource curse" 23 May 2007 Vientiane: World Bank

9.5 The Curse Elsewhere

A few countries have managed to avoid the curse, while others with great prospects have not. Malaysia and Mauritius, which have substantial endowments of natural resources, have experienced high rates of growth and rapid development, along with declines in poverty and improvements in food security. Their success however is not so much due to natural resources as manufactured exports supported by very open economies.¹⁶⁸

Whether manufacturing can emerge as a strong force in the economy in the years to 2020 in Laos remains to be seen. Factories around Vientiane and Savannakhet indicate some change is taking place, but many more will be needed, as will workers to stitch, sew, carve and cut. However their productivity and quality will probably have to improve by a margin exceeding any decline in the terms of trade that may result from an increase in resource exports.¹⁶⁹

Other countries with promise have not fared so well. Botswana, a country with which Laos shares more similarities than Malaysia or Mauritius, is often held up as another success because of impressive rates of economic growth. However scores for development are consistently poor. A dollar-a-day, or less, is what 47 per cent of Botswanans survive on. Poverty is even thought to be rising in rural areas, and unemployment is high.¹⁷⁰ Botswana has a United Nations Gini coefficient of 60.5, against 34.6 for Laos. Between 1990 and 2008 hunger worsened by 7.3 per cent. The Global Hunger Index rated Botswana serious with 17.9 in 2008, and Laos alarming with 20.6.¹⁷¹

How can decades of investment and growth fail to generate development in Botswana? There is relatively little manufacturing, that process of creating and adding value by turning raw materials into a wide-range of products, compared to Malaysia or Mauritius. Botswana will only transform when it can build on the success of mining to bring about a shift from growth to development by becoming a developmental state.¹⁷²

¹⁶⁸ Sachs, Jeffrey & Warner, Andrew "Natural resource abundance and economic growth" December 1995 Cambridge, MA: National Bureau of Economic Research p16

¹⁶⁹ Specifically how much of the foreign currency, primarily American dollars, generated by resources will be exchanged for Laotian kip.

¹⁷⁰ Hillbom p201-202, 206

¹⁷¹ von Grebmer, Klaus et al "Global Hunger Index – The Challenge of Global Hunger 2008" October 2008 Bonn: Welthungerhilfe p15, 19

¹⁷² Hillbom p210

Hillbom characterizes Botswana as a trapped economy, one suffering a resource curse, albeit perhaps an uncommon one:

Botswana's success should be understood as one of pre-modern growth without development... it has not yet experienced 'modern economic growth', characterised by structural change in patterns of production as well as in social and political institutions... Such analysis also offers an explanation for the duality of Botswana's economy and society, since pre-modern growth, as opposed to development, allows for significant poverty rates and extremely unequal resource and income distribution to prevail in the midst of plenty.¹⁷³

Botswana's struggles with hunger suggest Laos may find improvements in food security elusive and fleeting, at the very least they should not be taken for granted.

Zambia fared even worse. The government received a 'tremendous boost' to revenue because of copper yet the industry itself performed poorly and the people were among the poorest in the world in the 1980s and 1990s. "...the government's lack of foresight and its inability to consolidate its agreements have contributed to the failure of the country to fully benefit from the copper boom," argues Simutanyi.¹⁷⁴ Zambia's Global Hunger Index rating was 29.2 in 2008, against 29.1 in 1990, which is only a few ticks short of being considered extremely alarming.

If Laos is to avoid the fates of Botswana, Zambia or many other countries that are cursed by their natural resource wealth, there needs to be a qualitative shift in investment and development policy from extraction to processing and manufacturing. The scale of resources, particularly copper and bauxite, and the proximity of large markets suggests it would be economic for Laos to require investors to export semi-finished or finished products instead of processed ores.

9.6 Conclusion

The balance is tilting away from food security. It is a roll of the dice, gambling resource-intensive development will create enough income for households to eat and improve their well-being. In many developing countries it was a bad gamble. They were simply unprepared to administer the scale and complexities of resource-intensive development.

¹⁷³ Hillbom 2008 p191

¹⁷⁴ Simutanyi 2008 p1, 3

Where resources are abundant, playing a significant role in the economy and government revenues, there may be a greater prospect of food insecurity. The United Nations Development Programme has noted exports of electricity, timber and minerals do not favour rapid human development because these sectors are capital, not labour intensive, and carry significant risks to the environment and livelihoods.¹⁷⁵

This complex and challenging situation demands comprehensive policy and effective administration. The evidence suggests the government in Laos is not in full control of the investment process or even has an accurate assessment of its scale and consequences. If this were a football game, the players would be running rings around the referee and his broken whistle.

The crux of the issue is the eager embrace of resource-intensive development, leading to far more projects getting down to work than the government has any hope of properly regulating to maintain environmental security, sustain food production, and maximize revenues for the state on behalf of citizens.

Should the Big Push generate the expected sharp increases in revenue, it is questionable whether the government will be able to manage the bounty and protect it from being whittled away by corruption. Moreover, depending increasingly on cyclical resources to finance the government is risky and almost certainly going to present from time-to-time shortfalls in the budget and difficult choices over which policies and programmes to cut. Reductions in poverty and improvements in food security may well turn to be fleeting.

The gamble of the Big Push is accompanied by the darkening shadow of the resource curse. The record of other countries pursuing a similar approach is one of rare success and common failure.

The four actions Laos must take to avoid the resource curse are either not happening or happening far too slowly and on a scale inadequate to ward off the fast settling resource curse. For Laos, where resources – energy, mining and industrial crops – are accounting for ever larger shares of the economy and government revenues, it would seem that unless there are striking improvements in policy and administration, there is good reason to expect persistent and prepare for even worse food insecurity.

Laos is making a risky bargain, one which could well see environmental security gambled away for nothing, leaving a society still defined by the human insecurity of endemic poverty and widespread food insecurity, made worse because more people will be trying to share less forest food and fewer fish. The balance is tilting towards greater food insecurity. The food security paradox is set to tighten.

¹⁷⁵ Lawrence 2008 p22

The nature of intensifying global trends towards scarcity, uncertainty and upheaval pose increasing risks for Laos which is more exposed than before because of growing links and interactions with the wider world.

Uncertainty has not loomed so large for the world for many decades. The safety net provided by the age of abundance – a time when there was enough of most things to keep the developed world in comfort while leaving enough surpluses to help the poorest from time-to-time – of the 20th century, that net is now rather tatty and frayed. Production of many foods and other commodities is struggling to keep up with demand, rising fast from rapidly developing countries like China, Brazil, India and Indonesia on top of the excessively wasteful consumption of many developed countries. The breath taking rises in the prices of oil, commodities and food have brought disturbing trends in sharp focus, left a legacy of fear and a plethora of questions.

The road to 2020, and beyond, looks no less bumpy. Reviewing global trends uncovers additional threats to food security which may exacerbate the problems for food security in Laos generated by giving priority to the ‘Big Push’ over fundamental aspects of security – environment and food.

10.1 Oil, Farming, Food and Laos

High oil prices, whatever the cause, put food security under pressure, stressing food production from field to consumer. Transport costs rise for inputs like fertilizer as well as harvests. Prices for fertilizer tripled and transport costs double during 2006 to 2008. This places a heavy burden on small farmers calling into question their own food security as well as their ability to produce surpluses to feed people who cannot grow their own food.¹⁷⁶

There is also pressure from prices of natural gas which is a key catalyst in the production of synthetic nitrogen fertilizer. Demand for gas to fuel electricity-generating turbines is increasing competition with fertilizer manufacturers.¹⁷⁷ Nitrogen and fertilizer security are probably going to become more pressing issues, unless there is a substantial change in farming methods. Poor countries like Laos could be particularly vulnerable, although the reserves of potash might be used to trade away this insecurity. Farming is also demanding more energy, which will feed into oil prices, because more people want more meat which often means more energy-intensive factory farms.

¹⁷⁶ FAO 2008 (b) p10

¹⁷⁷ Roberts, Paul “The end of food” 2009 New York: First Mariner Books p214-215

People react by looking for alternatives to oil, creating a tussle over crops between energy and food. Some farmers gain, some lose. Bad weather or shipping troubles, say a strike over food prices, adds further strain. Sharp price shifts or see-saw prices can leave agriculture spinning. Unlike prices, farmers cannot change their ways and means overnight.

“...agricultural production needs time to adapt to price signals, because it requires new investments, the absorption of new technologies or the switch to higher-priced crops,” Olivier De Schutter, the Special Rapporteur on the Right to Food, told the United Nations in September 2008.¹⁷⁸

High oil prices can also alter patterns and terms of trade. Buyers have shown signs of seeking to overcome high shipping costs by turning to sources closer to home.¹⁷⁹ This suggests production of some crops in Laos could become more competitive as oil prices rise. However, it might also be the case that outside buyers outbid locals for food, even in the face of export controls. In effect Laos would be importing hunger.

In an era of uncertainty over oil, generating widespread concern that the risks lean towards greater volatility and rising prices in the decade ahead, it is advisable to reconsider food security. In this context, food such as from the forest or fish from rivers, which require less oil for production, could reduce vulnerability and support resilience. An expansion of traditional fertilizer production may also be helpful. Laos, unlike some countries, has natural advantages in these respects, albeit being eroded by the current conception of the ‘Big Push’.

10.2 Alternative Energy Questions Hydro-Power

High oil prices, doubts over oil supplies, along with deepening concerns about carbon¹⁸⁰ could heighten interest in developing hydro-electric dams in Laos. However, electricity generated by large dams faces growing competition from solar, biomass and biogas, which become increasingly competitive as oil prices rise, particularly above \$80 per barrel. Interest is rising in alternatives to hydro in the biggest customer for Laotian electricity exports: Thailand. In light of these dynamics and trends expectations for government revenues from hydro-power may fall short with implications for budgets tackling poverty and food insecurity.

¹⁷⁸ De Schutter, Olivier “Building resilience: a human rights framework for world food and nutrition security” 8 September 2008 New York: United Nations Human Rights Council p27

¹⁷⁹ Food Outlook “High prices and volatility in agricultural commodities” November 2007 Rome: Food and Agriculture Organization

¹⁸⁰ The switch to climate-friendly energy must begin before 2012 argues James McCarthy, president of the American Association for the Advancement of Science. BBC News “Obama ‘must act now’ on climate” 12 February 2009

Local electricity using alternative power generation is growing fast in Thailand partly because of policy promoting small power producers and very small power producers. Dozens of small power stations now use fuel derived by biomass or biogas processes from agricultural waste, which is abundant in Thailand. Thai utility Egco expects to finish feasibility studies of large solar power projects this year.¹⁸¹ In 2003 the Ministry of Energy estimated potential renewable energy resources at 14,000 megawatts compared to installed generating capacity in 2006 of 26,457 megawatts.¹⁸²

Generating power within Thailand using local resources is attractive because it keeps money in the economy creating work and income for Thais, especially poor farmers. Furthermore using local energy sources to generate electricity should alleviate demand for energy imports thereby improving energy security, a growing concern for energy-importing neighbours of Laos given the current uncertainties over oil reserves and production capacity.

These emerging trends in Thailand, as well as China and Vietnam, question the long-term market prospects for Laotian electricity exports. Regional power-generation dynamics may not appear of any consequence to food security, but they do pose risks, particularly regarding revenues which will be needed to tackle poverty in Laos and the construction of what might be unnecessary large dams – a technology which is starting to appear obsolete – and the significant costs they impose upon environmental security and food production.

