STRATEGISING AGRO-INNOVATION SYSTEM: THE CASES OF THAILAND AND VIETNAM

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Theme C: The Transformation of innovation systems

Content

- Conceptual framework
- Thai agro-innovation system
- Vietnamese agro-innovation system
- Conclusion

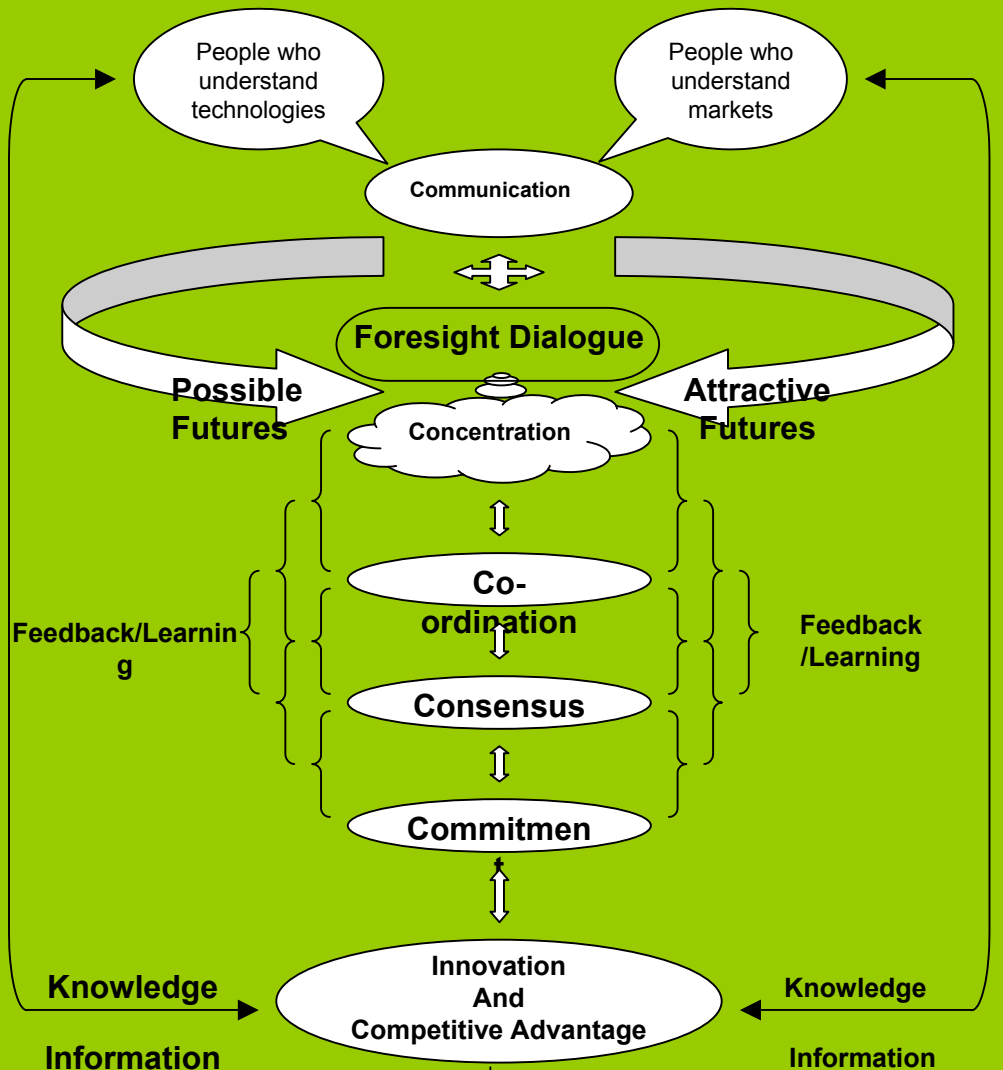
South East Asian as World's Rice Bowl

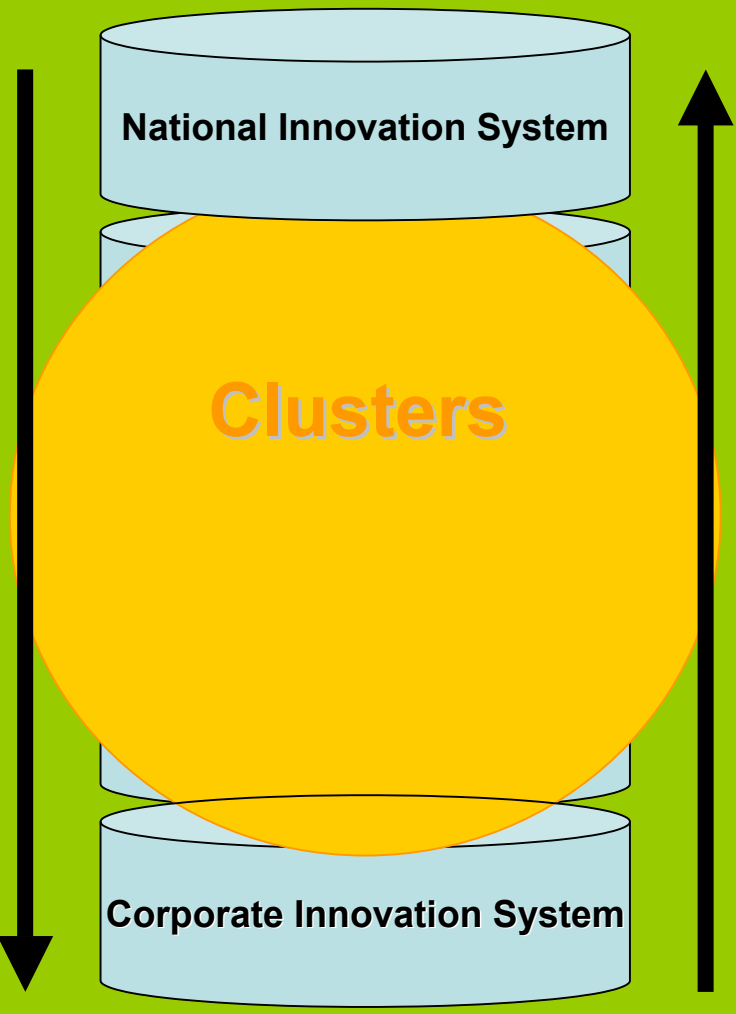
- Most of ASEAN agro-based economies has successfully adopted the 1st Green revolution, but inequality of income distribution among rural and urban areas exists
- Crop yields have multiplied with the applications of scientific research and development, new farming techniques and irrigation
- Quality of products, capital resources management and marketing capability developments are evidently improved
- In terms of employment, agriculture remains the biggest component of the ASEAN economies, it accounts for some 70% of the total employment
- Agricultural development continues to be vital to overall economic growth due to the multiplier effect factor, despite declining contribution of agriculture as a percentage of GDP
- Over 20% of food exports to developed countries comprises processed foods (or three times the amount from developed countries)
- The food producing economies in ASEAN + China are becoming a major world producer and supplier of food

Agro-Innovation System and Foresight

- Agro-Innovation System (AIS) systematises the agricultural sector in holistic approach
- To understand the dynamics of agricultural sector and its relationships to other sector in generating growth and prosperity
- Sectoral innovation system and clustering approaches
- Foresight is an effective and useful tool for strategic planning and to understand the dynamics of sector