10.3 Energy Options Heating Up By 2020?

The power shift emerging in Thailand is only the beginning of change in energy generation. Huge sums of public and private finance are being spent researching and developing clean, sustainable energy around the world. Energy research in Silicon Valley, for example, is at a similar point to computing in the 1970s. In short innovations in energy have never been more likely. Given the problems of oil and climate change they have never been more necessary.

At the root of the quest of new energy is a desire shared by households and governments for sustainable energy which is secure and independent of control by a few suppliers and risks of volatile prices. The customers for Laotian electricity exports – China, Thailand and Vietnam – are no different.

¹⁸¹ Praiwan 2009

¹⁸² Greacen, Chris & Bijoor, Sheila "Decentralized energy in Thailand: an emerging light" World Rivers Review Volume 22 June 2007 Berkeley: International Rivers p4

The trends, drivers and developments surrounding the quest for new energy raise doubts over the revenues Laos expects to earn from electricity exports. If revenues fall short budget cuts may be necessary forcing cut backs in programmes aiming to ease poverty and reduce food insecurity and offset any falls in domestic food production capacity caused by the Big Push.

Clearly there are firm prospects for electricity exports, not least because they offer a convenient solution for neighbouring countries facing domestic opposition to new power plants. Nevertheless exports cannot be taken for granted given concerns over energy security, growing competition from alternative energy, the inefficiency of long-distance electricity transmission, and advances being made in energy-generation research.

10.4 Competition Rising for Fertile Land

Until the 19th century humanity satisfied material needs using minerals dug from the soil, fibres like cotton, flax and hemp grown in the soil, or skins from animals grazing on the soil. During the early 20th century, the oil economy arose which through the alchemy of chemistry began producing plastics and synthetic fibres. This eased pressure on agro-materials releasing more land for growing crops to meet the needs of a rapidly growing population. In the early 21st century the population is still growing rapidly, oil appears close to peak production, and fertile land is being lost to urbanization, desertification and pollution.

Land is now under growing pressure from the confluence of four factors – food demand, fuel, rubber and bio plastics – which will squeeze food security.

10.4.1 Demand for food

By the end of the month there will be 6 million more mouths to feed in the world than there were at the beginning of the month. The same was true last month and will be next month. World population will continue to grow for at least a few more decades barring a catastrophe. Population growth is already outstripping rises in yields resulting in fewer staple grains per person. Globally, fewer and fewer people were going hungry until the late 1990s when hunger began to rise.¹⁸³

¹⁸³ Brown, Lester "Plan B 3.0: Mobilizing to Save Civilization" 2008 New York: W.W. Norton & Company, Earth Policy Institute chapter 2 citing United States Department of Agriculture, United Nations Population Division, Food and Agriculture Organization

Moreover, now that at least every other person is urban, the world's population growth is expected to be concentrated in cities.

Pressure on food production will come not only from more mouths, but also from the growing taste for grain-intensive meats that generally accompanies rising prosperity. Current trends informing forecasts are disconcerting:

- By 2030 five billion people will be urban.¹⁸⁴
- Then people could be eating 50 per cent more food than today because of rising affluence.¹⁸⁵
- In 1960 each person was fed by 1.45 hectares of cultivated land. In 2003 0.78 hectares.¹⁸⁶
- In the early years of this decade the world was harvesting 8.7 percent more wheat per hectare than the 1990s.
- In the 1970s wheat yields were 33.4 percent greater than the 1960s. Similar trends affect corn and rice.¹⁸⁷
- In 1984 there was 342 kilograms of grains per person. By 2006 there were 302 kilograms. This was offset by the soybean harvest which more than tripled between 1984 and 2007.
- In only one of the last eight years did farmers harvest more grains than people ate.¹⁸⁸
- By 2020 someone in the developing world will be eating almost half as much meat as someone in the developed world.¹⁸⁹
- A Chinese will by 2020 be eating as much meat as someone in the West.¹⁹⁰

The day may not be far off, if it has not passed already, when a shrinking minority will have to harvest enough food for themselves and also feed the rest of humanity which wants land for cities, industry and roads.

Higher food prices do not result generally in higher prices at the farm gate, except where land distribution is highly egalitarian such as Vietnam. Land distribution in Laos, due to the preference for issuing concessions to investors, is moving in the opposite direction to that of Vietnam.

¹⁸⁴ Ambler-Edwards, Susan "Food Futures: Rethinking UK Strategy" 2009 London: Royal Institute of International Affairs p11

¹⁸⁵ Evans, Alex "Rising Food Prices - Drivers and Implications for Development" April 2008 London: Royal Institute of International Affairs p1

¹⁸⁶ Ambler-Edwards 2009 p15 *citing* United Nations Environment Programme GEO Data Portal, US Census Bureau International Database

¹⁸⁷ Ambler-Edwards 2009 p15 *calculated* using data from United States Department of Agriculture

¹⁸⁸ Brown, Lester 2008 chapter 2

¹⁸⁹ Weis, Tony "The Global Food Economy – The Battle for the Future of Farming" 2007 London: Zed Books p18

¹⁹⁰ Weis 2007 p18

10.4.2 Natural rubber bounces back

The future of synthetic rubber does not look bright unless vast new oil fields are discovered. China, the world's largest user of rubber, took delivery of 1.3 million tonnes of rubber during the first six months of 2007, against 1.6 million tonnes for all of 2003. Yet China can barely tap 0.55 million tonnes from its rubber trees in Yunnan and Hainan provinces.¹⁹¹ In the long-term China's demand for rubber will grow because of industrialization, greater prosperity, and the popular dream of owning a car.

China's response includes financing research in Yunnan to engineer rubber trees comfortable with higher altitudes. Rubber at the usual elevations may also become more lucrative because Chinese scientists are trying to produce trees which mature faster and yield more latex.¹⁹²

Investment and migration from Yunnan, encouraged by China's demand for rubber and crops and supported by subsidies, have in just a few years radically altered the environment and economy in the northern Laotian province of Luang Nam Tha observe Sithong and Thounthone.:

*...we also believe that a scarcity of agricultural lands in southern Yunnan province is promoting Chinese farmers and small-scale entrepreneurs to cross the international border between China and Lao PDR in order to invest in rubber and other cash crops.*¹⁹³

10.4.3 Agro fuels

Many governments and investors see fuels derived from plants as a route to easing dependence on volatile imported oil. Fossil fuel demand will double over the next three decades if the world economy grows 2 per cent annually. Concerns about climate change and energy security will support interest in fuels derived from plants. Feedstock prices of mid-2008 justify investment in agro fuels when oil is at \$70-80 barrel.¹⁹⁴ Agro fuels, forecasts the World Bank, will account for 5 per cent of global transport energy by 2020 up from 1 per cent in 2008.¹⁹⁵ In simple terms globally the land devoted to fuel crops will have to increase five-fold. Current oil prices may provide a respite for agriculture from the pressures to grow fuel crops.

¹⁹¹ Shi 2008 p18

¹⁹² Qiu 2009 p246

¹⁹³ Sithong & Thounthone 2006 p107

¹⁹⁴ Roberts 2008 slide 18

¹⁹⁵ WWF Greater Mekong Programme "Agriculture Driver Study – presentation to the MRC BDP workshop" 12 March 2008

The ramifications for food production could be even greater than those seen during the acceleration of oil and food prices between 2005 and 2008. The rush for agro fuels accounted for 70-75 per cent of the increase in food prices, the remainder was due to rising oil and fertilizer prices as well as the weak dollar.¹⁹⁶ Energy prices lead agricultural prices because the energy market is substantially larger than the agriculture market.¹⁹⁷

A replay of this situation cannot be discounted in the face of rising demand for liquid fuels distilled from plants. Increasing production will require more land. If prices for agro fuel crops are higher than food farmers are likely to switch. Higher food prices and greater food insecurity are likely outcomes as was partly demonstrated by the rapid rise in food prices between 2006 and 2008. This will only compound the weaknesses and growing risks facing food production according to De Schutter:

*The expansion of monoculture plantations of soy, oil palm, jatropha, sugar cane, maize, cassava and other fuel crops, may also have detrimental impacts on biodiversity and an impact of diets, since in the regions affected the variety of local foods available may be reduced. In addition, it will increase the competition for scarce water between current land users and bioenergy crop production, and aggravate water scarcity problems.*¹⁹⁸

Disrupting food production to grow fuel may be short-sighted. Current first-generation agro fuels cannot meet global demand and do not produce an overwhelming case when analyzed across the life-cycle. Technical innovations may improve energy and water efficiency during cultivation and processing.¹⁹⁹ Greater hopes lie with algae grown in factories. Optimists foresee commercial production after 2020, however the technology remains unproven at scale.

Wood is also an emerging source of agro fuel. Pilot projects are testing timber as a source for cellulose for agro fuels. Meanwhile Asia's wood deficit is already expected to result in rising prices until at least 2020.²⁰⁰ If wood proves a viable and competitive source of cellulose for liquid energy then it seems certain to add to the pressures on timber prices in Asia.

¹⁹⁶ De Schutter 2008 p38 citing Michael, Donald "A note on rising food prices" July 2008 Washington, DC: The World Bank pp16-17; Ewing & Msangi 2008 p5

¹⁹⁷ Ewing, Mandy & Msangi, Siwa "Biofuels production in developing countries: assessing tradeoffs in welfare and food security" (draft) 2008 Environmental Science and Policy p4

¹⁹⁸ De Schutter 2008 p41

¹⁹⁹ Escobar, Jose, et al "Biofuels: Environment, technology and food security" 2008 Renewable and Sustainable Energy Reviews

²⁰⁰ Roberts, Don "Exploring the Future: Energy and the Convergence of the Markets for Fuel, Food & Fibre" (presentation) November 2008 Toronto: CIBC World Markets

Higher prices will increase demand for land for feedstock timber that may only be met through more concessions and plantations. There is a prospect of a replay of the consequences of plantations for pulp on livelihoods and food security which were described in section 5.1 which well illustrates the intersection of global trends in Laos.

10.4.4 Starch and bio plastics

Rising oil prices, ebbing oil stocks, and concerns about pollution are stoking interest in plastics made from starch derived from plants, of which cassava is a primary source. Furthermore, using finite oil to produce plastics, especially for disposable products, which can be made using infinite materials, like plant starch, is hard to justify. Bio plastics made from plant starch can be broken down by natural environmental processes in less than year under good conditions.

Plastics manufacturers are investing in production in among others America, China, Netherlands, Taiwan and Thailand. Coincidentally, Zhongxing Telecommunications Equipment, one of China's leading manufacturers, is seeking 50,000-100,000 hectares to grow tapioca in southern Laos.²⁰¹ High oil prices will encourage interest in paper alternatives to plastics, stoking demand for pulp.

10.5 Food, Fibre, Fuel, and Starch Markets Merging

The markets for food, fibre (wood), and fuel are merging²⁰² because of the competition between energy, materials and food for materials grown in the soil as explained in section 8.4. Oil is the primary driver. "The price of oil is expected to become a support price for cereals, oilseeds and lower-quality wood," forecasts economist Don Roberts.²⁰³

Bio plastics demand for starch may influence the convergence of food, fuel, and fibre causing greater demand and pressures for shifts in land use putting food production at risk. "We think some of the best forest land will be under pressure for conversion to either food or bio-energy crops – especially in the tropics. Expect greater land-use conflicts in many regions due to rising demand relative to potential supply."²⁰⁴

²⁰¹ Vientiane Times "Champassak gears up for cassava plantation" 14 October 2008 and VNA

²⁰² Roberts, Don 2008 slide 19

²⁰³ Roberts, Don 2008 slide 25

²⁰⁴ Roberts, Don 2008 slide 27

The need for land will pose problems for food production and food security in countries where laws are poor, rights are weak, and governance inadequate. The precedents are there in Laos and elsewhere for food crops being rooted out to make way for rubber, pulp and fuel, and quite possibly starch for plastics in the years to 2020. Moreover, the damage to food security and the costs to farming households and society could well outweigh the benefits of producing agro fuels which may be rendered obsolete if it proves feasible to derive liquid fuels from algae grown in factories.

Laos faces a struggle between the economic opportunities and incentives of growing agro fuels and fibres and the necessity of protecting and improving food security. Experience so far with dams, mines and plantations suggests food security will suffer.

10.6 Will the Well Run Dry?

Growing more industrial materials will raise demand for water with implications for the environment and food production. Trans-national irrigation may expand causing disruption to ecological flows and disputes over water rights that risks depressing food production in Laos.

During 2008 Thailand again made proposals for importing water, possibly via tunnel under the Mekong, from Laos to its north-eastern region to irrigate agriculture and support expansion of rubber plantations. Diverting water on this scale will exacerbate changes taking place in Mekong river basin because of large dams. How this would affect irrigation options for Laos as well as fisheries is unclear. The impacts may pile up downstream in Cambodia and Vietnam with implications for regional food security. *"The ensuing spatial politics over water are likely to grow more intense..."*²⁰⁵

Laos may also feel the ripples from falling water tables and dry wells reducing harvests in arid parts of India and China. In northern China farmers cropped 123 million tonnes of wheat in 1997. A decade later they could barely manage 100 million tonnes.²⁰⁶ To offset falling yields amid an intensifying drought, more fields in the northeast are being put into production.²⁰⁷ Reforestation is also being suspended to free land for crops.²⁰⁸

²⁰⁵ Lebel 2005 p6

²⁰⁶ Brown, Lester 2008 chapter 2

²⁰⁷ 张艳玲 (Zhang, Yanling) "北方干旱对粮食产量影响有限" (Arid north will have limited impact on food production) 18 August 2009 Beijing: Caijing

²⁰⁸ China Daily "Arable land fears halt reforestation drive" 23 June 2009

More and more grains (and other foodstuffs) are needed however, because more Chinese are eating more meat. Meat production is targeted to double by 2020. Each unit of meat requires 17 units of thirsty grains and in the case of pork 132 litres of water per day per pig.²⁰⁹ More grain imports will be reflected in world prices, especially during lean harvests. The knock-on effect as people seek cheaper substitutes for wheat could push up prices of rice and corn drawing those staples out of Laos into the Chinese market.

Construction of canals and tunnels to bring water from water-rich southern China to the dry north indicate a deteriorating situation which threatens a crisis. This appears to be the only hope for breaking a spiral of decline, which will continue to stress food production and food security in China and beyond for a decade or more while the irrigation project is under construction.

Yet moving water, whether from Laos to Thailand, or southern to northern China, requires lots of energy for pumping. At what energy price will it become too costly to ship water as liquid or in the form of grains around the world?²¹⁰ It is another factor in the energy equation affecting oil prices with ramifications for farming and food production and distribution.

Water mismanagement across Asia, particularly in irrigation, needs urgent attention. There is little land left that could benefit from irrigation. Water use requires reform to cut waste and dramatically lift productivity, which will require large investments in irrigation and better methods if many Asian countries are to avoid depending upon world markets for more than a quarter of the grains needed to feed growing populations.²¹¹

10.7 Disease and Blight

Disease is another growing threat, particularly for livestock weakened by thirst because of water shortages. *“The FAO warns that animal diseases are ‘advancing globally’ as a result of the changing climate and factors including increased transportation and urbanization, with the potential to cause more frequent supply interruptions.”*²¹²

²⁰⁹ Weis 2007 p33, 41, 106

²¹⁰ Roberts 2009 p315

²¹¹ International Water Management Institute “Revitalizing Asia’s Irrigation: To Sustainably meet Tomorrow’s Food Needs” 2009 Colombo

²¹² Ambler-Edwards 2009 p18 citing Food and Agriculture Organization Food Outlook November 2007

The avian influenza epidemic caused heavy losses as well as the deaths of farmers around Asia. Efforts in Laos to contain outbreaks and prevent transmission across borders have to a significant degree depended upon emergency foreign aid, some of which came from China.

Laos, unlike Burma and Vietnam, was fortunate not to see pigs decimated by what appears to be an unusually virulent strain of ‘blue ear’ which has gripped China since at least 2006 when pork prices soared 85 per cent.²¹³ At least a million pigs were killed by the disease in 2007 causing further pork shortages in 2008. Outbreaks in 2009 are apparently being contained by widespread vaccination.²¹⁴ Like avian influenza, this strain of ‘blue ear’ is thought to have originated in China’s Guangdong province, not so far from Laos.²¹⁵

Plants in Laos also face assault by diseases and pests. Coconuts, which make an important contribution to nutrition and livelihoods in some locations, are under threat because of an infestation of leaf beetles, which arrived from Vietnam.²¹⁶

10.8 Peak Fish

Farmers are not alone in facing hard times. Fish catches, partly because of poor international management to conserve stocks, have reached a plateau. Fish stocks in some areas have collapsed provoking fishing bans. Growing demand and expanding fleets suggest catches are more likely to fall than rise. Catches have been stable since the 1980s at 90 million tonnes per year yet another 40 million tonnes will be needed by 2030 according to the FAO. Fish are forecast to migrate to cooler polar waters away from temperate and tropical seas because of climate change leading to a sharp drop in catches for fishermen in the tropics.²¹⁷

Rising prices for saltwater fish caused by static catches present an opportunity for freshwater substitutes. Expanding aquaculture faces constraints of water, energy and capital.²¹⁸ Fish feed is affected by tight energy and grain supplies. Aquaculture can also take a heavy toll on the environment, the prime example being shrimp ponds raising questions over sustainability and wider system impacts for food production and food security.

²¹³ Barboza, David “Virus spreading alarm and pig disease in China” 16 August 2007 The New York Times

²¹⁴ Reuters “China official fired over blue ear disease outbreak” 11 February 2009

²¹⁵ Eunjung Cha, Ariana “Pig disease in China worries the world” 16 September 2007 The Washington Post

²¹⁶ Pongkhao, Somsack “FAO expresses concern over coconut leaf beetle” 25 February 2009 Vientiane Times p3

²¹⁷ Morgan, James “Bleak forecast on fishery stocks” 13 February 2009 BBC News

²¹⁸ Evans 2008 p3 *citing* The FAO’s State of World Aquaculture 2006

Laos still seems relatively rich in freshwater fish. There are however two intertwined challenges that could quickly reduce catches, if they are not already having effects. The apparent challenge is large dams, as discussed in section 7.5, are effectively incompatible with abundant and diverse fisheries concluded experts appointed by the Mekong River Commission. Reservoir fisheries are a poor substitute for the complex natural fisheries of rivers. It is either fish or dams. So far the evidence suggests Laos is choosing dams without adequate consideration for the consequences for fisheries, food security, livelihoods and possibly exports.

The unapparent challenge is a combination of soaring demand and inadequate management leading to unsustainable fishing, leading to a collapse in stocks. River fisheries depressed or destroyed by dams will intensify demands on other rivers and reservoirs. Even without the effects of dams, the rising population and indications of rising regional demand will generate demand fisher folk and traders will seek to satisfy.

The parallel is forest foods. They are being harvested faster than nature can replenish because demand is rising from Laotians, who are losing other food sources to dams, mines and industrial crops. Forest food harvesting is uncontrolled and little is being done to nurture natural production or farm these products in the dwindling forests. Could fish in Laos go the same way with huge implications for food security given how much protein Laotians get from fish?



10.9 Scarce Food

Food supplies are not what they were, threatening food security worldwide. Stocks are low and the balance between supply and demand delicate. In some quarters production concerns raise doubts about the OECD/FAO forecast for fairly stable prices food in the years to 2017.²¹⁹

“Scarcity issues suggest that the current signs of relief on food prices may be no more than a temporary lull before they resume their upward trend,” argues Evans.²²⁰

Hopes for increasing yields may also be misplaced because there exists as yet no proven method to make such dreams a reality, not only in the face of crops already close to the limits of biology but also issues of soil quality and the costs, impacts and supply of fertilizers.²²¹ The overall position appears to be worse thinks Khan:

Water and soil resources are being unsustainably used and depleted; yields of food crops are stagnating or even declining in some major food producing areas; agricultural or total factor productivity growth is falling in many systems; and agrochemical use and fossil energy inputs are rising with consequent impacts on the ecosystem and humans.²²²

This situation may be offset, partially, if land currently idle is used to grow food.²²³ However, if the trends responsible for flagging production are not dealt with then additional land will only buy time, it will not solve the underlying problems which threaten food security.

Experts considering a range of scenarios for the future of food production thought it unlikely that the food market stress experienced in recent years was just a blip. More likely the world has entered a period of flux and stress manifesting by supply disruptions, high prices and inflation because the global population continues to grow, demand is increasing in major developing countries and supply has not grown fast enough to keep pace with rising demand.²²⁴

²¹⁹ Evans 2009 p11

²²⁰ Evans 2009 p32

²²¹ Roberts 2009 p213-216

²²² Khan, Shabaz et al “Footprints of water and energy inputs in food production – Global perspectives” 2008 Food Policy

²²³ Ambler-Edwards 2009 p15 citing FAO/IIASA “Mapping the biophysical factors” 2007

²²⁴ Chatham House Food Supply Project “Thinking About the Future of Food – The Chatham House Food Supply Scenarios” May 2008 London: Royal Institute of International Affairs

"You will not see over the next years commodity prices return to previous levels of even two or three years ago," said Luis Cantarell, former head of Europe for Nestlé. "There has been a fundamental shift."²²⁵ John Beddington, the British prime minister's chief scientific adviser, concurred: "I think we are going to have to expect to have — throughout the world and not just in the UK — higher food prices."²²⁶

This suggests global food production is finely balanced, with just small moves having disproportionate effects on prices – and vulnerability to food security. Such situations are attractive to speculators. Peter Timmer argues speculators bets fuelled soaring global food prices in 2007 and 2008 and that they could return.²²⁷ For Laos it may be prudent to expect higher and more volatile prices, along with disruptions of food – and inputs – supplies when planning to defend and strengthen food security.

In general, although there may be some exceptions, higher food prices hurt the poor.²²⁸ They are a significant threat to the food security of Laos because more people are obtaining their food from the market, which in turn is sucking in more imports to fill the markets and supermarkets of Vientiane with processed foods. Indeed the consequences of the Big Push will leave little choice but to turn to more imports increasing society's exposure to the vagaries facing global food production and prices. Faced with high prices it is natural that people may expect to return to domestic substitutes. But will they be available with so much land, forests and rivers being lost to the Big Push? High regional or global prices may also suck food out of local markets no matter what barriers are erected by the government. Once locked-out, Laos is now linked-in to global food markets, a reality that does not appear to figure in planning for agriculture, food and the Big Push.