Innovation system and Foresight

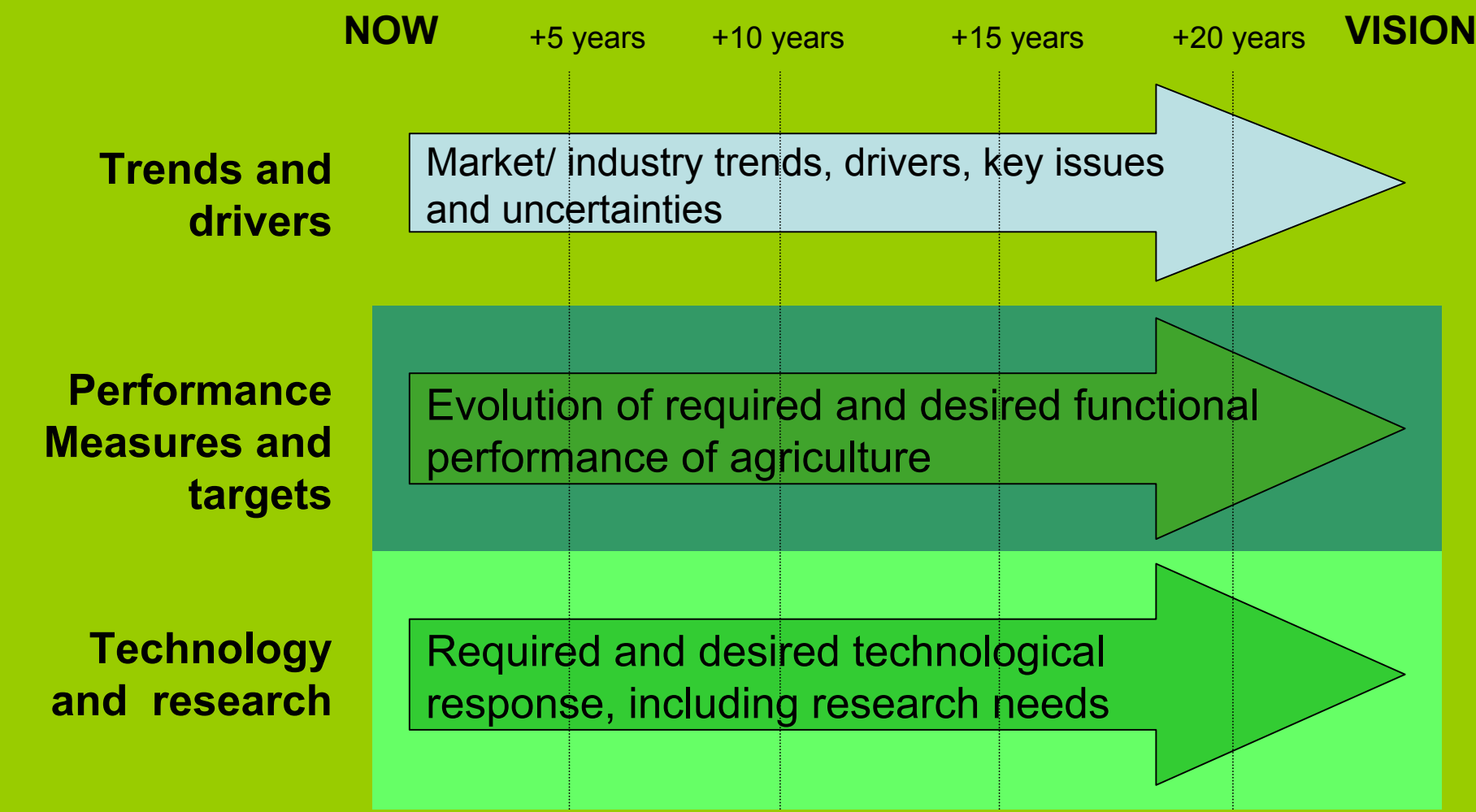




PAC and BTS 2003

Strategising Agro-Innovation System

Thai & Vietnam Foresight Agro-food Technology roadmap architecture









FOOD PROCESSING INDUSTRY IN THAILAND

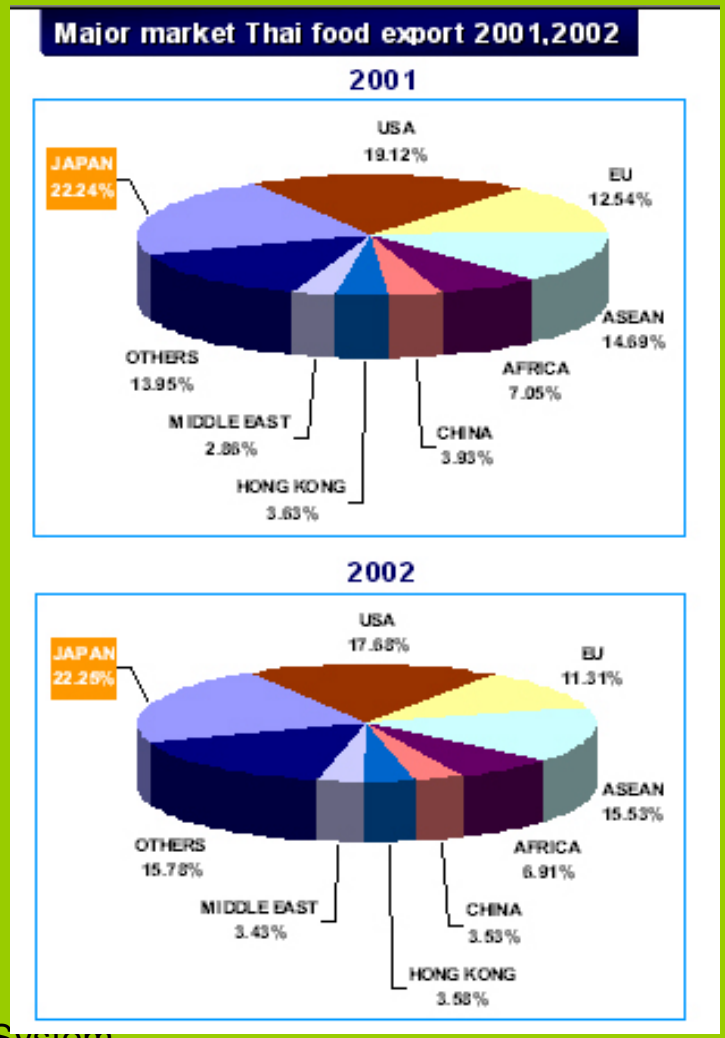
Innovation System

Composition of the Thai food industry

- Food processing industry has been key strategic sector in National Social and Economic Development Plan since the 1960's
- There are more than 8,000 factories in Thailand
- employed 570,000 persons – 20 million including related sectors
- The majority of these establishments are relatively small.
- Sugar and fishery products belongs to large firms
- 70% of raw material counts for local content
- 80% of raw food material of local market
- 9.6% of GDP and 14.4% of total exports in 2002 with average annual growth of 13%
- Product champions are frozen shrimp (25% of total world market), pine apple (45% of total world market), and Frozen chicken (6% of total world market) – in year 2000

The King and agriculture

Food processing sector in Thailand at a glance



Source: National Food Institute of Thailand

Thailand NIS in Brief

- Thailand is similar to the East Asian NIEs by having its economic structure change from an agriculture-based economy to an economy in which the industrial (manufacturing in particular) sector has gain distinctive significance.
- Low technological capability in Thai firm
- No articulated government policy to support innovation process
- Dynamic and high growth rate after financial crisis
- Static change in academic programme to support new economy, but high demand in private sector seeks human resources from abroad
- Transformation can be seen now:
  - Several conglomerates increased their R&D
  - A number of smaller companies collaborated with university R&D groups.
  - Subcontracting suppliers were forced to strengthen their technological efforts.
  - Emerging new own-designed, start-up firms