²²⁵ Ashton, James & Forston, Danny "High cost of weekly shop to last a decade, warn producers" 7 September 2008 The Daily Telegraph (London)

²²⁶ Ashton & Forston 2008

²²⁷ IRIN "In Brief: Financial speculators and the food crisis" 8 February 2009; De Schutter 2008 p28

²²⁸ FAO 2008 (b) p26

10.10 Conclusion

The world stands at the beginning of an age of scarcity, which will be marked by sharp fluctuations in availability and prices of energy, food and some, perhaps many, commodities. Macro-trends, like scarce energy or food, in the world will reverberate as painful micro-shocks for Laos.

Energy, land and food are under pressure like never before. Supply faces great uncertainty. Risks appear to be rising across the board. The prospects for lightning to strike in more than one place simultaneously are higher than any time in recent history. The fallout could hit food security directly or indirectly in Laos because of growing links to the world and the demands of China's economy.

Despite global recession and weak recovery underlying trends of scarcity remain intact. There are however opportunities. Ingenuity and innovation are if anything becoming more abundant. Yet moving technologies and innovations from the lab into the world at affordable prices is still a long and time-consuming process. It is therefore prudent not to bank on a rescue from technology but prepare, plan and adjust to protect food security in an age of scarcity lasting until at least 2020, perhaps much longer.



Food security in Laos is more than just a problem of a shortage of food. It is a symptom and consequence of government struggling to deal with a multitude of issues of a complexity beyond its capacity. It is bad luck that this situation arises as the world witnesses the age of abundance giving way to the age of scarcity. Food security does not end at hunger and malnutrition. Its impacts are broader, undermining society, holding back development. People who do not have enough of the right food to eat cannot think or work as well as they might. They are at risk from disease and disaster.

A holistic analysis of food security is undertaken using four frameworks and an examination of policies. The four complementary frameworks are:

- Sustainable Food Security – derived from Sustainable Livelihoods by the author for the purposes of this working paper and described in Appendix One.
- Food Livelihood System - derived from the Rural Livelihood System by the author for the purposes of this working paper and described in detail in Appendix One.
- Sustainable security – under development by the Oxford Research Group
- Comprehensive National Power – developed by Chinese security specialists.

11.1 Sustainable Food Security

Sustainable food security,²²⁹ an experimental approach, examines the political environment, assets and opportunities which intermesh people and their food. The political environment is squeezing livelihoods oriented towards producing food from the natural ecology by pursuing the Big Push at the expense of opportunities to enhance food production. Policy appears to over-emphasize the Big Push because institutions are not giving enough weight to the intricate relationship between the environment and food security. The sum of this analysis and the interplay of the factors in focus, which are explained in detail in Appendix One, indicate that the current human environment is not generating enough opportunities for significant improvements in assets that would bring about a rapid and sustained improvement in food security and a reduction in food insecurity.

²²⁹ Sustainable food security has been derived from Sustainable Livelihoods for the purpose of this study.

11.2 Food Livelihood System

Food security can also be examined as an outcome of a livelihood system.²³⁰ This experimental lens, which is explained in detail in Appendix One, brings into focus how the Big Push is not only putting food security at greater risk but is taking a toll on the mental, physical and spiritual well-being on people and communities producing food. Damage or destruction of food production corrodes the ties that bind households and weave together communities that aid society in dealing with challenges such as food security.

11.3 Sustainable Security

A state of security that is robust and sustainable requires focusing attention and resources on curing the causes of insecurity rather than trying to control the symptoms.²³¹ National security of Laos is threatened because a key pillar, food security, is under siege. The underlying cause of the growing threat to food security and prospects for worsening food insecurity in Laos is rising demand and intensifying competition for energy and land from a rising global population, and poor management and inadequate investment in protecting natural resources.

Competition for energy feeds into competition for land through *first*, forcing countries to diversify energy sources raising interest in large dams for generating electricity, *second*, the emerging nexus of fuel, food, fibre and starch, and *third*, the emerging shift away from oil-based materials to those which may be grown or processed from trees, hemp, flax and starch, such as paper, fabrics and bio plastics. The effects of climate change threaten to intensify this dynamic.

Achieving sustainable security will not be possible without a careful review and reordering of the development paradigm and priorities in Laos. Food production must be given equal, if not greater weight, than exports of electricity, minerals and industrial crops like fibre, sugar, starch and rubber. Priority weightings for each of these products will also need to change reflecting the trade-offs of environmental and ecological change against potential revenue for the state plus jobs.

Given the fraught outlooks for energy and food, a development paradigm placing food security first would require a precautionary approach to large industrial projects.

²³⁰ Food livelihood system has been derived from Rural Livelihood Systems for the purpose of this study.

²³¹ Sustainable security is a cooperative approach to tackling the causes of insecurity which is being developed by the Oxford Research Group

Such an approach may make allowance for some mining because of its concentrated nature and finite and therefore highly valuable product. Industrial cropping would be a component under a sustainable inter/poly-cropping system designed to support and even strengthen ecological diversity and environmental resilience. Large dams would be limited to just a few sites – primarily producing power for Laotians and perhaps some for export – given their far-reaching environmental and ecological impacts, questionable future in light of advances in alternative energy, and the growing preference for energy security and independence through local power generation. Sustainable security for Laos is without such an approach in doubt.

11.4 Comprehensive National Power

A society's security and power can be measured narrowly by counting its weapons and troops. China considers a broader perspective assessing among other things politics, diplomacy, economy, resources, military, science and technology, history, education, and willpower factors to calculate a country's comprehensive national power.²³²

China's broad view of security is informed by observations that domestic and international concerns, especially non-traditional threats such as environmental degradation and disease, are increasingly influencing and interacting with each other. The threat to food security posed by global demand for energy, commodities and food intruding upon Laos is a complex example. It is the sphere of non-traditional security matters where China's security perspectives brush close, if not intersect, with sustainable security. General Xiong Guangkai, a leading strategist, concludes non-traditional threats to security can only be tackled successfully by cooperation between states.²³³

From this perspective poverty and food security are significant non-traditional, or non-military, security issues threatening Laos. If anything the situation will worsen because the Big Push for dams, mining and industrial crops is having significant consequences, which appear likely to expand in the years to 2020, for the environment and ecology undermining the capacity to produce sufficient food to guarantee the number of people suffering food insecurity will not increase. Poor farmers, for example, saw their food security weaken after rubber replaced forests in which they foraged for food and took over lands where they grazed their livestock.²³⁴

²³² For a discussion of Comprehensive National Power see Craig, Susan "China's perception of traditional and non-traditional security threats" March 2007 Carlisle, Pennsylvania: US Army Strategic Studies Institute p12-23

²³³ Craig 2007 p102

²³⁴ Fujita 2007 pii

Ironically, the Big Push is being pursued, at least partly, because it may generate substantial revenues to finance policies and programmes to eliminate poverty and food insecurity. There are many reasons, as indicated in the reviews of the domestic and international situations, which suggest the comprehensive national power of Laos is very weak and which cast doubt on the Big Push generating significant reductions in poverty or food insecurity. As likely, if not more so, is that come 2020 the number of people living in poverty and suffering food insecurity will be little changed from today, indeed it may even be worse.

11.5 Food Security and Non Traditional Security

Viewed from these holistic perspectives, food security concerns and related issues in Laos may be harbingers of bigger problems.

“There is now a well established link between the exploitation of abundant resources and the propensity for civil strife, indicating that resource exploitation can be linked to both environmental degradation and human insecurity.”²³⁵

Food production is a barometer of the health and vigour of the ecology's systems and services. When harvests become harder to sustain or begin to decline alarm bells should ring. Just as a dead canary warned coalminers of a build-up in odourless suffocating gas, flagging harvests may be a warning that the ecology has reached its limit and may be crumbling. In some situations technology, such as the green revolution, can offset unsustainable depletion of the resources of the ecosystem or use those resources and qualities more efficiently. In others, without a fundamental change there is a risk of matters taking a turn for the worse with stark consequences for food security

The struggle for food security should not only be a concern of the Laotian government and its development partners, but also the governments of neighbours, particularly China, Thailand and Vietnam. Weakness in Laos leaves the country at risk of generating non-traditional security threats that do not respect borders, particularly hunger, poverty and disease. Laos is a weak link in a region facing growing stress.

²³⁵ Simpson, Adam “The environment - Energy security nexus: critical analysis of an energy 'love triangle' in Southeast Asia” April 2007 Third World Quarterly volume 28 number 3 citing Auty, RM “Natural resources and strife: a two-stage process” in Le Billon (ed) “The Geopolitics of Resource Wars” 2005 London: Frank Cass; Ross, ML “Resources and rebellion in Aceh, Indonesia” in “The Economics of Political Violence” 2003 Washington, DC: World Bank/Yale University.

11.6 Policy Perspectives

- **National Nutrition Policy** – this policy places poor nutrition at the top of the agenda across the government. Food security will improve if efforts addressing chronic malnutrition results in sustainable improvements delivering access to sufficient nutrition for children to properly grow and develop and for adults to live life to the full. Bringing about full and secure nutrition will assist Laotians in achieving their potential and bolster their resilience in the face of challenges thereby improving national sustainable security and enhancing national comprehensive strength.

However success will face great difficulties in the face of prevailing perceptions, paradigms and policies that generate a self-reinforcing and confirming dynamic in favour of the Big Push. The policy will struggle unless food production and the integrity of the environment receive greater recognition for their value in contributing to national security. Aggressive and persistent support from the highest levels will be crucial if the policy is to eliminate nutritional food insecurity.

- **Land Policy** – suggestion of a reconsideration of policies regarding land use could play a critical role in reducing chronic and acute nutritional and calorific food insecurity. The rapid advance of industries using land to produce industrial commodities and energy is the greatest and growing threat to individual and national food security, one that poses a threat to sustainable national security and comprehensive national strength. Land policy recognizing and protecting the environment and ecological systems to support food production would go a long way to addressing food security. However any review or revision of policy will encounter the same challenges and require a similar level of support as the National Nutrition Policy.

- **Rice Reserve** – plans for establishing rice reserves in Vientiane and later other provinces may offer some alleviation when acute food insecurity follows after disaster or poor harvests. Careful administration will be essential to ensure rice reserves do not fall prey to corruption, pests or rot. That reserves have not been established until now indicates the low priority of this matter and signals that the forces shaping food insecurity will remain a feature of livelihoods for the foreseeable future. At best the reserves may alleviate episodes of acute food insecurity. They will however absorb resources that would otherwise be better spent on removing the causes of food insecurity, such as tackling capacity questions by investing in irrigation and forest rehabilitation.

• **Policy Prospects** – Recent policy proposals and developments are encouraging. They suggest fears and concerns about food security are moving from rhetoric to action. If more policies follow to support and strengthen the momentum informed by recognition of the value and role of food security for national security then the prospects for eliminating food insecurity will rise. This will require a broad, strategic framework – absent so far and perhaps beyond the capacity of the administration. The challenges and the current piecemeal approach present significant obstacles. It is therefore hard to avoid the conclusion that the prospects are slim for a significant reduction or elimination of food insecurity and the parallel development of sustainable food security.



This assessment of the underlying nature of food security in Laos is informed by the foregoing analysis and hints at opportunities for alternatives for development while supporting, if not, improving food security.