Foresight projects in Thailand

2002

2001

2000

1999

1998

1995

Science and Technology in Thailand in the year 2020

Future key Technologies for Thailand

IT for education

IT for SME

Agriculture

Technology Promotion Association

National Metrology Institute of Thailand

Public warehouse organisation

National level **Sectoral level** **Organisationnal level**

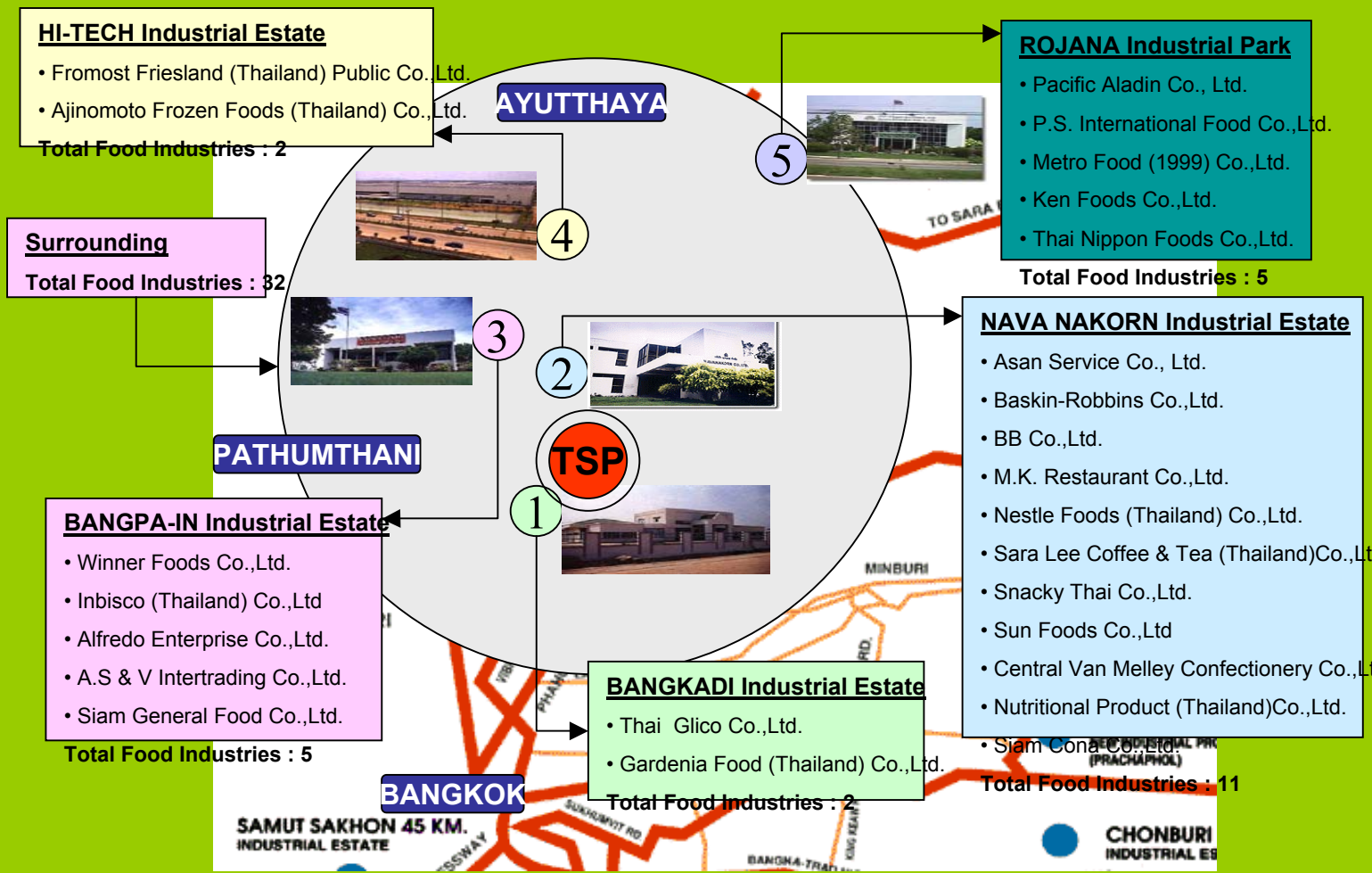
Agricultural Foresight in Thailand

- Objective: To plan the development of science and technology in Thai agriculture
- Main players: Thai Foresight Unit, NSTDA
- Methods: 33 experts interviewed with 1070 Delphi Questionnaires, 19.4% success rate and 36 in Scenario workshop
- Time Frame: 10 years
- Outputs: Good governance, R&D on Local knowledge, database, grass rooted organisation

Three scenarios of Thai Agriculture foresight

- Thailand as kitchen of the world
- Thai technology is widely used for national agricultural development
- Harmonious cooperation among private sector, farmer and government
- Three dimensions applied from STEEP dimensions are included
  - Managerial dimension
  - Technological dimension
  - Policy dimension

North Bangkok
Food processing industry



Northern Thailand and agriculture

- **Cut-flower cluster**
- **Rice**
- **Tropical fruit preservation**
- **Transportation hub of central sub-Maekong region**







FOOD PROCESSING INDUSTRY IN VIETNAM

Innovation System

Siuation of Vietnam agro-food processing industry (1)

- Agro-product processing of Vietnam is still less developed, leading to low quality products and economic inefficiency;
- However, food processing sector is growing:
  - 6.7% of GDP in 1991
  - Food processing growth of 14% annually while GDP growth of only 8.9% annually during 1991-1997
- The total estimated value of food processing is 2 billion US$ (1997), representing 8.8% of GDP and 35%of industrial value added;
- 5000 rice milling units with total capacity of 20,000 tons/day (1000 SOEs and 4000 private ones);
- 13 SOEs of vegetables and fruit processing. Most units with 100% foreign capital use imported equipment and technologies, can produce high quality products mainly for export;
- 50 Coffee processing units (14 equipped with foreign technologies)