Food insecurity in Laos is a complex problem at the interaction between the condition of the natural environment and human activity from household habits and livelihoods to the state's paradigms and policies. This interaction is intersected by global trends and demands for energy, commodities and food. These trends and demands embody the reductionist perspectives of prevailing global market paradigms that do not internalize and honestly price aspects of human activities such as pollution and consumption of non-renewable resources.²³⁶

12.1 Structural Shifts

The Laotian state is enclosing rights of control over the environment and resources traditionally thought of as commons to garner revenues by auctioning licenses for physical enclosure to investors building dams, mines or plantations. The links between such development and an expansion of prosperity however are unproven and fuzzy. They depend to a significant degree on sustained revenues accruing to the state without falling prey to the rent-seeking, which has characterized and been well-documented in many developing countries comparable to Laos.

There are few signs in Laos that there will be a significant reduction in poverty and its associated food insecurity. There are however indications of a transition from 'old poverty' (consequent of a mix of factors such as farming marginal land with poor methods, remoteness, limited markets and high transaction costs) to 'new poverty' (inadequate skills and knowledge to compete effectively in labour markets, limited labour opportunities, wages vulnerable to food price inflation, dependence upon markets for food).

The consequences of the Big Push are undermining food harvests at a time when food production globally faces growing challenges accompanied by rising risks of supply troubles and higher prices. Food security in Laos therefore faces a double peril: adverse domestic and international circumstances multiplied by the new and expanding visible and hidden links between them.

²³⁶ McGlade, Jacqueline "Deeper crisis of ecosystem losses" Financial Times 12 March 2009 *Letter*. McGlade is executive director, European Environment Agency

Linked Laos is exporting resources in exchange for money and externalized costs such as environmental degradation, land conflicts and food insecurity. Labour leaving China and Vietnam for work in Laos may help ease their unemployment problems but risks generating additional competition for limited food supplies in Laos, particularly at prices affordable by the majority who are poor and vulnerable, including those stricken by poverty. Laotians heading to jobs in Thailand may offset to some uncertain degree the burden of the Chinese and Vietnamese migrants.

12.2 Repressed Food Production

A limited supply of land in Laos for growing staple field crops, such as rice, amid steep and delicate mountain ecologies may hint against any prospect of enough food being produced locally to ensure adequate and nutritious food at affordable prices for everybody in Laos. On the other hand, diversity of the ecology and the bounty available from the forests and rivers is evidence the country is endowed with not insubstantial food resources. For example, estimates for annual river fish catch in Laos range between 168,000 and 183,000 tonnes²³⁷ which at first sale are worth \$318 million to \$346 million.²³⁸ Such numbers are only a part of the picture. They are multiplied by the economic value generated by fisher folk, crews, suppliers, traders, processors, boats, nets, and so on for households and communities. A similar picture may be painted for forest foods and other produce. Laos clearly has prospects for developing sustainable harvesting of forests foods and other products²³⁹ that should be explored as the foundation for food security and value-adding community industry for exports.

Were a concerted and comprehensive effort made to protect, enhance and nurture the fields, forests and rivers for sustainable food production through a mix of research and improved methods, traditional and modern, there may well be enough food for the people of Laos and possibly surpluses, particularly of high-value forest foods and other products, for export.

However, the full potential of the environment to provide a sustainable harvest of food is being reduced by the Big Push development paradigm for which Laos appears wholly unprepared. Changes wrought to the environment, food production and the economy by the Big Push do not show significant tangible promise of eliminating poverty.

²³⁷ Barlow 2008 p18 *citing* Van Zalinge et al 2004 and Hortle 2007

²³⁸ These figures are calculated using the first sale value of \$1,893 per tonne for migratory fish catches in the lower Mekong basin provided by Barlow 2008 p17 *citing* Hortle 2007

²³⁹ Foppes & Ketphanh 2000 p15 *in* Rigg 2006 p130

12.3 Consequences

The fragile food security situation in Laos and the substantial hurdles to a significant improvement is on balance likely to remain a 'slow-burn' crisis. The dispersed population, tight restrictions on firearms and limited civil society suggest large riots and strong revolts challenging the stability and authority of the state are unlikely. The crisis is likely to remain '*in situ*', concentrated among households remote from participation in the cash economy because of location, education, skills, language or other social factors. However in the event of sustained global food inflation the picture may change bringing visible distress to the provincial capitals and Vientiane.

Incomes for farmers and governments alike can fall sharply when from time-to-time global prices collapse, such as since the middle of 2008, posing risks if adequate nutritious food proves unaffordable. If too many livelihoods and too much of the economy depend on cash crops or cyclical commodities then chances appear to rise for problematic situations reducing food security. Furthermore the transition in Laos from subsistence farming to cash crops, like rubber and cassava, could affect the stability of livelihoods and society. Cash crops like sugar and coffee have historically been associated with wide price fluctuations, hardship, demands for land reform, revolt and civil conflict from central America to central Africa for a century.²⁴⁰

An unlikely prospect for Laos, yet the strains of the Big Push in Laos are apparently already reaching breaking point. A poor man was killed for stealing rubber seedlings from a prosperous family in Muang Sing.²⁴¹ Farmers have stopped Vietnamese from bulldozing their lands at gunpoint.²⁴² Conflicts could emerge between resettled and host communities if the Nam Ngum resettlement plans are not brought up to scratch (if that is even possible).²⁴³ Indeed the risks of conflict appear to rise sharply where minerals come to play a disproportionate role in the economy.²⁴⁴

12.4 Response

Alarm over food security has resulted in the matter rising up the agenda of the government and development agencies in Laos. The National Nutrition Policy is a promising step in the right direction. But it is only the first step on the long and steep road ahead. Many more steps must be taken to move food security from the sideline to the forefront of national policy.

²⁴⁰ Messer, Ellen & Cohen, Marc "FCND Discussion Paper 206 - Conflict, Food Insecurity, and Globalization" 2006 Washington, D.C.: International Food Policy Research Institute p22, 26, 27

²⁴¹ Sithong & Thounthone 2006 p117

²⁴² Baird 2009 p32

²⁴³ Vattenfall 2008 p5, 17

²⁴⁴ Pegg 2006 p378 citing de Soysa 2001 and Collier 2000 World Bank

Only in that context will the full potential for producing food in Laos be known. Industrial development may then follow in a way that does not unduly reduce the opportunities for producing food while generating revenues for the state and wages for people. This will help overcome any shortcomings in production to deliver strong and sustainable food security providing a solid foundation for the development of a strong society contributing to robust sustainable and comprehensive national security.

Food insecurity in Laos is primarily a man-made problem borne of development paradigms and policies informed by reductionist ideas and approaches handed down from the age of plenty when hunger globally appeared to be in decline. Risks to the ecology underpinning food production are rising meanwhile vulnerability is not falling and may well be creeping higher. The persistence of food insecurity for so many people and the hovering threat for many more suggest a structural element to the cause relating to the perceptions, paradigms and policies shaping development in a way that undervalues smallholder agriculture while overvaluing Big Push projects.

The situation poses a fundamental threat to the national security of Laos and the integrity of society because food is the most basic human requirement. A hungry society is not a strong or resilient society and is certainly not one in a position to make progress in its well-being. It is in essence a weak society, more vulnerable to trouble than it might otherwise be. However the problem of food insecurity in Laos is also an opportunity because there are significant resources for sustainably producing food to ensure every Laotian has sufficient calories and nutrients. The only requirements are will and imagination to craft policy to unlock this potential.



Food security in Laos is a complex economic, political and social phenomenon subject to domestic and international influences manifesting as complementary and contradictory dynamics and trends. Predicting exact impacts and outcomes is of course difficult. However, they may be explored by constructing scenarios of possible futures highlighting risks and opportunities, costs and benefits of different policy paradigms and choices.

13.1 Robust Food Security

Against a background of growing international concern about environmental degradation, climate change, food production and deepening worries in neighbouring capitals, the government of Laos reconsiders the country's development trajectory taking counsel from think tanks and research centres concerned with environment, sustainability, development and security. A new direction is embodied in the five-year plan for 2011-2015 aiming to put the country on a long-term path to sustainable security and development, focusing on enduring assets and sources of livelihood, stability, industry and wealth. Sustainability and transition issues, from an industrial perspective, rise up the government's agenda. The government takes inspiration, but does not imitate, the path of developmental states like Singapore, South Korea, Taiwan and the United Arab Emirates.



A guiding principle is securing adequate domestic production of foodstuffs to either satisfy domestic demand or trade for foodstuffs which are difficult to produce in Laos. Emphasis is placed on working with, not exploiting, the natural environment and ecology. Minerals and mining are understood as a transient industry, one which can generate capital to invest in enduring assets and industries, such as agriculture, by financing research, in cooperation with overseas experts, into agricultural production, environmental products and services. School and university education also benefits from rising budgets financed by mining revenues.

Food production is given priority for using land. Industrial crops focus on bamboo, rubber and jatropha grown not in plantations but as integrated facets of holistic, small-holder farming to diversify incomes and increase agricultural resilience. As a result, at a micro-level there are few plantations (primary exception being vast natural bamboo forests). At the macro-level however land use appears intensive because farmers are strongly assisted, encouraged and incentivized not to leave land idle. Revenue from mining is invested in farmer education and training, extensive irrigation, credit, processing and marketing. Active farmer cooperatives emerge to source inputs, manage irrigation, local energy generation, training and marketing.

Food production and incomes begin to improve by 2015. The five-year plan for 2016-2020 continues with the direction of the plan for 2011-2015. Agricultural processing and product development starts showing results, supported by investment financed from mining revenues. During this plan food security improves markedly as the foundations laid in the previous plan have an increasing impact on raising output and increasing incomes. By 2020 Laos is close to shedding its status of Least Developed Country and is making good progress towards building a sustainable agro-industrial base. It is attracting increasing interest from quality investors inspired by the opportunities created by rising agricultural output in a world of rising demand for food and natural products. Chronic food insecurity disappears. Occasional acute food insecurity does not present significant problems because resilience is rising due to better agriculture.

13.2 Vulnerable Food Security

While food security is a concern, the government determines the country needs more manufacturing and foreign investment to strengthen the economy. Economic growth, at any cost, is considered the best and quickest way to generate revenues for the government and raise peoples' incomes to eradicate poverty. The environment is seen as a resource to be exploited. Sustainability and transition are not substantive issues. Investors talk of Laos as a country-size industrial park. The country draws comparison with the Philippines, Thailand and even Botswana.



The five-year plan 2011-2015 introduces measures which result in a slightly warmer investment climate, including more land for industrial use. Investment in agricultural resilience and sustainability is piecemeal and ineffective. Farmer education and training is weak and ineffective. There is insufficient credit available for farmers to invest in production. Irrigation suffers from underinvestment because investment focuses on infrastructure to support industry.

One result is more plantations for rubber, eucalyptus, and jatropha, as well as fruit orchards. Loss of paddies, fields and forests to industry reduces farming opportunities – and food production, although this is partially offset by rising yields. Food agriculture also suffers because of intensifying environmental degradation, which results in yet more land for industrial use. Migration from villages to cities along the Mekong valley increases as people seek work in new factories.