Siuation of Vietnam agro-food processing industry (2)

- 75 tea industrial processing and 12,000 private processing units
- 53 sugar processing units with equipment imported from various countries
- A few processing units for livestock products and fish

Challenges/issues for Vietnam food processing industry

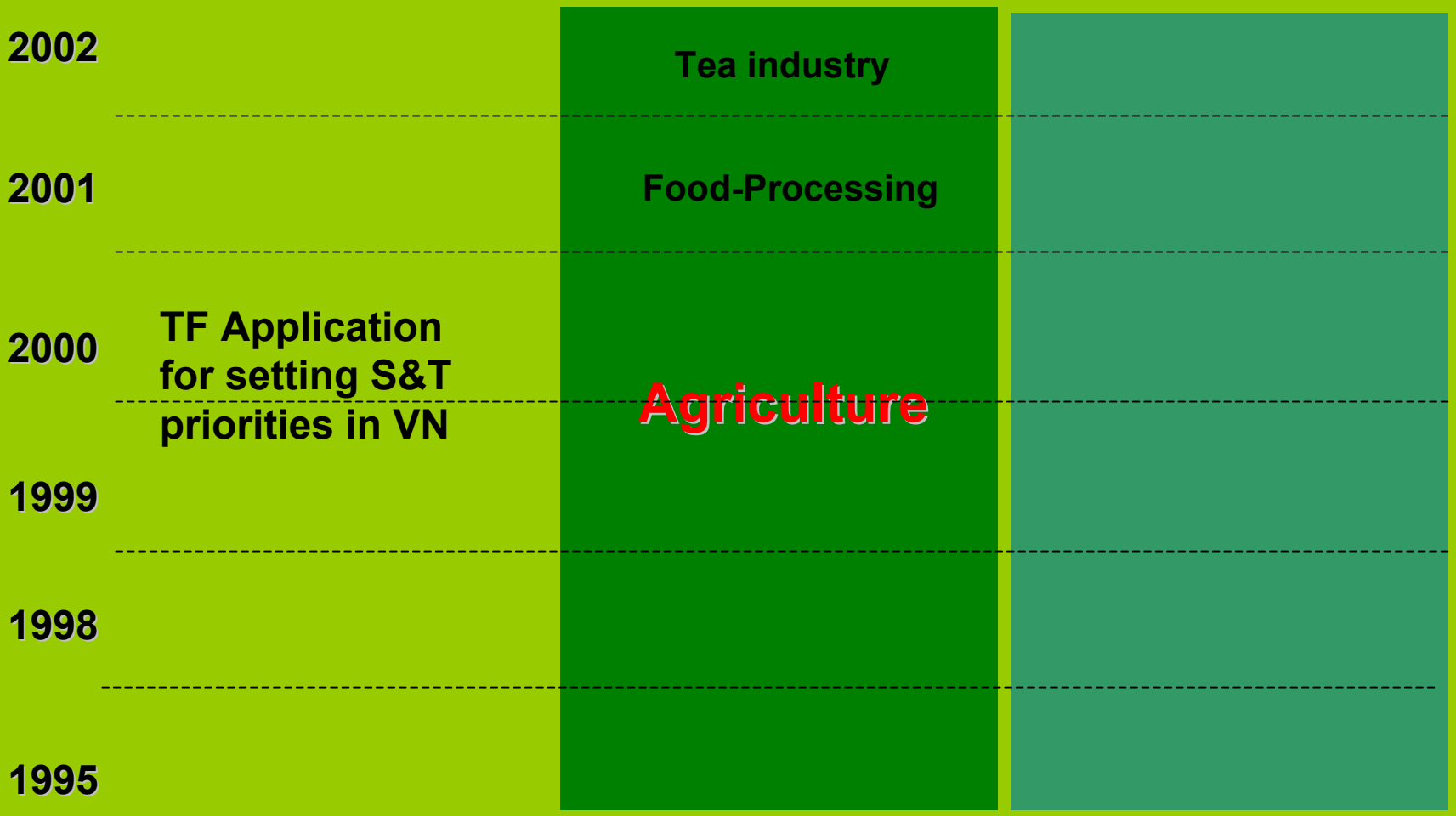
- Unstable, fragmented and low-quality supplies of raw material for processing.
- Lack of capital for investment to expand the production areas and modernise the equipment and technologies.
- Poor infrastructure such as transportation means, storage facilities.
- Lack of highly-qualified people, both technically and managerially.
- Low investment in research on processing.
- Lack of specific and realistic Government policies for the promotion of processing.