Overall, food production at best stagnates, and even begins to fall, as the population continues to grow. More and more people stop growing their own food, instead buying food, often processed products, from the market using incomes from factory work and other non-agricultural employment. In response to this rising demand upon the market for food, imports rise, a trend which continues to 2020. Imports of inputs, especially chemicals and genetically-engineered seeds, also rise because agriculture takes an industrial path in the face of expanding environmental degradation and declining soil quality.

Laos is increasingly linked and exposed to the ups-and-downs of global food prices. Bouts of acute food insecurity are experienced by people depending upon the market for their food which is particularly sensitive to global prices. Sustained food price rises cause widespread chronic food insecurity. Strikes and protests are common among factory workers unable to afford enough food. Despite the trend towards increasingly fragile food security, high economic growth rates and other promising general economic indicators result in the five-year plan 2015-2020 taking further steps to open the economy to attract more investment.

13.3 Acute Food Insecurity

Seeking to protect Laos from volatile global food prices and ensure stability, the five-year plan 2011-2015 sees the government emphasize self-reliance, especially for agriculture and food production, while taking a more cautious approach to trade and foreign investment. Environmental protection and enhancement is designed to support agriculture, especially food production. Interest rises in sustainability and transition issues. The country takes on an authoritarian character, the emphasis on self-reliance a faint echo of Myanmar, North Korea and Turkmenistan.



As a result foreign investment and domestic industry slow. Mineral projects take longer to develop or are cancelled. Overall government revenues do not rise as high or as quickly as was projected during the previous decade. Meanwhile demands on the budget are rising. Consequently investment in agricultural infrastructure, particularly local energy and irrigation, and farming education and training falls short. Plantations remain a significant feature of the agricultural sector and landscape. However their expansion slows. Overall food production remains stable, and even rises during some seasons for some crops.

The result is a stable food security situation, showing little improvement from the previous decade. Natural disasters are often accompanied by instances of acute, localized food insecurity. Many poor people in remote rural areas or with farming poor soils, along with poor people living in towns, suffer chronic food insecurity. Nutrition among the general population fluctuates, nutrient deficits are not uncommon. For some communities this is a deep problem.

Although the country shows little promise of shedding its Least Developed Country status by 2020 and acute food insecurity is common, the government sticks with the strategy emphasizing self-reliance judging the alternatives to be high risk in a world where food, commodities and energy are facing ever greater demands.

13.4 Chronic Food Insecurity

Encouraged by revenues from mining and enjoying increasing attention from investors, especially from other developing countries eager to exploit resources, the Lao government makes its priority - commodities. Focusing on resources is expected to generate revenues, create jobs and accelerate growth. The plan for 2011-2015 focuses on measures to support mining, large hydropower dams and industrial plantations. The environment is sacrificed for resources. Expectations are that food insecurity will be solved by the knock-on effects in terms of jobs and government revenues from resources development. To some investors and development agents Laos resembles Congo without the downsides of insecurity, violence and war. Prospects look bright.



However, the subsequent inflow of investment washes away the state's capacity for regulation. Together with fast-rising revenues, the country suffers a severe resource curse. Meanwhile agricultural production stagnates. Come 2015, despite farming enjoying strong recognition and favourable pronouncements from the government, agricultural output is fluctuating sharply towards the downside. The environment is deteriorating. Overall production is in decline. State capacity for supporting farmers with education, training, irrigation and credit is in practise, dysfunctional. Infrastructure spending is almost entirely directed at serving resource projects like mines, dams and plantations.

Many people now live in chronic food insecurity. The worsening situation is offset by rising food aid from international donors. The government however continues with its emphasis on resources in the plan for 2016-2020 for fear of upsetting investors, who praise the country's attractive environment. Despite rising revenues, the government is unable to improve its capacity or implement comprehensive, effective policies to tackle poverty or deal with food insecurity, in part because central authority is becoming weak as provinces work harder to accommodate investors in resources projects. The situation is compounded because the vast scale of resources exploitation is leaving much of the country with a poor environment further damaging farmers' harvests.

Overall human development indicators stagnate and even fall. Laos shows no prospects for leaving behind its status as a least developed country. Resource projects complement public security with their own security measures. Food insecurity worsens. Fears grow among major donors and neighbours of crumbling Laos becoming a failed state. Tentative plans are drafted for intervention.

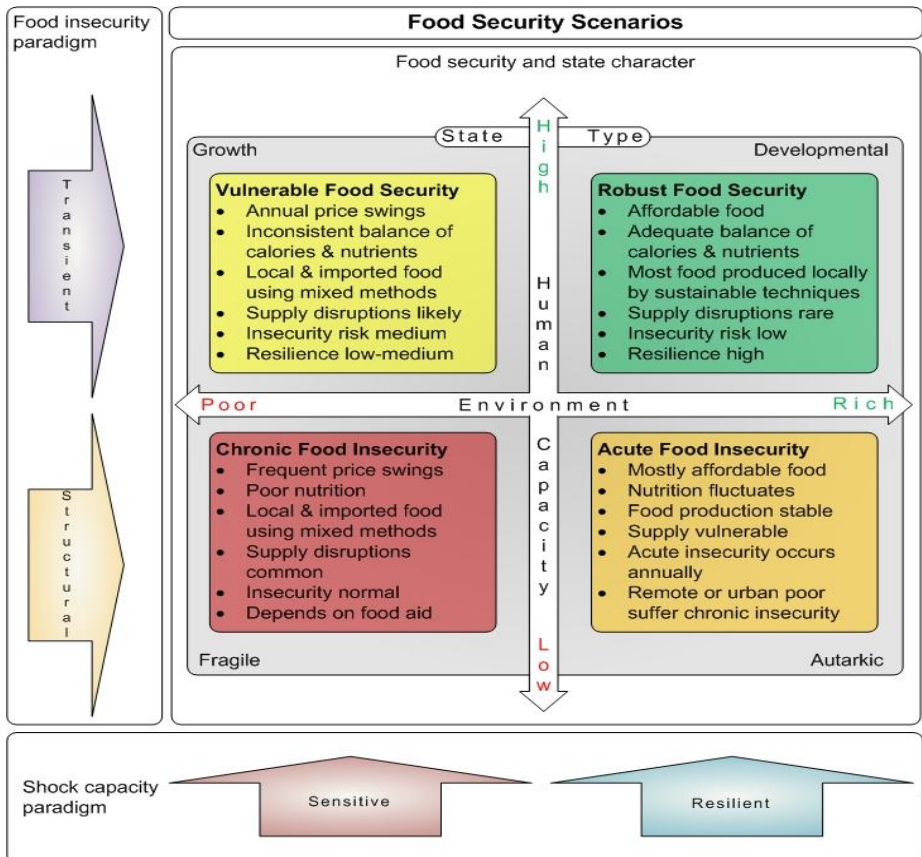


13.5 Matrix: Food Security Scenarios

Scenarios are a synthesis of:

- State of the environment
- Human capacity for policy, administration, regulation and enforcement
- Type of state political-economy
- Food insecurity associated with certain types of state
- Capacity to absorb shocks associated with certain types of state

Environment and *human capacity* together form a framework for the scenarios because they limit options, shape society and policy, determine scope for action, and resilience of society.



Food security, including nutrition security, is rising up the policy ladder of the government and development partners. For a few households food is becoming more affordable because their incomes are rising thanks to the opportunities created by the changing nature of the economy. Others have confronted their food insecurity with stoicism and fortitude. The shockwaves from soaring food prices did not shake the stability of society so much as to cause protests and riots, unlike other poor countries. The environment still supports an ecology that allows farmers to produce much of the food needed by Laos. Food imports are not, yet, holding Laos hostage.

Nevertheless malnutrition and hunger are facts of life for many people. The numbers have barely moved in a decade. Mothers and children seem particularly hard hit. The rush to build dams, open mines and plant industrial crops like rubber, pulp, sugar and the like, is generating a rising wave of change for the environment. The ecology is being damaged and reshaped in ways that are altering its fundamental nature and with it prospects and opportunities for food production.

If current trends continue, as seems likely, farming, fishing and foraging will suffer adversely. Harvests will not increase and will almost certainly fall. This could not be happening at a more inconvenient time. The population is growing. Migration has been rising. Laos needs more food just to maintain the present difficult food security situation. Even more will be needed if people now suffering food insecurity are to attain food security.

The outlook is not promising because the government will for some years at least lack the capacity to properly plan, manage and regulate investments to ensure they do not damage the environment or communities. To encourage such a high volume of investment is putting the country at a high risk of falling under the resource curse. Many countries suffering the curse of resources are also home to many people suffering food insecurity.²⁴⁵

The clouds building up over food security in Laos are paralleled by the storms looming for energy and food around the world as the age of abundance gives way to the age of scarcity. Laos will find it hard to escape the effects because it is now no longer locked away, but enjoys growing links to the world, especially its resource-hungry neighbours. The gloomy global outlook for food and energy security and the intensifying interactions between the two and the consequences for increasing competition between industrial crops and food for land seem set to intensify the situation in Laos. Food production and therefore food security will suffer in the face of these growing threats generating rising risks.

²⁴⁵ Appendix Two

Assessment of the food security situation reveals poor prospects for improvement. *Sustainable Food Security*²⁴⁶ highlights the lack of progress in developing assets to bring about enduring reductions or elimination of food insecurity. *Food Livelihood System*²⁴⁷ analysis shows that producing food for food security and income is intrinsic to the well-being of most people, households and communities in Laos. Disrupting, damaging or destroying food production reduces food security and more broadly strains or breaks the bonds of households, communities and society with implications for resilience at all levels.

Sacrificing food security, livelihood well-being and community resilience in expectation that these costs will be outweighed by the narrow revenue and limited employment of Big Push industrial projects is a risky bargain primed to produce unsustainable development and undermine national security. The alternative is the low-risk *Sustainable Security* approach that would create an environment for broad, sustainable development and robust national security.. The development paradigm should be taken apart and reassembled to reflect the fundamental security role of food and the costs and impacts of damage to the environment and ecology of industrial projects. Such an approach would strengthen *Comprehensive National Power*, reduce the vulnerability of Laos to non-traditional security threats, such as hunger and disease, and lessen the chances of Laos generating non-traditional security problems which do not respect borders. Without change the food-security pillar of national security will remain weak and vulnerable.

Food insecurity in Laos is not caused by the environment, ecology or means of production. It is a consequence of the prevailing paradigms and policies, borne of the age of abundance, that lack the breadth and depth to appreciate and value cross-cutting perspectives, implications and consequences. In the past this was perhaps less of a problem because of the safety net of surplus food implicit in the age of abundance. This lies at the centre of the food security paradox.

The age of abundance that shapes the 20th century is passing into history leaving behind a legacy of paradigms and policies ill-suited to the age of scarcity, indeed they are obsolete. To continue with them in the age of scarcity is to court danger and tempt trouble.

²⁴⁶ Appendix One

²⁴⁷ Appendix One

Placing food security at the heart of development in Laos will undo the food-security paradox by generating opportunities and outcomes to strengthen livelihoods, sustainably use energy, and nurture harvests of the environment while maintaining space for foreign investment but avoiding dependence and distortion. This will provide a strong foundation for strengthening national security.

Food insecurity in Laos is a man-made problem, the paradox is not inevitable. Food security for all in Laos is possible with man-made solutions if there is vision and will to shape them. To not make food security the overriding priority is to condemn Laos, like many of its children, to a stunted, weak and sickly future.



15.1 Opportunities and Alternatives

A holistic approach to development in Laos placing immediate human needs, particularly food security, first would carefully assess the strengths and resilience of society, environment and ecology and thereafter build upon this nexus in a process guided by defence, nurture and maximization. It is not incompatible with business and industry. It would create conditions favourable for economic growth which spreads the benefits among the poor as well as the prosperous while strengthening, not weakening, food security.

15.1.1 Land

Land could yield more income for farmers and the government. The problem is not industrial crops but the model of development that is failing to spread the benefits in a way which does not require sacrificing the environment or food security. *"...it is not export cropping per se, but rather the structures of production and markets and the food and financial policy context that determine local household incomes and peaceful or belligerent outcomes."*²⁴⁸ Land rents which are low, result in windfall profits which flow into the accounts of foreign investors. Prices for land could be pegged higher, it is after all a finite resource for which global demand is rising.

Opportunities should shift away from handing land under one appearance or another to investors, to a paradigm which allows people to stay on the land if they wish producing industrial crops for processing in Laos in partnership with foreign expertise, investment and marketing. One mechanism is contract farming, if carefully managed to build long-term partnerships, ensure equal terms, eliminate damaging conditions imposed by traders, and minimize information asymmetries.²⁴⁹

Developing land for industrial purposes should take place within a policy and planning framework which considers to the scarcity value of pristine landscapes. Tourism is by some reckonings already the world's biggest industry. It is a significant industry in Laos which appears set for long-term growth if the charm of the free-flowing rivers, rich forests and traditional towns and vistas is maintained. Moreover thriving rural communities will be in a position to maintain their food and lifestyle culture for their own benefit as well as a unique attraction for visitors, such as is the case of France or Italy. Plantations of eucalyptus, rubber or acacia cloaking stretching as far as the eye can see will not prove a strong lure for tourists.

²⁴⁸ Messer, Ellen & Cohen, Marc "FCND Discussion Paper 206 - Conflict, Food Insecurity, and Globalization" 2006 Washington, D.C.: International Food Policy Research Institute p31

²⁴⁹ An examination of the contract farming situation in Laos and its challenges and prospects is made by Fullbrook 2007

15.1.2 Agriculture

Agriculture is underperforming in Laos. A holistic approach could expand food security by improving harvests and raising incomes. Field crops and market gardening could yield more with additional research, as well as investment in irrigation, training for farmers, and much better access to information on methods, markets and prices. Similarly with research and development forest foods and products may be coaxed into producing larger quantities tended by households trained to nurture.

Polyculture, like sustainable Aigamo²⁵⁰ used in Japan on small farms to produce high yields, already to some degree exists traditionally in Laos. Aigamo indicates higher yields may be possible with research bringing farmers and scientists together to learn and help each other to devise better systems for Laos. Ingenuity and lateral thinking could also help Laos increase and diversify its agricultural output just as it did for Cuba in the face of a sudden transition crisis when subsidized energy and other supplies from the Soviet bloc ended in the early 1990s. Food was scarce for a few years until agricultural reforms took effect. They focused on small farms and farms and gardens, using high levels of organic inputs, in cities such that within five years Havana almost tripled its agricultural production reaching 113,525 tons in 1998.²⁵¹

Such approaches can on a net output/unit area basis be almost as efficient as high-input monoculture while being much more efficient at retaining and recycling organic materials.²⁵² This approach puts far less strain on the environment, depends on far fewer environmental subsidies through externalities, which bodes well for long-term sustainability and food security.

In this way industrial crops could be integrated into livelihoods, diversifying incomes without unduly ruining the value of landscapes. In Africa community area-based development involving women as well as men has improved food security for farmers and their region through mixing crop varieties, diversification, new methods, careful use of water and local management of watersheds to produce bigger harvests.²⁵³

²⁵⁰ Roberts 2009 p273,275

²⁵¹ Novo, Mario Gonzalez. & Murphy, Catherine "Urban agriculture in the city of Havana: a popular response to crisis" in "Growing Cities Growing Food: Urban Agriculture on the Policy Agenda: A Reader on Urban Agriculture" 2001 The Hague: Resource Centres on Urban Agriculture and Food Security p330, 338

²⁵² Weis 2007 p166, 167

²⁵³ Wardle, Chris "Natural Resource Perspectives 119 - Community Area Based Development Approach (CABDA) Programme: An alternative way to address the current African food crisis?" 2008 London: Overseas Development Institute p1

Preference should be given to perennials like jatropha and pongamia which generate incomes from processing seeds.²⁵⁴ Perennials that stress the environment sucking up water and nutrients, like eucalyptus, should be avoided. Rubber is growing profitably for smallholders mixed with fruit, bamboo, poultry and vegetables in Malaysia, likewise with jungle rubber in Indonesia. In north eastern India rubber is not taking root in endless plantations but being inserted into integrated farm livelihoods making use of shifting cultivation where it is planted on marginal land.²⁵⁵

This corner of India, which bears parallel in terms of ethnography and geography with Laos, is seeing rubber supporting food security instead of raising concerns about food insecurity as is the case in Laos, for example in Luang Nam Tha.

“...the newly emerging rubber-growing tracts in the NE region show immense dynamism in terms of adoption of rubber-integrated farming systems, which needs to be promoted as an important strategy in the context of the growing food security concerns in the region.”²⁵⁶

15.1.3 Fisheries

Fisheries along what wild and free-flowing rivers remain in Laos are critical to food security, as well as supporting livelihoods of hundreds of thousands of people. Preserved, nurtured and carefully managed, river fisheries may well yield greater catches which could be processed into products valuable to a world in which ocean fisheries are unable to meet rising demand. The role and value of fish will increase because they are among the most efficient producers of protein.

15.1.4 Energy

Energy is being developed back-to-front in Laos. Hydroelectric dams – mostly for exporting power – are large and getting larger imposing costs and risks on the environment and households which undermine food security. A sustainable alternative would start small, seeking to generate electricity for households and villages by harnessing the opportunities for generating electricity using pico, micro and mini generators placed along the innumerable streams and small rivers.

²⁵⁴ Wani, Suhas et al “Improved livelihoods and environmental protection through biodiesel plantations in Asia” 2006 Asian Biotechnology and Development Review volume 8 number 2

²⁵⁵ Viswanathan, P. K. & Shivakoti, Ganesh “Adoption of rubber-integrated farm-livelihood systems: contrasting empirical evidence from the Indian context” 2008 Journal of Forest Research volume 13 number 1 p1, 2, 11

²⁵⁶ Viswanathan & Shivakoti 2008 p12

Hydro-electricity at this scale is cheap, simple and fast to build. It is usually compatible with migrating fish. Power is already being generated by such systems, for example on the Bolaven plateau. They could be integrated with the commercial household solar systems pioneered by the Laotian company Sunlabob. A community approach to energy could also turn the not insignificant quantities of agricultural wastes into energy through biogas and biomass facilities as is increasingly happening in China, Cuba (with Swiss development-cooperation assistance)²⁵⁷ and Thailand.

First exhausting opportunities for community electricity from hydro, solar and agricultural waste would ensure only the minimum of large hydro dams would be built avoiding unnecessary costs for the ecology and households and reductions in food security.

15.1.5 Mining

The Extractive Industries Transparency Initiative²⁵⁸ fosters good governance by laying down principles, methods and practises to improve accountability and transparency for extractive industries of oil, gas and mining. Azerbaijan and Liberia have achieved compliant status. Another 28 countries have reached candidate status. Indonesia is one of three countries indicating intention to reach candidate status. Interest and support for the Initiative from governments, companies and civil society suggests it is a credible mechanism for managing resources to maximize the benefits from revenues for society. Preparing for candidacy and eventual compliance with the Initiative may provide a framework to assist the government in managing resources development and introducing internationally-recognized practises for clarity.

15.2 Options

15.2.1 Fundamental

- Review and revise government strategies and policies to support and promote food security, environmental protection and comprehensive national power to achieve sustainable security.
- Place strengthening and expanding food security to support national security at the heart of the 2011-2015 national plan.
- Protect, nurture and enhance the capacity of the environment and ecology to produce food to eliminate food insecurity and position Laos as a food exporter to meet the world's growing needs.

²⁵⁷ Caribbean Net News "Cuba boosts bio-mass as renewable source of energy" 15th April 2009

²⁵⁸ <http://eitransparency.org>

- Survey and protect outstanding landscapes and human habitats to support and enhance the value of Laos in the global tourism industry.

15.2.2 Land and Security

- Implement a moratorium on large dams, mining and industrial crop plantations.
- Suspend all on-going projects which have yet to begin physical development pending strategic review and assessment of national resources development and regulatory overhaul.
- Suspend on-going projects in the early stages of physical development pending strategic review and assessment of national resources development and regulatory overhaul.

15.2.3 Regulatory

- Ensure a robust, effective and transparent government planning, management, regulatory and mitigation regimes are in place prior to investment projects by adjusting tax and fee structures to source support from investors.
- Implement security impact assessments for large dams, mining, plantation and other projects.
- Consider compliance with the Extractive Industries Transparency Initiative.

15.2.4 Agriculture and Development

- Support research, development and implementation of holistic inter-cropping regimes for producing food and industrial commodities such as rubber, fuel, fibre and starch.
- Support research, development and implementation of regimes and methods to protect, nurture and increase catches of riverine fisheries with a view to expanding exports.
- Implement paradigms in industrial crops to create opportunities for farming households and channel investment into processing and marketing.
- Urgently identify and develop sites for pico, micro and mini hydro-electric power generators to meet domestic electricity needs in conjunction with expanding solar generation.
- Impose high taxes on mono-cropping.
- Impose high taxes on crops placing a heavy burden on the environment such as eucalyptus.

- Seek and nurture cooperation to support these measures from developing countries with relevant experience such as India, Indonesia, Malaysia and Thailand, as well as funding and technical support from bilateral development agencies.

15.4.5 Development Agencies and Partners

- Review plans, programmes and assistance to re-evaluate all explicit and implicit assumptions in light of the age of scarcity and adjust accordingly to deliver resilience and avoid irrelevance.
- Review plans, programmes and assistance to support and promote food and environmental security.
- Emphasise and encourage support for achieving enduring food security within the context of a development paradigm focused on sustainability and resilience delivering pro-poor growth.
- Integrate food security into the core of all programmes and projects in ways similar to gender and HIV/Aids.
- Encourage compliance with the Extractive Industries Transparency Initiative.
- Support agricultural ingenuity and poly-culture research and development drawing on expertise and experience from established and effective models in Cuba, Japan and elsewhere.



Food security analytical concepts

Food security in Laos is more than just a problem of a shortage of food. It is a symptom and consequence of applying paradigms and policies that do not fit the complexity of issues in a world of global markets adjusting to the transition from abundance to scarcity. Food security does not end at hunger and malnutrition. Its impacts are broader, undermining society, holding back development. People who do not have enough of the right food to eat cannot think or work as well as they might. They are at greater risk from disease and disaster.

Viewing these facets together to reach a holistic analysis of food security can present a challenge. The concepts suggested here were derived by the author from concepts developed for poverty analysis since the late 1990s by development agencies. This approach yields assessments of the underlying nature of food security in Laos and hint at opportunities for alternatives for development while supporting, if not, improving food security.