Vietnam NIS in Brief

- Vietnam is similar to Thailand and other East Asian NIEs by having its economic structure change from an agriculture-based economy to an economy in which the industrial (manufacturing in particular) sector has gain distinctive significance.
- Low technological capability in Vietnam firm
- Weak interactions among actors
  - weak links between research and industry;
  - domestic enterprises underestimate potential support of local research institutions;
  - Miss-match between capabilities at R&D institutions and technology demand of enterprises
- Poor institutional framework for innovation:
  - Lack of intermediary institutions/agencies for facilitation of innovation process;
  - Policies not consistent and sometime conflicting each other;
- Lack for motivation of innovation
  - limited investment by enterprises to use and exploit technologies;
  - Limited technology learning of enterprises from foreign partners;
  - No venture capital

FOOD PROCESSING FORESIGHT IN VIETNAM

Foresight projects in agro-food industry in Vietnam



Food Processing Foresight in Vietnam

- Objective: To set up S&T Priorities food-processing industry in Vietnam
- Main players: TF Research Department, NISTPASS with assistance from APEC TF Centre
- Methods: 30 experts from food-processing industry, managers from MARD, researchers from research institutions and universities and scenario workshop
- Time Frame: 2001-1025 (15 years)
- Outputs: 3 scenarios developed; a number of S&T priorities for food industry identified


(NISTPASS)
TRAINING COURSE ON
TECHNOLOGY FORESIGHT IN FOOD PRO
DOSON 22-25 OCTOBER 2001

Tea industy Foresight in Vietnam

- Objective: To set up S&T Priorities in tea industry in Vietnam
- Main players: TF Research Department, NISTPASS with assistance from APEC TF Centre
- Methods: 100 experts from Tea industry, researchers from research institutions and universities and scenario workshop
- Time Frame: 2001-2020 (20 years)
- Outputs: 4 scenarios developed; a number of critical strategic areas for VN tea industry up to 2020 (quality, marketing, management and policies) identified; some immediate actions to be followed up


VN
HÈ VN
TRUNG TÂM FORESIGHT
CÔNG NGHỆ APEC
VIỆN NGHIÊN CỨU
CHIẾN LƯỢC & CHÍNH SÁCH
KHCN
LỚP TẬP HUẤN
CH TIẾP CẬN FORESIGHT TRONG XÁC ĐỊNH ƯU TIÊN
VÀ CHIẾN LƯỢC KINH DOANH CHẾ Ở VIỆT NAM
ĐỒ SƠN, 25-27/11/2002

Interfacing TF with Strategic Planning and Decision Making in Vietnam: some challenges

- Follow-up with the results from TF for users;
- From user side: long-term visions are temporally not the centre of attention among manager and business communities;
- From supplier side: very beginning stage of capacity building can not supply and prove more evidence of success to potential clients

Mapping ASEAN Agro-Innovation System

Strengths

- Varieties of primary and secondary products
- Cost advantages
- Location
- Food culture (Thai and Vietnam cuisines)
- Complementary from related sector (handicraft and tourism)

Weaknesses

- Weak linkages among stakeholder
- Competing in the same products
- Technological backwardness in some area (rural area) cause low productivity and quality

Mapping ASEAN Agro-Innovation System

Opportunities

- Upgrading to higher manufacturing standards and technological innovation
- planning agricultural development in more dynamic and holistic ways
- To become “industrial” in the form of “factory production”
- Large-scale industrial systems for growing and breeding, production and processing can be introduced to *manufacture food products for the world market*

Threats

- Trade and non-trade barriers
- Higher quality and standard demands from importers (HACCP, ISO 14000 etc.)
- Price competition from lower cost economies
- Decreasing of labour and professions in related fields (farming and fishery in particular, in Thailand and Malaysia)