16.1 Sustainable Food Security

'Sustainable food security' is derived from applying the frames of Sustainable Livelihoods,²⁵⁹ which was developed to consider comprehensive poverty by analyzing a context for risks and vulnerabilities, opportunities, policies and institutions. Poverty is a situation in which people lack sufficient resources for their well-being. Likewise, food security assesses whether people have adequate food, or face food insecurity, in other words food poverty.

Food security is at *risk and vulnerable* in Laos from unchecked industrial development of the Big Push reordering and damaging the environment which curtails access to land and water for producing food as well as undermining or eliminating livelihoods based on producing food in harmony with the ecology. Food security could benefit from *opportunities* for enhancing and nurturing food production in harmony with the environment by careful use of the land, combined with sophisticated inter-cropping strategies and improved or new methods.

Food security is not being enhanced and is being undermined by the current Big Push *policy* paradigm premised on exploiting the environment and its resources at the cost of removing land from food production or generating pollution.

²⁵⁹ Sustainable Livelihoods is a framework developed by the UK's Department for International Development in 1999, and used by other agencies including the Swiss Agency for Development and Cooperation, which takes a holistic approach to identify priorities for tackling poverty by uncovering and understanding the needs and interests of poor people informed by their perceptions.

Food security is suffering because *institutions* have an inadequate understanding of the interaction between industrialization, resource extraction, food production and the environment, a situation made worse because institutions lack the capability to properly plan, manage and regulation industrialization and resource extraction. In practise food production and food security are secondary matters to the primary objective of industrialization and resource extraction to generate revenues for the state.

This approach also analyzes a situation by considering natural, human, social, physical, financial and political assets. Food security in Laos is closely related to *natural capital*, which is the land, water and air and the ecology it produces. Land and water for producing food, including ecological characteristics such as diverse forests and aquatic habitats, is being lost to resource extraction and industrial development on a significant scale which appears likely to continue and possibly accelerate given global trends.

- *Human capital*, that is the skills, knowledge, ability and health, are generally attuned to producing food from an environment and ecology now being eroded by the Big Push. Further, human capital is underperforming because many people are not eating sufficient calories or nutrients on a daily basis affecting their capability to work or acquire knowledge either for producing food or participating in the industrial cash economy.

Food security may suffer because *social capital*, such as opportunities for informal unmediated and spontaneous cooperation, membership of semi-formal or formal non-government groups, and resilience-building and cost-reducing trust, is weak in Laos. In particular farmers organization is generally limited to informal village groups, there are as yet no formal and effective large cooperatives supporting food production and marketing in Laos.

- *Physical capital*, such as roads, railways, electricity, communications, schools and hospitals, are in a poor state in Laos, although there is some improvement in roads, electricity and mobile telephones. Better physical capital could cut transport fees and times for farmers resulting in cheaper and more competitive food. Information asymmetry, such as regional market prices and knowledge of techniques, methods and crops, which is currently weighted heavily against farmers could also improve.

- *Financial capital*, such as cash, savings, remittances, and fungible assets like livestock and bamboo, is extremely limited for many farming households in Laos. Many are regularly forced into debt or lack the capital to expand production or improve yields leaving them little choice but to enter into relationships with traders that are often unfair and onerous. This situation is probably not conducive to maximizing harvests nor improving the financial resilience of farming households.

Food security in Laos is being put at risk because *political capital* is distributed in a closed system designed for a command economy now replaced by a new economic mechanism in which ‘independent’ markets play a powerful role in determining prices and distributing benefits. Farming households struggle to make their views and concerns known to policymakers, lack the capacity or knowledge to claim and use their rights as individuals or groups, and are unable to hold the government to account, in part because laws and courts are inaccessible or ineffective. Furthermore, a high perception of deep corruption raises serious doubts about the integrity of governance, policymaking and justice. In this context it is difficult to be certain that the state’s intentions to tackle poverty are not being warped by self-interest and personal gain of its duty-bearers.

The sum of this analysis and the interplay of the factors in focus indicates that the current context is not generating significant improvements in assets that would bring about a rapid and sustained improvement in food security and a reduction in food insecurity.



16.2 Food Livelihood System

Growing or catching food is still the major preoccupation for most people in Laos. Their livelihoods and culture are intrinsically bound through the environment and ecology in which they live with harvesting food for their household and to varying degrees for sale to earn cash which may be used to buy food or saved for use when harvests are bad. For farming households of Laos food security is not simply about enough to eat, but an integral and fundamental part of their livelihood, for many it is probably accounts for the greater part of their livelihood.

Households in Laos have been practising this food-centred livelihood for centuries. Their food livelihood systems must therefore be sustainable to a large degree. The Rural Livelihood System²⁶⁰ identifies nine perspectives on livelihood, which can be applied as the '*Food Livelihood System*'. This framework however obviously does not apply to people who suffer food insecurity but do not engage in livelihoods producing food.

For farmers who have lived and worked the same land for their lives, as did their ancestors, there is a degree of *emotion* bound up with producing food. This is not to romanticise farming, it remains hard, difficult and stressful work the success of which depends to a significant degree on benevolent weather and a diverse and robust ecology able to keep pests in check most of the time. The Big Push in Laos however is either totally eliminating food livelihoods for some households or posing a grave threat to the sustainability of food livelihoods of other households. This may impose an emotional cost upon farming households beyond the vagaries of coping with food security issues, which themselves extend to households not farming such as the urban poor.

Farming as a way of life informs the *inner human space* where people shape perceptions of their identity, who they are and how they relate to other people, households and communities. For some people farming is an activity of the household, yet in other communities it involves extensive cooperation with other households, depending upon the crop and the culture of the community. Identification, generosity and compassion for other households may extend to assisting with challenging tasks like building a house or coping with a death in the family. Changes to food production and food security may present ramifications for identity of individuals and the ties of binding households and communities.

²⁶⁰ The Swiss National Science Foundation developed the Rural Livelihood System to understand people's perceptions of what constituted a sustainable, or enduring, livelihood for their household and how that could be enhanced in comprehensive, holistic ways that would be meaningful to them.

Individual orientation may reflect the food livelihood and the food security bound up within that. Final revision: If food security is imperilled, seemingly beyond reach of the prevailing food livelihood system, because the environment and ecology are being reshaped or destroyed by the Big Push, visions and aspirations may switch from expanding farming or trying to improve harvests to changing livelihoods, leaving food production to take up something else, possibly involving migration and the risk of significant household and community disruption or dislocation.

Food producing may be a significant source of *family orientation* because ancestors for generations may have tilled the same fields, foraged the same forests, or fished the same rivers. Success in a food livelihood system may confer social status and positions of power, respect or influence. If the prospects for harvests dim because of the Big Push then not is food security at risk, but so is the structure and culture of a household or community.

Household relations between genders and ages may be closely tied to food producing roles that in turn play a significant role in defining the *family space*. If the Big Push upsets or eliminates these roles the family may suffer significant disruption, the costs of which in terms of food insecurity, material suffering, or violence may fall along lines of gender and age. The poor health indicators for women and children revealed by the Ministry of Health survey²⁶¹ might suggest the costs of damage to food livelihood systems are already falling heavily on women and children.

Disruption or elimination of food production livelihoods can upset a community's *collective orientation* by removing a key element of tradition, culture and in the case of some groups, religion. Not only may a community face food insecurity after farming is undermined or made impossible, perhaps by forced relocation to poor or insufficient land, but the rhythms of the farming seasons which define the community's habits and festivals, can be difficult to sustain.

Farmers' *knowledge* is the sum of insights, understanding, technology, experience and skills derived from and in response to the conditions presented by the environment and ecology for producing food. When abrupt change comes farming households may struggle to adapt because they lack the appropriate knowledge. A case in point is the switch to rubber in northern Laos, where few farming households have enough knowledge to properly manage the trees and reap the full benefits.

²⁶¹ WFP 2007

Farming households 'washed up' by a change in their environment risk falling into deeper poverty and worse food insecurity because not only may they not be able to produce food, but they may have little option left but to seek insecure work as day labourers.

Socio-economic space may be bound up with farming practices and food production, shaping how households cooperate, organize and form communities. Stark change or elimination of traditional farming will force change upon the socio-economic space for which households and communities may not be prepared or able to accommodate.

Large dams, mining and industrial crops are having a significant impact on natural resources, one which given current trajectories appears likely to intensify in the years to 2020. The damage and change to the *resources situation* undermines food security and livelihoods, as well as cultures and communities.

Food production plays an integral, indeed central role for the livelihoods of many households in Laos. Disruption or elimination of food production not only risks undermining a household's food security, but also visiting damage upon the structure and nature of the household, community and culture, weakening or breaking the bonds of resilience which help society survive through difficult times, including food insecurity.



Hunger, development and stability indexes

Country	Hunger	Resource	Corruption	Governance	Stability	Business ease	Contract
Sudan	20.5	Oil	1.6	11	113	147	143
Laos	20.6	Hydro Mining Rubber	2	21	88.7	165	111
Nepal	20.6		2.7	22	94.2	121	121
Djibouti	20.9		3	14	80	153	164
Guinea	20.9	Iron	1.6	4	101.8	171	131
Pakistan	21.7		2.5	28	103.8	77	154
Malawi	21.8		2.8	31	92.9	134	138
Rwanda	22.3		3	44	88	139	48
Cambodia	23.2		1.8	21	85.8	135	136
Burkina Faso	23.5		3.5	19	89.9	148	110
India	23.7		3.4	57	72.9	122	180
Zimbabwe	23.8	Mining	1.8	3	112.5	158	77
Tanzania	24.2		3	39	79.1	127	33
Haiti	24.3	Sugar?	1.4	8	99.3	154	92
Bangladesh	25.2		2.1	22	100.3	110	178
Tajikistan	25.9		2	14	88.9	159	23
Mozambique	26.3		2.6	40	76.8	141	124
Mali	26.9	Gold	3.1	35	75.6	166	158
Guinea-Bissau	27.5		1.9	10	91.3	179	139
Central African Republic	28	Diamonds	2	5	103.7	180	169
Madagascar	28.8		3.4	47	76.7	144	153
Comoros	29.1		2.5	1	79.6	155	150
Zambia	29.2	Copper	2.8	31	81.6	100	87
Angola	29.5	Oil	1.9	11	83.8	168	179
Yemen	29.8	Oil gas	2.3	13	95.4	98	41
Chad	29.9	Oil cotton	1.6	4	110.9	175	166
Ethiopia	31		2.6	37	96.1	116	78
Liberia	31.8	Timber rubber	2.4	10	91	157	165
Niger	32.4	Uranium	2.8	18	94.5	172	134
Sierra Leone	32.4	Diamonds bauxite	1.9	12	92.3	156	141
Burundi	38.3	Coffee	1.9	7	94.1	177	170
Eritrea	39		2.6	9	87.4	173	51
Congo	42.7	Diamonds coffee oil zinc	1.7	1	106.7	181	173

Observation, notes and sources on following page 109

Observation

Significant resources coincide with state or civil instability and food insecurity. This may suggest Laos is at high risk of problems related to food and resources.

Notes

- . Resource curse effects have been noted where a particular resource comprises only 6 per cent GDP.
- . *Business ease* is a proxy for economic efficiency.
- . *Contract* is a proxy for legal framework efficiency.

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- . *Resources* – Wikipedia (mainly CIA World Fact Book)
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- . *Instability* – Foreign Policy/Fund for Peace Failed States Index (high figures equal greater instability, risk of state failure)
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